Qtile Documentation

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CHAPTER

ONE

GETTING STARTED

1.1 Installing Qtile

1.1.1 Distro Guides

Below are the preferred installation methods for specific distros. If you are running something else, please see *Installing From Source*.

Installing on Arch Linux

Stable versions of Qtile are currently packaged for Arch Linux. To install this package, run:

```
pacman -S qtile
```

Please see the ArchWiki for more information on Qtile.

Installing on Fedora

Stable versions of Qtile are currently packaged for current versions of Fedora. To install this package, run:

```
dnf -y install qtile
```

Installing on Funtoo

Latest versions of Qtile are available on Funtoo. To install it, run:

```
emerge -av x11-wm/qtile
```

You can also install the development version from GitHub:

```
echo "x11-wm/qtile-9999 **" >> /etc/portage/package.accept_keywords
emerge -av qtile
```

Customize

You can customize your installation with the following useflags:

- dbus
- widget-khal-calendar
- widget-imap
- widget-keyboardkbdd
- widget-launchbar
- widget-mpd
- widget-mpris
- widget-wlan

The dbus useflag is enabled by default. Disable it only if you know what it is and know you don't use/need it.

All widget-* useflags are disabled by default because these widgets require additional dependencies while not everyone will use them. Enable only widgets you need to avoid extra dependencies thanks to these useflags.

Visit Funtoo Qtile documentation for more details on Qtile installation on Funtoo.

Installing on Debian or Ubuntu

Note: As of Ubuntu 20.04 (Focal Fossa), the package has been outdated and removed from the Ubuntu's official package list. Users are advised to follow the instructions of *Installing From Source*.

On other recent Ubuntu (17.04 or greater) and Debian unstable versions, there are Qtile packages available via:

```
sudo apt-get install qtile
```

On older versions of Ubuntu (15.10 to 16.10) and Debian 9, the dependencies are available via:

```
sudo apt-get install python3-xcffib python3-cairocffi
```

Installing on Slackware

Qtile is available on the SlackBuilds.org as:

Package Name	Description
qtile	stable branch (release)

Using slpkg (third party package manager)

The easy way to install Qtile is with slpkg. For example:

```
slpkg -s sbo qtile
```

Manual installation

Download dependencies first and install them. The order in which you need to install is:

- pycparser
- cffi
- futures
- python-xcffib
- trollius
- cairocffi
- qtile

Please see the HOWTO for more information on SlackBuild Usage HOWTO.

Installing on FreeBSD

Qtile is available via FreeBSD Ports. It can be installed with

```
pkg install qtile
```

1.1.2 Installing From Source

Python interpreters

We aim to always support the last three versions of CPython, the reference Python interpreter. We usually support the latest stable version of PyPy as well. You can check the versions and interpreters we currently run our test suite against in our tox configuration file.

There are not many differences between versions aside from Python features you may or may not be able to use in your config. PyPy should be faster at runtime than any corresponding CPython version under most circumstances, especially for bits of Python code that are run many times. CPython should start up faster than PyPy and has better compatibility for external libraries.

Core Dependencies

Here are Qtile's core runtime dependencies and where available the package name that provides them in Ubuntu. Note that Qtile can run with one of two backends -- X11 and Wayland -- so only the dependencies of one of these is required.

Dependency	Ubuntu Package	Needed for
CFFI	python3-cffi	Both backends, bars and popups
X server	xserver-xorg	X11 backend
xcffib	python3-xcffib	X11 backend
wlroots	libwlroots-dev	Wayland backend (see below)
pywlroots	--	Wayland backend
pywayland	--	Wayland backend
python-xkbcommon	--	Wayland backend
cairocffi	python3-cairocffi	Drawing on bars and popups (see below)
libpangocairo	libpangocairo-1.0-0	Writing on bars and popups
dbus-next	--	Sending notifications with dbus (optional)

cairocffi

Qtile uses cairocffi for drawing on status bars and popup windows. Under X11, cairocffi requires XCB support via xcffib, which you should be sure to have installed **before** installing cairocffi, otherwise the needed cairo-xcb bindings will not be built. Once you've got the dependencies installed, you can use the latest version on PyPI:

```
pip install --no-cache-dir cairocffi
```

Qtile

With the dependencies in place, you can now install qtile:

```
git clone git://github.com/qtile/qtile.git
cd qtile
pip install .
```

Stable versions of Qtile can be installed from PyPI:

```
pip install qtile
```

As long as the necessary libraries are in place, this can be done at any point, however, it is recommended that you first install xcffib to ensure the cairo-xcb bindings are built (X11 only) (see above).

1.1.3 Wayland

Qtile can be run as a Wayland compositor rather than an X11 window manager. For this, Qtile uses wlroots, a compositor library which is undergoing fast development. This means we can only support the latest release. Be aware that some distributions package outdated versions of wlroots. More up-to-date distributions such as Arch Linux may also package pywayland, pywlroots and python-xkbcommon.

With the Wayland dependencies in place, Qtile can be run either from a TTY, or within an existing X11 or Wayland session where it will run inside a nested window:

```
qtile start -b wayland
```

See the *Wayland* page for more information on running Qtile as a Wayland compositor.

1.2 Configuration

Qtile is configured in Python. A script (`~/.config/qtile/config.py` by default) is evaluated, and a small set of configuration variables are pulled from its global namespace.

1.2.1 Configuration lookup order

Qtile looks in the following places for a configuration file, in order:

- The location specified by the `-c` argument.
- `$XDG_CONFIG_HOME/qtile/config.py`, if it is set
- `~/.config/qtile/config.py`
- It reads the module `libqtile.resources.default_config`, included by default with every Qtile installation.

Qtile will try to create the configuration file as a copy of the default config, if it doesn't exist yet.

1.2.2 Default Configuration

The *default configuration* is invoked when qtile cannot find a configuration file. In addition, if qtile is restarted or the config is reloaded, qtile will load the default configuration if the config file it finds has some kind of error in it. The documentation below describes the configuration lookup process, as well as what the key bindings are in the default config.

The default config is not intended to be suitable for all users; it's mostly just there so qtile does /something/ when fired up, and so that it doesn't crash and cause you to lose all your work if you reload a bad config.

Key Bindings

The mod key for the default config is `mod4`, which is typically bound to the "Super" keys, which are things like the windows key and the mac command key. The basic operation is:

- `mod + k` or `mod + j`: switch windows on the current stack
- `mod + <space>`: put focus on the other pane of the stack (when in stack layout)
- `mod + <tab>`: switch layouts
- `mod + w`: close window
- `mod + <ctrl> + r`: reload the config
- `mod + <group name>`: switch to that group
- `mod + <shift> + <group name>`: send a window to that group
- `mod + <enter>`: start terminal guessed by `libqtile.utils.guess_terminal`
- `mod + r`: start a little prompt in the bar so users can run arbitrary commands

The default config defines one screen and 8 groups, one for each letter in `asdfuiop`. It has a basic bottom bar that includes a group box, the current window name, a little text reminder that you're using the default config, a system tray, and a clock.

The default configuration has several more advanced key combinations, but the above should be enough for basic usage of qtile.

See *Keybindings in images* for visual keybindings in keyboard layout.

Mouse Bindings

By default, holding your `mod` key and clicking (and holding) a window will allow you to drag it around as a floating window.

1.2.3 Configuration variables

A Qtile configuration consists of a file with a bunch of variables in it, which qtile imports and then runs as a Python file to derive its final configuration. The documentation below describes the most common configuration variables; more advanced configuration can be found in the qtile-examples repository, which includes a number of real-world configurations that demonstrate how you can tune Qtile to your liking. (Feel free to issue a pull request to add your own configuration to the mix!)

Lazy objects

The `lazy.lazy` object is a special helper object to specify a command for later execution. This object acts like the root of the object graph, which means that we can specify a key binding command with the same syntax used to call the command through a script or through *qtile shell*.

Example

```
from libqtile.config import Key
from libqtile.command import lazy

keys = [
    Key(
        ["mod1"], "k",
        lazy.layout.down()
    ),
    Key(
        ["mod1"], "j",
        lazy.layout.up()
    )
]
```

Lazy functions

This is overview of the commonly used functions for the key bindings. These functions can be called from commands on the *Qtile* object or on another object in the command tree.

Some examples are given below.

General functions

function	description
`lazy.spawn("application")`	Run the `application`
`lazy.spawncmd()`	Open command prompt on the bar. See prompt widget.
`lazy.reload_config()`	Reload the config.
`lazy.restart()`	Restart Qtile. In X11, it won't close your windows.
`lazy.shutdown()`	Close the whole Qtile

Group functions

function	description
`lazy.next_layout()`	Use next layout on the actual group
`lazy.prev_layout()`	Use previous layout on the actual group
`lazy.screen.next_group()`	Move to the group on the right
`lazy.screen.prev_group()`	Move to the group on the left
`lazy.screen.toggle_group()`	Move to the last visited group
`lazy.group.next_window()`	Switch window focus to next window in group
`lazy.group.prev_window()`	Switch window focus to previous window in group
`lazy.group["group_name"].toscreen()`	Move to the group called `group_name`. Takes an optional `toggle` parameter (defaults to False). If this group is already on the screen, it does nothing by default; to toggle with the last used group instead, use `toggle=True`.
`lazy.layout.increase_ratio()`	Increase the space for master window at the expense of slave windows
`lazy.layout.decrease_ratio()`	Decrease the space for master window in the advantage of slave windows

Window functions

function	description
`lazy.window.kill()`	Close the focused window
`lazy.layout.next()`	Switch window focus to other pane(s) of stack
`lazy.window.togroup("group_name")`	Move focused window to the group called `group_name`
`lazy.window.toggle_floating()`	Put the focused window to/from floating mode
`lazy.window.toggle_fullscreen()`	Put the focused window to/from fullscreen mode

ScratchPad DropDown functions

function	description
`lazy.group["group_name"].dropdown_toggle("name")`	Toggles the visibility of the specified DropDown window. On first use, the configured process is spawned.
`lazy.group["group_name"].hide_all()`	Hides all DropDown windows.
`lazy.group["group_name"].dropdown_reconfigure("name", **configuration)`	Update the configuration of the named DropDown.

User-defined functions

function	description
`lazy.function(func, *args, **kwargs)`	Calls `func(qtile, *args, **kwargs)`. NB. the `qtile` object is automatically passed as the first argument.

Examples

`lazy.function` can also be used as a decorator for functions.

```
from libqtile.config import Key
from libqtile.command import lazy

@lazy.function
def my_function(qtile):
    ...
```

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```
keys = [
    Key(
        ["mod1"], "k",
        my_function
    )
]
```

Additionally, you can pass arguments to user-defined function in one of two ways:

1) In-line definition

Arguments can be added to the `lazy.function` call.

```
from libqtile.config import Key
from libqtile.command import lazy
from libqtile.log_utils import logger

def multiply(qtile, value, multiplier=10):
    logger.warning(f"Multiplication results: {value * multiplier}")

keys = [
    Key(
        ["mod1"], "k",
        lazy.function(multiply, 10, multiplier=2)
    )
]
```

2) Decorator

Arguments can also be passed to the decorated function.

```
from libqtile.config import Key
from libqtile.command import lazy
from libqtile.log_utils import logger

@lazy.function
def multiply(qtile, value, multiplier=10):
    logger.warning(f"Multiplication results: {value * multiplier}")

keys = [
    Key(
        ["mod1"], "k",
        multiply(10, multiplier=2)
    )
]
```

Groups

A group is a container for a bunch of windows, analogous to workspaces in other window managers. Each client window managed by the window manager belongs to exactly one group. The `groups` config file variable should be initialized to a list of `DGroup` objects.

`DGroup` objects provide several options for group configuration. Groups can be configured to show and hide themselves when they're not empty, spawn applications for them when they start, automatically acquire certain groups, and various other options.

Example

```
from libqtile.config import Group, Match
groups = [
    Group("a"),
    Group("b"),
    Group("c", matches=[Match(wm_class=["Firefox"])]),
]

# allow mod3+1 through mod3+0 to bind to groups; if you bind your groups
# by hand in your config, you don't need to do this.
from libqtile.dgroups import simple_key_binder
dgroups_key_binder = simple_key_binder("mod3")
```

Reference

Group

class libqtile.config.**Group**(*name: str*, *matches: Optional[List[*libqtile.config.Match*]] = None*, *exclusive=False*, *spawn: Optional[Union[str, List[str]]] = None*, *layout: Optional[str] = None*, *layouts: Optional[List] = None*, *persist=True*, *init=True*, *layout_opts=None*, *screen_affinity=None*, *position=9223372036854775807*, *label: Optional[str] = None*)

Represents a "dynamic" group

These groups can spawn apps, only allow certain Matched windows to be on them, hide when they're not in use, etc. Groups are identified by their name.

Parameters

name: string the name of this group

matches: default ``None`` list of `Match` objects whose windows will be assigned to this group

exclusive: boolean when other apps are started in this group, should we allow them here or not?

spawn: string or list of strings this will be `exec()` d when the group is created, you can pass either a program name or a list of programs to `exec()`

layout: string the name of default layout for this group (e.g. 'max' or 'stack'). This is the name specified for a particular layout in config.py or if not defined it defaults in general the class name in all lower case.

layouts: list the group layouts list overriding global layouts. Use this to define a separate list of layouts for this particular group.

persist: boolean should this group stay alive with no member windows?

init: boolean is this group alive when qtile starts?

position int group position

label: string the display name of the group. Use this to define a display name other than name of the group. If set to None, the display name is set to the name.

libqtile.dgroups.**simple_key_binder**(*mod*, *keynames=None*)
Bind keys to mod+group position or to the keys specified as second argument

Group Matching

Match

class libqtile.config.**Match**(*title=None*, *wm_class=None*, *role=None*, *wm_type=None*, *wm_instance_class=None*, *net_wm_pid=None*, *func: Optional[Callable[[Union[*libqtile.backend.base.Window*, libqtile.backend.base.Internal, libqtile.backend.base.Static]], bool]] = None*, *wid=None*)
Match for dynamic groups or auto-floating windows.

It can match by title, wm_class, role, wm_type, wm_instance_class or net_wm_pid.

`Match` supports both regular expression objects (i.e. the result of `re.compile()`) or strings (match as an "include"-match). If a window matches all specified values, it is considered a match.

Parameters

title: matches against the WM_NAME atom (X11) or title (Wayland)

wm_class: matches against the second string in WM_CLASS atom (X11) or app ID (Wayland)

role: matches against the WM_ROLE atom (X11 only)

wm_type: matches against the WM_TYPE atom (X11 only)

wm_instance_class: matches against the first string in WM_CLASS atom (X11) or app ID (Wayland)

net_wm_pid: matches against the _NET_WM_PID atom (X11) or PID (Wayland) - (only int allowed for this rule)

func: delegate the match to the given function, which receives the tested client as argument and must return True if it matches, False otherwise

Rule

class libqtile.config.**Rule**(*match*, *group=None*, *float=False*, *intrusive=False*, *break_on_match=True*)
How to act on a match

A Rule contains a list of Match objects, and a specification about what to do when any of them is matched.

Parameters

match `Match` object or a list of such associated with this `Rule`

float auto float this window?

intrusive override the group's exclusive setting?

break_on_match Should we stop applying rules if this rule is matched?

ScratchPad and DropDown

ScratchPad is a special - by default invisible - group which acts as a container for *DropDown* configurations. A *DropDown* can be configured to spawn a defined process and bind thats process' window to it. The associated window can then be shown and hidden by the lazy command `dropdown_toggle()` (see *Lazy objects*) from the ScratchPad group. Thus - for example - your favorite terminal emulator turns into a quake-like terminal by the control of Qtile.

If the DropDown window turns visible it is placed as a floating window on top of the current group. If the DropDown is hidden, it is simply switched back to the ScratchPad group.

Example

```
from libqtile.config import Group, ScratchPad, DropDown, Key
from libqtile.command import lazy
groups = [
    ScratchPad("scratchpad", [
        # define a drop down terminal.
        # it is placed in the upper third of screen by default.
        DropDown("term", "urxvt", opacity=0.8),

        # define another terminal exclusively for ``qtile shell` at different position
        DropDown("qtile shell", "urxvt -hold -e 'qtile shell'",
                 x=0.05, y=0.4, width=0.9, height=0.6, opacity=0.9,
                 on_focus_lost_hide=True) ]),
    Group("a"),
]

keys = [
  # toggle visibiliy of above defined DropDown named "term"
  Key([], 'F11', lazy.group['scratchpad'].dropdown_toggle('term')),
  Key([], 'F12', lazy.group['scratchpad'].dropdown_toggle('qtile shell')),
]
```

Note that if the window is set to not floating, it is detached from DropDown and ScratchPad, and a new process is spawned next time the DropDown is set visible.

Some programs run in a server-like mode where the spawned process does not directly own the window that is created, which is instead created by a background process. In this case, the window may not be correctly caught in the scratchpad group. To work around this, you can pass a `config.Match` object to the corresponding `Dropdown`. See below.

Reference

ScratchPad

class libqtile.config.**ScratchPad**(*name*, *dropdowns=None*, *position=9223372036854775807*, *label=''*, *single=False*)

Represents a "ScratchPad" group

ScratchPad adds a (by default) invisible group to qtile. That group is used as a place for currently not visible windows spawned by a `DropDown` configuration.

Parameters

name: string the name of this group

dropdowns: default ``None`` list of DropDown objects

position: int group position

label: string The display name of the ScratchPad group. Defaults to the empty string such that the group is hidden in `GroupList` widget.

single [Boolean] Only one of the window among the specified dropdowns will be visible at a time.

DropDown

class libqtile.config.**DropDown**(*name*, *cmd*, ***config*)

Configure a specified command and its associated window for the ScratchPad. That window can be shown and hidden using a configurable keystroke or any other scripted trigger.

key	default	description
height	0.35	Height of window as fraction of current screen.
match	None	Use a `config.Match` to identify the spawned window and move it to the scratchpad, instead of relying on the window's PID. This works around some programs that may not be caught by the window's PID if it does not match the PID of the spawned process.
on_focus_lost_hide	True	Shall the window be hidden if focus is lost? If so, the DropDown is hidden if window focus or the group is changed.
opacity	0.9	Opacity of window as fraction. Zero is opaque.
warp_pointer	True	Shall pointer warp to center of window on activation? This has only effect if any of the on_focus_lost_xxx configurations is True
width	0.8	Width of window as fraction of current screen width
x	0.1	X position of window as fraction of current screen width. 0 is the left most position.
y	0.0	Y position of window as fraction of current screen height. 0 is the top most position. To show the window at bottom, you have to configure a value < 1 and an appropriate height.

Keys

The `keys` variable defines Qtile's key bindings. Individual key bindings are defined with *libqtile.config.Key* as demonstrated in the following example. Note that you may specify more than one callback functions.

```
from libqtile.config import Key

keys = [
    # Pressing "Meta + Shift + a".
    Key(["mod4", "shift"], "a", callback, ...),

    # Pressing "Control + p".
    Key(["control"], "p", callback, ...),

    # Pressing "Meta + Tab".
```

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```
    Key(["mod4", "mod1"], "Tab", callback, ...),
]
```

The above may also be written more concisely with the help of the `libqtile.config.EzKey` helper class. The following example is functionally equivalent to the above:

```
from libqtile.config import EzKey as Key

keys = [
    Key("M-S-a", callback, ...),
    Key("C-p",   callback, ...),
    Key("M-A-<Tab>", callback, ...),
]
```

The `EzKey` modifier keys (i.e. `MASC`) can be overwritten through the `EzKey.modifier_keys` dictionary. The defaults are:

```
modifier_keys = {
    'M': 'mod4',
    'A': 'mod1',
    'S': 'shift',
    'C': 'control',
}
```

Callbacks can also be configured to work only under certain conditions by using the `when()` method. Currently, the following conditions are supported:

```
from libqtile.config import Key

keys = [
    # Only trigger callback for a specific layout
    Key(
        [mod, 'shift'],
        "j",
        lazy.layout.grow().when(layout='verticaltile'),
        lazy.layout.grow_down().when(layout='columns')
    ),

    # Limit action to when the current window is not floating (default True)
    Key([mod], "f", lazy.window.toggle_fullscreen().when(when_floating=False))

    # Also matches are supported on the current window
    # For example to match on the wm_class for fullscreen do the following
    Key([mod], "f", lazy.window.toggle_fullscreen().when(focused=Match(wm_class=
↪"yourclasshere"))
]
```

KeyChords

Qtile also allows sequences of keys to trigger callbacks. In Qtile, these sequences are known as chords and are defined with *libqtile.config.KeyChord*. Chords are added to the `keys` section of the config file.

```
from libqtile.config import Key, KeyChord

keys = [
    KeyChord([mod], "z", [
        Key([], "x", lazy.spawn("xterm"))
    ])
]
```

The above code will launch xterm when the user presses Mod + z, followed by x.

Warning: Users should note that key chords are aborted by pressing <escape>. In the above example, if the user presses Mod + z, any following key presses will still be sent to the currently focussed window. If <escape> has not been pressed, the next press of x will launch xterm.

Modes

Chords can optionally specify a "mode". When this is done, the mode will remain active until the user presses <escape>. This can be useful for configuring a subset of commands for a particular situations (i.e. similar to vim modes).

```
from libqtile.config import Key, KeyChord

keys = [
    KeyChord([mod], "z", [
        Key([], "g", lazy.layout.grow()),
        Key([], "s", lazy.layout.shrink()),
        Key([], "n", lazy.layout.normalize()),
        Key([], "m", lazy.layout.maximize())],
        mode="Windows"
    )
]
```

In the above example, pressing Mod + z triggers the "Windows" mode. Users can then resize windows by just pressing g (to grow the window), s to shrink it etc. as many times as needed. To exit the mode, press <escape>.

Note: If using modes, users may also wish to use the Chord widget (*libqtile.widget.chord.Chord*) as this will display the name of the currently active mode on the bar.

Chains

Chords can also be chained to make even longer sequences.

```
from libqtile.config import Key, KeyChord

keys = [
    KeyChord([mod], "z", [
        KeyChord([], "x", [
            Key([], "c", lazy.spawn("xterm"))
        ])
    ])
]
```

Modes can also be added to chains if required. The following example demonstrates the behaviour when using the `mode` argument in chains:

```
from libqtile.config import Key, KeyChord

keys = [
    KeyChord([mod], "z", [
        KeyChord([], "y", [
            KeyChord([], "x", [
                Key([], "c", lazy.spawn("xterm"))
            ], mode="inner")
        ])
    ], mode="outer")
]
```

After pressing Mod+z y x c, the "inner" mode will remain active. When pressing <escape>, the "inner" mode is exited. Since the mode in between does not have `mode` set, it is also left. Arriving at the "outer" mode (which has this argument set) stops the "leave" action and "outer" now becomes the active mode.

Note: If you want to bind a custom key to leave the current mode (e.g. Control + G in addition to <escape>), you can specify `lazy.ungrab_chord()` as the key action. To leave all modes and return to the root bindings, use `lazy.ungrab_all_chords()`.

Modifiers

On most systems `mod1` is the Alt key - you can see which modifiers, which are enclosed in a list, map to which keys on your system by running the `xmodmap` command. This example binds `Alt-k` to the "down" command on the current layout. This command is standard on all the included layouts, and switches to the next window (where "next" is defined differently in different layouts). The matching "up" command switches to the previous window.

Modifiers include: "shift", "lock", "control", "mod1", "mod2", "mod3", "mod4", and "mod5". They can be used in combination by appending more than one modifier to the list:

```
Key(
    ["mod1", "control"], "k",
    lazy.layout.shuffle_down()
)
```

Special keys

These are most commonly used special keys. For complete list please see the code. You can create bindings on them just like for the regular keys. For example `Key(["mod1"], "F4", lazy.window.kill())`.

`Return`
`BackSpace`
`Tab`
`space`
`Home`, `End`
`Left`, `Up`, `Right`, `Down`
`F1`, `F2`, `F3`, ...
`XF86AudioRaiseVolume`
`XF86AudioLowerVolume`
`XF86AudioMute`
`XF86AudioNext`
`XF86AudioPrev`
`XF86MonBrightnessUp`
`XF86MonBrightnessDown`

Reference

Key

class libqtile.config.**Key**(*modifiers: List[str]*, *key: str*, **commands*, *desc: str = ''*)

Defines a keybinding.

Parameters

modifiers: A list of modifier specifications. Modifier specifications are one of: "shift", "lock", "control", "mod1", "mod2", "mod3", "mod4", "mod5".

key: A key specification, e.g. "a", "Tab", "Return", "space".

commands: A list of lazy command objects generated with the lazy.lazy helper. If multiple Call objects are specified, they are run in sequence.

desc: description to be added to the key binding

KeyChord

class libqtile.config.**KeyChord**(*modifiers: List[str]*, *key: str*, *submappings: List[Union[*libqtile.config.Key, libqtile.config.KeyChord*]]*, *mode: str = ''*)

Define a key chord aka vim like mode

Parameters

modifiers: A list of modifier specifications. Modifier specifications are one of: "shift", "lock", "control", "mod1", "mod2", "mod3", "mod4", "mod5".

key: A key specification, e.g. "a", "Tab", "Return", "space".

submappings: A list of Key or KeyChord declarations to bind in this chord.

mode: A string with vim like mode name. If it's set, the chord mode will not be left after a keystroke (except for Esc which always leaves the current chord/mode).

EzConfig

class libqtile.config.**EzConfig**

Helper class for defining key and button bindings in an emacs-like format. Inspired by Xmonad's XMonad.Util.EZConfig.

Layouts

A layout is an algorithm for laying out windows in a group on your screen. Since Qtile is a tiling window manager, this usually means that we try to use space as efficiently as possible, and give the user ample commands that can be bound to keys to interact with layouts.

The `layouts` variable defines the list of layouts you will use with Qtile. The first layout in the list is the default. If you define more than one layout, you will probably also want to define key bindings to let you switch to the next and previous layouts.

See *Built-in Layouts* for a listing of available layouts.

Example

```
from libqtile import layout
layouts = [
    layout.Max(),
    layout.Stack(stacks=2)
]
```

Mouse

The `mouse` config file variable defines a set of global mouse actions, and is a list of *Click* and *Drag* objects, which define what to do when a window is clicked or dragged.

Example

```
from libqtile.config import Click, Drag
mouse = [
    Drag([mod], "Button1", lazy.window.set_position_floating(),
        start=lazy.window.get_position()),
    Drag([mod], "Button3", lazy.window.set_size_floating(),
        start=lazy.window.get_size()),
    Click([mod], "Button2", lazy.window.bring_to_front())
]
```

The above example can also be written more concisely with the help of the `EzClick` and `EzDrag` helpers:

```
from libqtile.config import EzClick as Click, EzDrag as Drag

mouse = [
    Drag("M-1", lazy.window.set_position_floating(),
        start=lazy.window.get_position()),
    Drag("M-3", lazy.window.set_size_floating(),
        start=lazy.window.get_size()),
    Click("M-2", lazy.window.bring_to_front())
]
```

Reference

Click

class libqtile.config.**Click**(*modifiers: List[str]*, *button: str*, **commands*, ***kwargs*)
Defines binding of a mouse click

Drag

class libqtile.config.**Drag**(**args*, *start=False*, ***kwargs*)
Defines binding of a mouse to some dragging action

On each motion event command is executed with two extra parameters added x and y offset from previous move.

Screens

The `screens` configuration variable is where the physical screens, their associated `bars`, and the `widgets` contained within the bars are defined (see *Built-in Widgets* for a listing of available widgets).

Example

Tying together screens, bars and widgets, we get something like this:

```
from libqtile.config import Screen
from libqtile import bar, widget

screens = [
    Screen(
        bottom=bar.Bar([
            widget.GroupBox(),
            widget.WindowName()
            ], 30),
        ),
    Screen(
        bottom=bar.Bar([
            widget.GroupBox(),
            widget.WindowName()
            ], 30),
```

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```
        )
    ]
```

Bars support both solid background colors and gradients by supplying a list of colors that make up a linear gradient. For example, `bar.Bar(..., background="#000000")` will give you a black back ground (the default), while `bar.Bar(..., background=["#000000", "#FFFFFF"])` will give you a background that fades from black to white.

Bars (and widgets) also support transparency by adding an alpha value to the desired color. For example, `bar.Bar(..., background="#00000000")` will result in a fully transparent bar. Widget contents will not be impacted i.e. this is different to the `opacity` parameter which sets the transparency of the entire window.

Note: In X11 backends, transparency will be disabled in a bar if the `background` color is fully opaque.

Users can add borders to the bar by using the `border_width` and `border_color` parameters. Providing a single value sets the value for all four sides while sides can be customised individually by setting four values in a list (top, right, bottom, left) e.g. `border_width=[2, 0, 2, 0]` would draw a border 2 pixels thick on the top and bottom of the bar.

Multiple Screens

You will see from the example above that `screens` is a list of individual `Screen` objects. The order of the screens in this list should match the order of screens as seen by your display server.

X11

You can view the current order of your screens by running `xrandr --listmonitors`.

Examples of how to set the order of your screens can be found on the Arch wiki.

Wayland

The Wayland backend supports the wlr-output-management protocol for configuration of outputs by tools such as Kanshi.

Fake Screens

instead of using the variable *screens* the variable *fake_screens* can be used to set split a physical monitor into multiple screens. They can be used like this:

```
from libqtile.config import Screen
from libqtile import bar, widget

# screens look like this
#     600         300
#  |-------------|-----|
#  |          480|     |580
#  |   A         |  B  |
#  |----------|--|     |
#  |       400|--|-----|
```

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```
#  |   C      |        |400
#  |----------|   D    |
#     500     |--------|
#                400
#
# Notice there is a hole in the middle
# also D goes down below the others

fake_screens = [
  Screen(
      bottom=bar.Bar(
          [
              widget.Prompt(),
              widget.Sep(),
              widget.WindowName(),
              widget.Sep(),
              widget.Systray(),
              widget.Sep(),
              widget.Clock(format='%H:%M:%S %d.%m.%Y')
          ],
          24,
          background="#555555"
      ),
      x=0,
      y=0,
      width=600,
      height=480
  ),
  Screen(
      top=bar.Bar(
          [
              widget.GroupBox(),
              widget.WindowName(),
              widget.Clock()
          ],
          30,
      ),
      x=600,
      y=0,
      width=300,
      height=580
  ),
  Screen(
      top=bar.Bar(
          [
              widget.GroupBox(),
              widget.WindowName(),
              widget.Clock()
          ],
          30,
      ),
      x=0,
```

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```
        y=480,
        width=500,
        height=400
    ),
    Screen(
        top=bar.Bar(
            [
                widget.GroupBox(),
                widget.WindowName(),
                widget.Clock()
            ],
            30,
        ),
        x=500,
        y=580,
        width=400,
        height=400
    ),
]
```

Third-party bars

There might be some reasons to use third-party bars. For instance you can come from another window manager and you have already configured dzen2, xmobar, or something else. They definitely can be used with Qtile too. In fact, any additional configurations aren't needed. Just run the bar and qtile will adapt.

Reference

Screen

class libqtile.config.**Screen**(*top: Optional[Union[*libqtile.bar.Bar*,* libqtile.bar.Gap*]] = None*, *bottom: Optional[Union[*libqtile.bar.Bar*,* libqtile.bar.Gap*]] = None*, *left: Optional[Union[*libqtile.bar.Bar*,* libqtile.bar.Gap*]] = None*, *right: Optional[Union[*libqtile.bar.Bar*,* libqtile.bar.Gap*]] = None*, *wallpaper: Optional[str] = None*, *wallpaper_mode: Optional[str] = None*, *x: Optional[int] = None*, *y: Optional[int] = None*, *width: Optional[int] = None*, *height: Optional[int] = None*)

A physical screen, and its associated paraphernalia.

Define a screen with a given set of Bars of a specific geometry. Note that bar.Bar objects can only be placed at the top or the bottom of the screen (bar.Gap objects can be placed anywhere). Also, `x`, `y`, `width`, and `height` aren't specified usually unless you are using 'fake screens'.

The `wallpaper` parameter, if given, should be a path to an image file. How this image is painted to the screen is specified by the `wallpaper_mode` parameter. By default, the image will be placed at the screens origin and retain its own dimensions. If the mode is 'fill', the image will be centred on the screen and resized to fill it. If the mode is 'stretch', the image is stretched to fit all of it into the screen.

Bar

class libqtile.bar.**Bar**(*widgets*, *size*, ***config*)

A bar, which can contain widgets

Parameters

widgets A list of widget objects.

size The "thickness" of the bar, i.e. the height of a horizontal bar, or the width of a vertical bar.

key	default	description
background	'#000000'	Background colour.
border_color	'#000000'	Border colour as str or list of str [N E S W]
border_width	0	Width of border as int of list of ints [N E S W]
margin	0	Space around bar as int or list of ints [N E S W].
opacity	1	Bar window opacity.

Gap

class libqtile.bar.**Gap**(*size*)

A gap placed along one of the edges of the screen

If a gap has been defined, Qtile will avoid covering it with windows. The most probable reason for configuring a gap is to make space for a third-party bar or other static window.

Parameters

size The "thickness" of the gap, i.e. the height of a horizontal gap, or the width of a vertical gap.

Hooks

Qtile provides a mechanism for subscribing to certain events in `libqtile.hook`. To subscribe to a hook in your configuration, simply decorate a function with the hook you wish to subscribe to.

See *Built-in Hooks* for a listing of available hooks.

Examples

Automatic floating dialogs

Let's say we wanted to automatically float all dialog windows (this code is not actually necessary; Qtile floats all dialogs by default). We would subscribe to the `client_new` hook to tell us when a new window has opened and, if the type is "dialog", as can set the window to float. In our configuration file it would look something like this:

```
from libqtile import hook

@hook.subscribe.client_new
def floating_dialogs(window):
    dialog = window.window.get_wm_type() == 'dialog'
    transient = window.window.get_wm_transient_for()
    if dialog or transient:
        window.floating = True
```

A list of available hooks can be found in the *Built-in Hooks* reference.

Autostart

If you want to run commands or spawn some applications when Qtile starts, you'll want to look at the `startup` and `startup_once` hooks. `startup` is emitted every time Qtile starts (including restarts), whereas `startup_once` is only emitted on the very first startup.

Let's create an executable file `~/.config/qtile/autostart.sh` that will start a few programs when Qtile first runs. Remember to *chmod +x* this file so that it can be executed.

```
#!/bin/sh
pidgin &
dropbox start &
```

We can then subscribe to `startup_once` to run this script:

```
import os
import subprocess

from libqtile import hook

@hook.subscribe.startup_once
def autostart():
    home = os.path.expanduser('~/.config/qtile/autostart.sh')
    subprocess.run([home])
```

Accessing the qtile object

If you want to do something with the `Qtile` manager instance inside a hook, it can be imported into your config:

```
from libqtile import qtile
```

Async hooks

Hooks can also be defined as coroutine functions using `async def`, which will run them asynchronously in the event loop:

```
@hook.subscribe.focus_change
async def _():
    ...
```

In addition to the above variables, there are several other boolean configuration variables that control specific aspects of Qtile's behavior:

variable	default	description
auto_fullscreen	True	If a window requests to be fullscreen, it is automatically fullscreened. Set this to false if you only want windows to be fullscreen if you ask them to be.
bring_front_click	False	When clicked, should the window be brought to the front or not. If this is set to "floating_only", only floating windows will get affected (This sets the X Stack Mode to Above.)
cursor_warp	False	If true, the cursor follows the focus as directed by the keyboard, warping to the center of the focused window. When switching focus between screens, If there are no windows in the screen, the cursor will warp to the center of the screen.
dgroups_key_binder	None	A function which generates group binding hotkeys. It takes a single argument, the DGroups object, and can use that to set up dynamic key bindings. A sample implementation is available in libqtile/dgroups.py called simple_key_binder(), which will bind groups to mod+shift+0-10 by default.
dgroups_app_rules	[]	A list of Rule objects which can send windows to various groups based on matching criteria.
extension_defaults	_defaults + widget_defaults	Default settings for extensions.
floating_layout	libqtile.layout.Floating(float_rules=[...])	The default floating layout to use. This allows you to set custom floating rules among other things if you wish. See the configuration file for the default *float_rules*.
focus_on_window_activation	'smart'	Behavior of the _NET_ACTIVATE_WINDOW message sent by applications • urgent: urgent flag is set for the window • focus: automatically focus the window • smart: automatically focus if the window is in the current group • never: never automatically focus any window that requests it
follow_mouse_focus	True	Controls whether or not focus follows the mouse around as it moves across windows in a layout.
widget_defaults	dict(font='sans', fontsize=12, padding=3)	Default settings for bar widgets. Note: if the font file associated with the font selected here is modified while Qtile is running, Qtile may segfault (for details see issue #2656).
reconfigure_screens	True	Controls whether or not to automatically reconfigure screens when there are changes in randr output configuration.
wmname	'LG3D'	Gasp! We're lying here. In fact, nobody really uses or cares about this string besides java UI toolkits; you can see several discussions on the mailing lists, GitHub issues, and other WM documentation that suggest setting this string if your java app doesn't work correctly. We may as well just lie and say that we're a working one by default. We choose LG3D to maximize irony: it is a 3D non-reparenting WM written in java that happens to be on java's whitelist.
auto_minimize	True	If things like steam games want to auto-minimize themselves when losing focus, should we respect this or not?

1.2.4 Testing your configuration

The best way to test changes to your configuration is with the provided Xephyr script. This will run Qtile with your `config.py` inside a nested X server and prevent your running instance of Qtile from crashing if something goes wrong.

See *Hacking Qtile* for more information on using Xephyr.

1.2.5 Starting Qtile

There are several ways to start Qtile. The most common way is via an entry in your X session manager's menu. The default Qtile behavior can be invoked by creating a qtile.desktop file in `/usr/share/xsessions`.

A second way to start Qtile is a custom X session. This way allows you to invoke Qtile with custom arguments, and also allows you to do any setup you want (e.g. special keyboard bindings like mapping caps lock to control, setting your desktop background, etc.) before Qtile starts. If you're using an X session manager, you still may need to create a `custom.desktop` file similar to the `qtile.desktop` file above, but with `Exec=/etc/X11/xsession`. Then, create your own `~/.xsession`. There are several examples of user defined `xsession` s in the qtile-examples repository.

If there is no display manager such as SDDM, LightDM or other and there is need to start Qtile directly from `~/.xinitrc` do that by adding `exec qtile start` at the end.

In very special cases, ex. Qtile crashing during session, then suggestion would be to start through a loop to save running applications:

```
while true; do
    qtile
done
```

Finally, if you're a gnome user, you can start integrate Qtile into Gnome's session manager and use gnome as usual.

Running from systemd

This case will cover automatic login to Qtile after booting the system without using display manager. It logins in virtual console and init X by running through session.

Automatic login to virtual console

To get login into virtual console as an example edit *getty* service by running *systemctl edit getty@tty1* and add instructions to */etc/systemd/system/getty@tty1.service.d/override.conf*:

```
[Service]
ExecStart=
ExecStart=-/usr/bin/agetty --autologin username --noclear %I $TERM
```

username should be changed to current user name.

Check more for other examples.

Autostart X session

After login X session should be started. That can be done by *.bash_profile* if bash is used or *.zprofile* in case of zsh. Other shells can be adjusted by given examples.

```
if systemctl -q is-active graphical.target && [[ ! $DISPLAY && $XDG_VTNR -eq 1 ]]; then
  exec startx
fi
```

And to start Qtile itself *.xinitrc* should be fixed:

```
# some apps that should be started before Qtile, ex.
#
#   [[ -f ~/.Xresources ]] && xrdb -merge ~/.Xresources
#   ~/.fehbg &
#   nm-applet &
#   blueman-applet &
#   dunst &
#
# or
#
#   source ~/.xsession

exec qtile start
```

Running Inside Gnome

Add the following snippet to your Qtile configuration. As per this page, it registers Qtile with gnome-session. Without it, a "Something has gone wrong!" message shows up a short while after logging in. dbus-send must be on your $PATH.

```
import subprocess
import os
from libqtile import hook

@hook.subscribe.startup
def dbus_register():
    id = os.environ.get('DESKTOP_AUTOSTART_ID')
    if not id:
        return
    subprocess.Popen(['dbus-send',
                      '--session',
                      '--print-reply',
                      '--dest=org.gnome.SessionManager',
                      '/org/gnome/SessionManager',
                      'org.gnome.SessionManager.RegisterClient',
                      'string:qtile',
                      'string:' + id])
```

This adds a new entry "Qtile GNOME" to GDM's login screen.

```
$ cat /usr/share/xsessions/qtile_gnome.desktop
[Desktop Entry]
```

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```
Name=Qtile GNOME
Comment=Tiling window manager
TryExec=/usr/bin/gnome-session
Exec=gnome-session --session=qtile
Type=XSession
```

The custom session for gnome-session.

For Gnome >= 3.23.2 (Ubuntu >= 17.04, Fedora >= 26, etc.)

```
$ cat /usr/share/gnome-session/sessions/qtile.session
[GNOME Session]
Name=Qtile session
RequiredComponents=qtile;org.gnome.SettingsDaemon.A11ySettings;org.gnome.SettingsDaemon.
↪Clipboard;org.gnome.SettingsDaemon.Color;org.gnome.SettingsDaemon.Datetime;org.gnome.
↪SettingsDaemon.Housekeeping;org.gnome.SettingsDaemon.Keyboard;org.gnome.SettingsDaemon.
↪MediaKeys;org.gnome.SettingsDaemon.Mouse;org.gnome.SettingsDaemon.Power;org.gnome.
↪SettingsDaemon.PrintNotifications;org.gnome.SettingsDaemon.Rfkill;org.gnome.
↪SettingsDaemon.ScreensaverProxy;org.gnome.SettingsDaemon.Sharing;org.gnome.
↪SettingsDaemon.Smartcard;org.gnome.SettingsDaemon.Sound;org.gnome.SettingsDaemon.Wacom;
↪org.gnome.SettingsDaemon.XSettings;
```

Or for older Gnome versions

```
$ cat /usr/share/gnome-session/sessions/qtile.session
[GNOME Session]
Name=Qtile session
RequiredComponents=qtile;gnome-settings-daemon;
```

So that Qtile starts automatically on login.

```
$ cat /usr/share/applications/qtile.desktop
[Desktop Entry]
Type=Application
Encoding=UTF-8
Name=Qtile
Exec=qtile start
NoDisplay=true
X-GNOME-WMName=Qtile
X-GNOME-Autostart-Phase=WindowManager
X-GNOME-Provides=windowmanager
X-GNOME-Autostart-Notify=false
```

The above does not start gnome-panel. Getting gnome-panel to work requires some extra Qtile configuration, mainly making the top and bottom panels static on panel startup and leaving a gap at the top (and bottom) for the panel window.

You might want to add keybindings to log out of the GNOME session.

```
Key([mod, 'control'], 'l', lazy.spawn('gnome-screensaver-command -l')),
Key([mod, 'control'], 'q', lazy.spawn('gnome-session-quit --logout --no-prompt')),
Key([mod, 'shift', 'control'], 'q', lazy.spawn('gnome-session-quit --power-off')),
```

The above apps need to be in your path (though they are typically installed in `/usr/bin`, so they probably are if they're installed at all).

1.3 Troubleshooting

1.3.1 So something has gone wrong... what do you do?

When Qtile is running, it logs error messages (and other messages) to its log file. This is found at `~/.local/share/qtile/qtile.log`. This is the first place to check to see what is going on. If you are getting unexpected errors from normal usage or your configuration (and you're not doing something wacky) and believe you have found a bug, then please *report a bug*.

If you are *hacking on Qtile* and you want to debug your changes, this log is your best friend. You can send messages to the log from within libqtile by using the `logger`:

```
from libqtile.log_utils import logger

logger.warning("Your message here")
logger.warning(variable_you_want_to_print)

try:
    # some changes here that might error
raise Exception as e:
    logger.exception(e)
```

`logger.warning` is convenient because its messages will always be visibile in the log. `logger.exception` is helpful because it will print the full traceback of an error to the log. By sticking these amongst your changes you can look more closely at the effects of any changes you made to Qtile's internals.

1.3.2 Capturing an `xtrace`

Occasionally, a bug will be low level enough to require an `xtrace` of Qtile's conversations with the X server. To capture one of these, create an `xinitrc` or similar file with:

```
exec xtrace qtile >> ~/qtile.log
```

This will put the xtrace output in Qtile's logfile as well. You can then demonstrate the bug, and paste the contents of this file into the bug report.

Note that xtrace may be named `x11trace` on some platforms, for example, on Fedora.

1.4 Running Qtile as a Wayland Compositor

Some functionality may not yet be implemented in the Wayland compositor. Please see the discussion here to see the current state of development.

1.4.1 Backend-Specific Configuration

If you want your config file to work with different backends but want some options set differently per backend, you can check the name of the current backend in your config as follows:

```
from libqtile import qtile

if qtile.core.name == "x11":
    term = "urxvt"
elif qtile.core.name == "wayland":
    term = "foot"
```

1.4.2 Keyboard Configuration

Keyboard management is done using xkbcommon via the Python bindings. xkbcommon's initial configuration can be set using environmental variables; see their docs for more information. The 5 `XKB_DEFAULT_X` environmental variables have corresponding settings in X11's keyboard configuration, so if you have these defined already simply copy their values into these variables, otherwise see X11's helpful XKB guide to see the syntax for these settings. Simply set these variables before starting Qtile and the initial keyboard state will match these settings.

If you want to change keyboard configuration during runtime, you can use the core's *set_keymap* command (see *Core Commands* below).

1.4.3 Running X11-Only Programs

Qtile _does_ support XWayland. This requires that *wlroots* and *pywlroots* were built with XWayland support, and that XWayland is installed on the system from startup. XWayland will be started the first time it is needed.

1.4.4 Core Commands

Core

class libqtile.backend.wayland.core.**Core**

cmd_change_vt(*vt: int*) → bool
Change virtual terminal to that specified

cmd_commands() → List[str]
Returns a list of possible commands for this object

Used by __qsh__ for command completion and online help

cmd_doc(*name*) → str
Returns the documentation for a specified command name

Used by __qsh__ to provide online help.

cmd_eval(*code: str*) → Tuple[bool, Optional[str]]
Evaluates code in the same context as this function

Return value is tuple *(success, result)*, success being a boolean and result being a string representing the return value of eval, or None if exec was used instead.

cmd_function(*function*, **args*, ***kwargs*) → None
Call a function with current object as argument

cmd_info() → Dict
Get basic information about the running backend.

cmd_items(*name*) → Tuple[bool, Optional[List[Union[str, int]]]]
Returns a list of contained items for the specified name

Used by __qsh__ to allow navigation of the object graph.

cmd_set_keymap(*layout: Optional[str] = None*, *options: Optional[str] = None*, *variant: Optional[str] = None*) → None
Set the keymap for the current keyboard.

The options correspond to xkbcommon configuration environmental variables and if not specified are taken from the environment. Acceptable values are strings identical to those accepted by the env variables.

1.5 Shell commands

qtile uses a subcommand structure; various subcommands are listed below. Additionally, two other commands available in the scripts/ section of the repository are also documented below.

1.5.1 qtile start

This is the entry point for the window manager, and what you should run from your `.xsession` or similar. This will make an attempt to detect if qtile is already running and fail if it is. See `qtile start --help` for more details.

1.5.2 qtile shell

The Qtile command shell is a command-line shell interface that provides access to the full complement of Qtile command functions. The shell features command name completion, and full command documentation can be accessed from the shell itself. The shell uses GNU Readline when it's available, so the interface can be configured to, for example, obey VI keybindings with an appropriate `.inputrc` file. See the GNU Readline documentation for more information.

Navigating the Object Graph

The shell presents a filesystem-like interface to the object graph - the builtin "cd" and "ls" commands act like their familiar shell counterparts:

```
> ls
layout/  widget/  screen/  bar/     window/  group/

> cd screen
layout/  window/  bar/  widget/

> cd ..
/

> ls
layout/  widget/  screen/  bar/     window/  group/
```

If you try to access an object that has no "default" value then you will see an error message:

```
> ls
layout/  widget/  screen/  bar/     window/  group/

> cd bar
Item required for bar

> ls bar
bar[bottom]/

> cd bar/bottom
bar['bottom']> ls
screen/  widget/
```

Please refer to *Keys* for a summary of which objects need a specified selector and the type of selector required. Using `ls` will show which selectors are available for an object. Please see below for an explanation about how Qtile displays shell paths.

Alternatively, the `items()` command can be run on the parent object to show which selectors are available. The first value shows whether a selector is optional (`False` means that a selector is required) and the second value is a list of selectors:

```
> ls
layout/  widget/  screen/  bar/     window/  group/

> items(bar)
(False, ['bottom'])
```

Displaying the shell path

Note that the shell provides a "short-hand" for specifying node keys (as opposed to children). The following is a valid shell path:

```
> cd group/4/window/31457314
```

The command prompt will, however, always display the Python node path that should be used in scripts and key bindings:

```
group['4'].window[31457314]>
```

Live Documentation

The shell `help` command provides the canonical documentation for the Qtile API:

```
> cd layout/1

layout[1]> help
help command   -- Help for a specific command.

Builtins
========
cd    exit  help  ls    q     quit
```

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```
Commands for this object
========================
add             commands      current       delete        doc
down            get_info      items         next          previous
rotate          shuffle_down  shuffle_up    toggle_split  up

layout[1]> help previous
previous()
Focus previous stack.
```

1.5.3 qtile cmd-obj

This is a simple tool to expose qtile.command functionality to shell. This can be used standalone or in other shell scripts.

How it works

`qtile cmd-obj` works by selecting a command object and calling a specified function of that object.

As per *Commands API*, Qtile's object graph has seven nodes: `layout`, `window`, `group`, `bar`, `widget`, `screen`, and a special `root` node. These are the objects that can be accessed via `qtile cmd-obj` (NB the root node is called `cmd` when using the `cmd-obj` script to give it an addressable name).

Running the command against a selected object without a function (`-f`) will run the `help` command and list the commands available to the object. Commands shown with an asterisk ("*") require arguments to be passed via the `-a` flag.

Selecting an object

With the exception of `cmd`, all objects need an identifier so the correct object can be selected. Refer to *Keys* for more information.

Note: You will see from the graph on *Commands API* that certain objects can be accessed from other objects. For example, `qtile cmd-obj -o group term layout` will list the commands for the current layout on the `term` group.

Information on functions

Running a function with the `-i` flag will provide additional detail about that function (i.e. what it does and what arguments it expects).

Passing arguments to functions

Arguments can be passed to a function by using the `-a` flag. For example, to change the label for the group named "1" to "A", you would run `qtile cmd-obj -o group 1 -f set_label -a A`.

Warning: It is not currently possible to pass non-string arguments to functions via `qtile cmd-obj`. Doing so will result in an error.

Examples:

Output of `qtile cmd-obj -h`

```
usage: qtile cmd-obj [-h] [--object OBJ_SPEC [OBJ_SPEC ...]]
                 [--function FUNCTION] [--args ARGS [ARGS ...]] [--info]

Simple tool to expose qtile.command functionality to shell.

optional arguments:
  -h, --help            show this help message and exit
  --object OBJ_SPEC [OBJ_SPEC ...], -o OBJ_SPEC [OBJ_SPEC ...]
                        Specify path to object (space separated). If no
                        --function flag display available commands.
  --function FUNCTION, -f FUNCTION
                        Select function to execute.
  --args ARGS [ARGS ...], -a ARGS [ARGS ...]
                        Set arguments supplied to function.
  --info, -i            With both --object and --function args prints
                        documentation for function.

Examples:
 qtile cmd-obj
 qtile cmd-obj -o cmd
 qtile cmd-obj -o cmd -f prev_layout -i
 qtile cmd-obj -o cmd -f prev_layout -a 3 # prev_layout on group 3
 qtile cmd-obj -o group 3 -f focus_back
 qtile cmd-obj -o widget textbox -f update -a "New text"
 qtile cmd-obj -o cmd -f restart # restart qtile
```

Output of `qtile cmd-obj -o group 3`

```
-o group 3 -f commands            Returns a list of possible commands for this object
-o group 3 -f doc               * Returns the documentation for a specified command name
-o group 3 -f eval              * Evaluates code in the same context as this function
-o group 3 -f focus_back          Focus the window that had focus before the current one␣
↪got it.
-o group 3 -f focus_by_name     * Focus the first window with the given name. Do nothing␣
↪if the name is
-o group 3 -f function          * Call a function with current object as argument
```

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```
-o group 3 -f info                  Returns a dictionary of info for this group
-o group 3 -f info_by_name        * Get the info for the first window with the given name␣
↪without giving it
-o group 3 -f items               * Returns a list of contained items for the specified␣
↪name
-o group 3 -f next_window           Focus the next window in group.
-o group 3 -f prev_window           Focus the previous window in group.
-o group 3 -f set_label           * Set the display name of current group to be used in␣
↪GroupBox widget.
-o group 3 -f setlayout
-o group 3 -f switch_groups       * Switch position of current group with name
-o group 3 -f toscreen            * Pull a group to a specified screen.
-o group 3 -f unminimize_all        Unminimise all windows in this group
```

Output of `qtile cmd-obj -o cmd`

```
-o cmd -f add_rule                * Add a dgroup rule, returns rule_id needed to remove it
-o cmd -f addgroup                * Add a group with the given name
-o cmd -f commands                  Returns a list of possible commands for this object
-o cmd -f critical                  Set log level to CRITICAL
-o cmd -f debug                     Set log level to DEBUG
-o cmd -f delgroup                * Delete a group with the given name
-o cmd -f display_kb              * Display table of key bindings
-o cmd -f doc                     * Returns the documentation for a specified command name
-o cmd -f error                     Set log level to ERROR
-o cmd -f eval                    * Evaluates code in the same context as this function
-o cmd -f findwindow              * Launch prompt widget to find a window of the given name
-o cmd -f focus_by_click          * Bring a window to the front
-o cmd -f function                * Call a function with current object as argument
-o cmd -f get_info                  Prints info for all groups
-o cmd -f get_state                 Get pickled state for restarting qtile
-o cmd -f get_test_data             Returns any content arbitrarily set in the self.test_
↪data attribute.
-o cmd -f groups                    Return a dictionary containing information for all␣
↪groups
-o cmd -f hide_show_bar           * Toggle visibility of a given bar
-o cmd -f info                      Set log level to INFO
-o cmd -f internal_windows          Return info for each internal window (bars, for␣
↪example)
-o cmd -f items                   * Returns a list of contained items for the specified␣
↪name
-o cmd -f list_widgets              List of all addressible widget names
-o cmd -f next_layout             * Switch to the next layout.
-o cmd -f next_screen               Move to next screen
-o cmd -f next_urgent               Focus next window with urgent hint
-o cmd -f pause                     Drops into pdb
-o cmd -f prev_layout             * Switch to the previous layout.
-o cmd -f prev_screen               Move to the previous screen
-o cmd -f qtile_info                Returns a dictionary of info on the Qtile instance
-o cmd -f qtilecmd                * Execute a Qtile command using the client syntax
```

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```
-o cmd -f remove_rule           * Remove a dgroup rule by rule_id
-o cmd -f restart                 Restart qtile
-o cmd -f run_extension         * Run extensions
-o cmd -f run_external          * Run external Python script
-o cmd -f screens                 Return a list of dictionaries providing information on␣
↪all screens
-o cmd -f shutdown                Quit Qtile
-o cmd -f simulate_keypress     * Simulates a keypress on the focused window.
-o cmd -f spawn                 * Run cmd in a shell.
-o cmd -f spawncmd              * Spawn a command using a prompt widget, with tab-
↪completion.
-o cmd -f status                  Return "OK" if Qtile is running
-o cmd -f switch_groups         * Switch position of groupa to groupb
-o cmd -f switchgroup           * Launch prompt widget to switch to a given group to the␣
↪current screen
-o cmd -f sync                    Sync the X display. Should only be used for development
-o cmd -f to_layout_index       * Switch to the layout with the given index in self.
↪layouts.
-o cmd -f to_screen             * Warp focus to screen n, where n is a 0-based screen␣
↪number
-o cmd -f togroup               * Launch prompt widget to move current window to a given␣
↪group
-o cmd -f tracemalloc_dump        Dump tracemalloc snapshot
-o cmd -f tracemalloc_toggle      Toggle tracemalloc status
-o cmd -f warning                 Set log level to WARNING
-o cmd -f windows                 Return info for each client window
```

1.5.4 qtile run-cmd

Run a command applying rules to the new windows, ie, you can start a window in a specific group, make it floating, intrusive, etc.

The Windows must have NET_WM_PID.

```
# run xterm floating on group "test-group"
qtile run-cmd -g test-group -f xterm
```

1.5.5 qtile top

`qtile top` is a `top`-like tool to measure memory usage of Qtile's internals.

Note: To use `qtile shell` you need to have `tracemalloc` enabled. You can do this by setting the environmental variable `PYTHONTRACEMALLOC=1` before starting qtile. Alternatively, you can force start `tracemalloc` but you will lose early traces:

```
>>> from libqtile.command.client import InteractiveCommandClient
>>> i=InteractiveCommandClient()
>>> i.eval("import tracemalloc;tracemalloc.start()")
```

1.5.6 dqtile-cmd

A Rofi/dmenu interface to qtile-cmd. Accepts all arguments of qtile-cmd.

Examples:

Output of `dqtile-cmd -o cmd`

```
dmenu:                                                                    -
Alt-1   Prompt for args and show function help (if -f is present)
..      Go back to menu.
C-u     Clear input
Esc     Exit
-o cmd -f add_rule              * Add a dgroup rule, returns rule_id needed to remove it
-o cmd -f addgroup              * Add a group with the given name
-o cmd -f commands                Returns a list of possible commands for this object
-o cmd -f critical                Set log level to CRITICAL
-o cmd -f debug                   Set log level to DEBUG
-o cmd -f delgroup              * Delete a group with the given name
-o cmd -f display_kb            * Display table of key bindings
-o cmd -f doc                   * Returns the documentation for a specified command name
-o cmd -f error                   Set log level to ERROR
-o cmd -f eval                  * Evaluates code in the same context as this function
-o cmd -f findwindow            * Launch prompt widget to find a window of the given name
-o cmd -f focus_by_click        * Bring a window to the front
-o cmd -f function              * Call a function with current object as argument
-o cmd -f get_info                Prints info for all groups
-o cmd -f get_state               Get pickled state for restarting qtile
```

Output of `dqtile-cmd -h`

```
dqtile-cmd

    A Rofi/dmenu interface to qtile-cmd. Excepts all arguments of qtile-cmd
    (see below).

usage: dqtile-cmd [-h] [--object OBJ_SPEC [OBJ_SPEC ...]]
                  [--function FUNCTION] [--args ARGS [ARGS ...]] [--info]

Simple tool to expose qtile.command functionality to shell.

optional arguments:
  -h, --help            show this help message and exit
  --object OBJ_SPEC [OBJ_SPEC ...], -o OBJ_SPEC [OBJ_SPEC ...]
                        Specify path to object (space separated). If no
                        --function flag display available commands.
  --function FUNCTION, -f FUNCTION
                        Select function to execute.
  --args ARGS [ARGS ...], -a ARGS [ARGS ...]
                        Set arguments supplied to function.
  --info, -i            With both --object and --function args prints
                        documentation for function.
```

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```
Examples:
 dqtile-cmd
 dqtile-cmd -o cmd
 dqtile-cmd -o cmd -f prev_layout -i
 dqtile-cmd -o cmd -f prev_layout -a 3 # prev_layout on group 3
 dqtile-cmd -o group 3 -f focus_back

If both rofi and dmenu are present rofi will be selected as default, to change this us --
↪force-dmenu as the first argument.
```

1.5.7 iqshell

In addition to the standard `qtile shell` shell interface, we provide a kernel capable of running through Jupyter that hooks into the qshell client. The command structure and syntax is the same as qshell, so it is recommended you read that for more information about that.

Dependencies

In order to run iqshell, you must have ipykernel and jupyter_console. You can install the dependencies when you are installing qtile by running:

```
$ pip install qtile[ipython]
```

Otherwise, you can just install these two packages separately, either through PyPI or through your distribution package manager.

Installing and Running the Kernel

Once you have the required dependencies, you can run the kernel right away by running:

```
$ python3 -m libqtile.interactive.iqshell_kernel
```

However, this will merely spawn a kernel instance, you will have to run a separate frontend that connects to this kernel.

A more convenient way to run the kernel is by registering the kernel with Jupyter. To register the kernel itself, run:

```
$ python3 -m libqtile.interactive.iqshell_install
```

If you run this as a non-root user, or pass the `--user` flag, this will install to the user Jupyter kernel directory. You can now invoke the kernel directly when starting a Jupyter frontend, for example:

```
$ jupyter console --kernel qshell
```

The `iqshell` script will launch a Jupyter terminal console with the qshell kernel.

iqshell vs qtile shell

One of the main drawbacks of running through a Jupyter kernel is the frontend has no way to query the current node of the kernel, and as such, there is no way to set a custom prompt. In order to query your current node, you can call `pwd`.

This, however, enables many of the benefits of running in a Jupyter frontend, including being able to save, run, and re-run code cells in frontends such as the Jupyter notebook.

The Jupyter kernel also enables more advanced help, text completion, and introspection capabilities (however, these are currently not implemented at a level much beyond what is available in the standard qtile shell).

CHAPTER

TWO

REFERENCE

2.1 Built-in Extensions

2.1.1 CommandSet

class libqtile.extension.**CommandSet**(***config*)

Give list of commands to be executed in dmenu style.

ex. manage mocp deamon:

```
Key([mod], 'm', lazy.run_extension(extension.CommandSet(
    commands={
        'play/pause': '[ $(mocp -i | wc -l) -lt 2 ] && mocp -p || mocp -G',
        'next': 'mocp -f',
        'previous': 'mocp -r',
        'quit': 'mocp -x',
        'open': 'urxvt -e mocp',
        'shuffle': 'mocp -t shuffle',
        'repeat': 'mocp -t repeat',
        },
    pre_commands=['[ $(mocp -i | wc -l) -lt 1 ] && mocp -S'],
    **Theme.dmenu))),
```

key	default	description
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
commands	None	dictionary of commands where key is runable command
dmenu_bottom	False	dmenu appears at the bottom of the screen
dmenu_command	'dmenu'	the dmenu command to be launched
dmenu_font	None	override the default 'font' and 'fontsize' options for dmenu
dmenu_height	None	defines the height (only supported by some dmenu forks)
dmenu_ignorecase	False	dmenu matches menu items case insensitively
dmenu_lines	None	dmenu lists items vertically, with the given number of lines
dmenu_prompt	None	defines the prompt to be displayed to the left of the input field
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
pre_commands	None	list of commands to be executed before getting dmenu answer
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.1.2 Dmenu

class libqtile.extension.**Dmenu**(***config*)

Python wrapper for dmenu http://tools.suckless.org/dmenu/

key	default	description
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
dmenu_bottom	False	dmenu appears at the bottom of the screen
dmenu_command	'dmenu'	the dmenu command to be launched
dmenu_font	None	override the default 'font' and 'fontsize' options for dmenu
dmenu_height	None	defines the height (only supported by some dmenu forks)
dmenu_ignorecase	False	dmenu matches menu items case insensitively
dmenu_lines	None	dmenu lists items vertically, with the given number of lines
dmenu_prompt	None	defines the prompt to be displayed to the left of the input field
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.1.3 DmenuRun

class libqtile.extension.**DmenuRun**(***config*)

Special case to run applications.

config.py should have something like:

```
from libqtile import extension
keys = [
    Key(['mod4'], 'r', lazy.run_extension(extension.DmenuRun(
        dmenu_prompt=">",
        dmenu_font="Andika-8",
        background="#15181a",
        foreground="#00ff00",
        selected_background="#079822",
        selected_foreground="#fff",
        dmenu_height=24,  # Only supported by some dmenu forks
    ))),
]
```

key	default	description
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
dmenu_bottom	False	dmenu appears at the bottom of the screen
dmenu_command	'dmenu_run'	the dmenu command to be launched
dmenu_font	None	override the default 'font' and 'fontsize' options for dmenu
dmenu_height	None	defines the height (only supported by some dmenu forks)
dmenu_ignorecase	False	dmenu matches menu items case insensitively
dmenu_lines	None	dmenu lists items vertically, with the given number of lines
dmenu_prompt	None	defines the prompt to be displayed to the left of the input field
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.1.4 J4DmenuDesktop

class libqtile.extension.**J4DmenuDesktop**(***config*)

Python wrapper for j4-dmenu-desktop https://github.com/enkore/j4-dmenu-desktop

key	default	description
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
dmenu_bottom	False	dmenu appears at the bottom of the screen
dmenu_command	'dmenu'	the dmenu command to be launched
dmenu_font	None	override the default 'font' and 'fontsize' options for dmenu
dmenu_height	None	defines the height (only supported by some dmenu forks)
dmenu_ignorecase	False	dmenu matches menu items case insensitively
dmenu_lines	None	dmenu lists items vertically, with the given number of lines
dmenu_prompt	None	defines the prompt to be displayed to the left of the input field
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
j4dmenu_command	'j4-dmenu-desktop'	the dmenu command to be launched
j4dmenu_display_binary	False	display binary name after each entry
j4dmenu_generic	True	include the generic name of desktop entries
j4dmenu_terminal	None	terminal emulator used to start terminal apps
j4dmenu_usage_log	None	file used to sort items by usage frequency
j4dmenu_use_xdg_de	False	read $XDG_CURRENT_DESKTOP to determine the desktop environment
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.1.5 RunCommand

class libqtile.extension.**RunCommand**(***config*)

Run an arbitrary command.

Mostly useful as a superclass for more specific extensions that need to interact with the qtile object.

Also consider simply using lazy.spawn() or writing a client.

key	default	description
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.1.6 WindowList

class libqtile.extension.**WindowList**(***config*)

Give vertical list of all open windows in dmenu. Switch to selected.

key	default	description
all_groups	True	If True, list windows from all groups; otherwise only from the current group
background	None	defines the normal background color (#RGB or #RRGGBB)
command	None	the command to be launched (string or list with arguments)
dmenu_bottom	False	dmenu appears at the bottom of the screen
dmenu_command	'dmenu'	the dmenu command to be launched
dmenu_font	None	override the default 'font' and 'fontsize' options for dmenu
dmenu_height	None	defines the height (only supported by some dmenu forks)
dmenu_ignorecase	False	dmenu matches menu items case insensitively
dmenu_lines	'80'	Give lines vertically. Set to None get inline
dmenu_prompt	None	defines the prompt to be displayed to the left of the input field
font	'sans'	defines the font name to be used
fontsize	None	defines the font size to be used
foreground	None	defines the normal foreground color (#RGB or #RRGGBB)
item_format	'{group}.{id}: {window}'	the format for the menu items
selected_background	None	defines the selected background color (#RGB or #RRGGBB)
selected_foreground	None	defines the selected foreground color (#RGB or #RRGGBB)

2.2 Built-in Hooks

subscribe.**addgroup**(*func*)
Called when group is added

Arguments

- name of new group

subscribe.**changegroup**(*func*)
Called whenever a group change occurs

Arguments

None

subscribe.**client_focus**(*func*)
Called whenever focus moves to a client window

Arguments

- `Window` object of the new focus.

subscribe.**client_killed**(*func*)
Called after a client has been unmanaged

Arguments

- `Window` object of the killed window.

subscribe.**client_managed**(*func*)
Called after Qtile starts managing a new client

Called after a window is assigned to a group, or when a window is made static. This hook is not called for internal windows.

Arguments

- `Window` object of the managed window

subscribe.**client_mouse_enter**(*func*)
Called when the mouse enters a client

Arguments

- `Window` of window entered

subscribe.**client_name_updated**(*func*)
Called when the client name changes

Arguments

- `Window` of client with updated name

subscribe.**client_new**(*func*)
Called before Qtile starts managing a new client

Use this hook to declare windows static, or add them to a group on startup. This hook is not called for internal windows.

Arguments

- `Window` object

Examples

```
@libqtile.hook.subscribe.client_new
def func(c):
    if c.name == "xterm":
        c.togroup("a")
    elif c.name == "dzen":
        c.cmd_static(0)
```

subscribe.**client_urgent_hint_changed**(*func*)
Called when the client urgent hint changes

Arguments

- Window of client with hint change

subscribe.**current_screen_change**(*func*)
Called when the current screen (i.e. the screen with focus) changes

Arguments

None

subscribe.**delgroup**(*func*)
Called when group is deleted

Arguments

- name of deleted group

subscribe.**enter_chord**(*func*)
Called when key chord begins

Arguments

- name of chord(mode)

subscribe.**float_change**(*func*)
Called when a change in float state is made

Arguments

None

subscribe.**focus_change**(*func*)
Called when focus is changed, including moving focus between groups or when focus is lost completely

Arguments

None

subscribe.**group_window_add**(*func*)
Called when a new window is added to a group

Arguments

- Group receiving the new window
- Window added to the group

subscribe.**layout_change**(*func*)
Called on layout change

Arguments

- layout object for new layout

- group object on which layout is changed

subscribe.**leave_chord**(*func*)
Called when key chord ends

Arguments

None

subscribe.**net_wm_icon_change**(*func*)
Called on *_NET_WM_ICON* chance

Arguments

- `Window` of client with changed icon

subscribe.**restart**(*func*)
Called before qtile is restarted

Arguments

None

subscribe.**screen_change**(*func*)
Called when the output configuration is changed (e.g. via randr in X11).

Arguments

- `xproto.randr.ScreenChangeNotify` event (X11) or None (Wayland).

subscribe.**screens_reconfigured**(*func*)
Called once `qtile.cmd_reconfigure_screens` has completed (e.g. if `reconfigure_screens` is set to `True` in your config).

Arguments

None

subscribe.**selection_change**(*func*)
Called on selection change

Arguments

- name of the selection
- dictionary describing selection, containing `owner` and `selection` as keys

subscribe.**selection_notify**(*func*)
Called on selection notify

Arguments

- name of the selection
- dictionary describing selection, containing `owner` and `selection` as keys

subscribe.**setgroup**(*func*)
Called when group is changed

Arguments

None

subscribe.**shutdown**(*func*)
Called before qtile is shutdown

Arguments

None

subscribe.**startup**(*func*)
Called when qtile is started

Arguments

None

subscribe.**startup_complete**(*func*)
Called when qtile is started after all resources initialized

Arguments

None

subscribe.**startup_once**(*func*)
Called when Qtile has started on first start

This hook is called exactly once per session (i.e. not on each `lazy.restart()`).

Arguments

None

2.3 Built-in Layouts

2.3.1 Floating

class libqtile.layout.floating.**Floating**(*float_rules: Optional[List[*libqtile.config.Match*]] = None*, *no_reposition_rules=None*, ***config*)
Floating layout, which does nothing with windows but handles focus order

key	default	description
border_focus	'#0000ff'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	1	Border width.
fullscreen_border_width	0	Border width for fullscreen.
max_border_width	0	Border width for maximize.

2.3.2 Bsp

class libqtile.layout.bsp.**Bsp**(***config*)
This layout is inspired by bspwm, but it does not try to copy its features.

The first client occupies the entire screen space. When a new client is created, the selected space is partitioned in 2 and the new client occupies one of those subspaces, leaving the old client with the other.

The partition can be either horizontal or vertical according to the dimensions of the current space: if its width/height ratio is above a pre-configured value, the subspaces are created side-by-side, otherwise, they are created on top of each other. The partition direction can be freely toggled. All subspaces can be resized and clients can be shuffled around.

All clients are organized at the leaves of a full binary tree.

An example key configuration is:

```
Key([mod], "j", lazy.layout.down()),
Key([mod], "k", lazy.layout.up()),
Key([mod], "h", lazy.layout.left()),
Key([mod], "l", lazy.layout.right()),
Key([mod, "shift"], "j", lazy.layout.shuffle_down()),
Key([mod, "shift"], "k", lazy.layout.shuffle_up()),
Key([mod, "shift"], "h", lazy.layout.shuffle_left()),
Key([mod, "shift"], "l", lazy.layout.shuffle_right()),
Key([mod, "mod1"], "j", lazy.layout.flip_down()),
Key([mod, "mod1"], "k", lazy.layout.flip_up()),
Key([mod, "mod1"], "h", lazy.layout.flip_left()),
Key([mod, "mod1"], "l", lazy.layout.flip_right()),
Key([mod, "control"], "j", lazy.layout.grow_down()),
Key([mod, "control"], "k", lazy.layout.grow_up()),
Key([mod, "control"], "h", lazy.layout.grow_left()),
Key([mod, "control"], "l", lazy.layout.grow_right()),
Key([mod, "shift"], "n", lazy.layout.normalize()),
Key([mod], "Return", lazy.layout.toggle_split()),
```

key	default	description
border_focus	'#881111'	Border colour(s) for the focused window.
border_normal	'#220000'	Border colour(s) for un-focused windows.
border_width	2	Border width.
fair	True	New clients are inserted in the shortest branch.
grow_amount	10	Amount by which to grow a window/column.
lower_right	True	New client occupies lower or right subspace.
margin	0	Margin of the layout (int or list of ints [N E S W]).
ratio	1.6	Width/height ratio that defines the partition direction.

2.3.3 Columns

class libqtile.layout.columns.**Columns**(***config*)

Extension of the Stack layout.

The screen is split into columns, which can be dynamically added or removed. Each column can present its windows in 2 modes: split or stacked. In split mode, all windows are presented simultaneously, spliting the column space. In stacked mode, only a single window is presented from the stack of windows. Columns and windows can be resized and windows can be shuffled around.

This layout can also emulate wmii's default layout via:

layout.Columns(num_columns=1, insert_position=1)

Or the "Vertical", and "Max", depending on the default parameters.

An example key configuration is:

```
Key([mod], "j", lazy.layout.down()),
Key([mod], "k", lazy.layout.up()),
Key([mod], "h", lazy.layout.left()),
Key([mod], "l", lazy.layout.right()),
Key([mod, "shift"], "j", lazy.layout.shuffle_down()),
Key([mod, "shift"], "k", lazy.layout.shuffle_up()),
```

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```
Key([mod, "shift"], "h", lazy.layout.shuffle_left()),
Key([mod, "shift"], "l", lazy.layout.shuffle_right()),
Key([mod, "control"], "j", lazy.layout.grow_down()),
Key([mod, "control"], "k", lazy.layout.grow_up()),
Key([mod, "control"], "h", lazy.layout.grow_left()),
Key([mod, "control"], "l", lazy.layout.grow_right()),
Key([mod, "shift", "control"], "h", lazy.layout.swap_column_left()),
Key([mod, "shift", "control"], "l", lazy.layout.swap_column_right()),
Key([mod], "Return", lazy.layout.toggle_split()),
Key([mod], "n", lazy.layout.normalize()),
```

key	default	description
border_focus	'#881111'	Border colour(s) for the focused window.
border_focus_stack	'#881111'	Border colour(s) for the focused window in stacked columns.
border_normal	'#220000'	Border colour(s) for un-focused windows.
border_normal_stack	'#220000'	Border colour(s) for un-focused windows in stacked columns.
border_on_single	False	Draw a border when there is one only window.
border_width	2	Border width.
fair	False	Add new windows to the column with least windows.
grow_amount	10	Amount by which to grow a window/column.
insert_position	0	Position relative to the current window where new ones are inserted (0 means right above the current window, 1 means right after).
margin	0	Margin of the layout (int or list of ints [N E S W]).
margin_on_single	None	Margin when only one window. (int or list of ints [N E S W])
num_columns	2	Preferred number of columns.
split	True	New columns presentation mode.
wrap_focus_columns	True	Wrap the screen when moving focus across columns.
wrap_focus_rows	True	Wrap the screen when moving focus across rows.
wrap_focus_stacks	True	Wrap the screen when moving focus across stacked.

2.3.4 Matrix

class libqtile.layout.matrix.**Matrix**(*columns=2*, ***config*)

This layout divides the screen into a matrix of equally sized cells and places one window in each cell. The number of columns is configurable and can also be changed interactively.

key	default	description
border_focus	'#0000ff'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	1	Border width.
margin	0	Margin of the layout (int or list of ints [N E S W])

2.3.5 Max

class libqtile.layout.max.**Max**(***config*)

Maximized layout

A simple layout that only displays one window at a time, filling the screen_rect. This is suitable for use on laptops and other devices with small screens. Conceptually, the windows are managed as a stack, with commands to switch to next and previous windows in the stack.

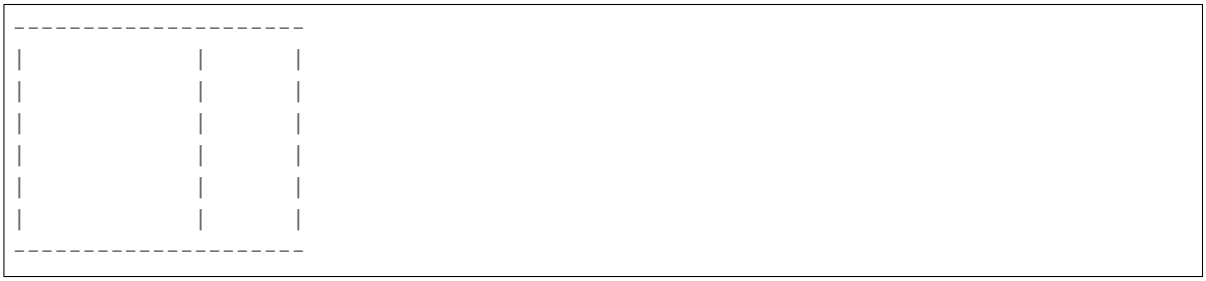
2.3.6 MonadTall

class libqtile.layout.xmonad.**MonadTall**(***config*)

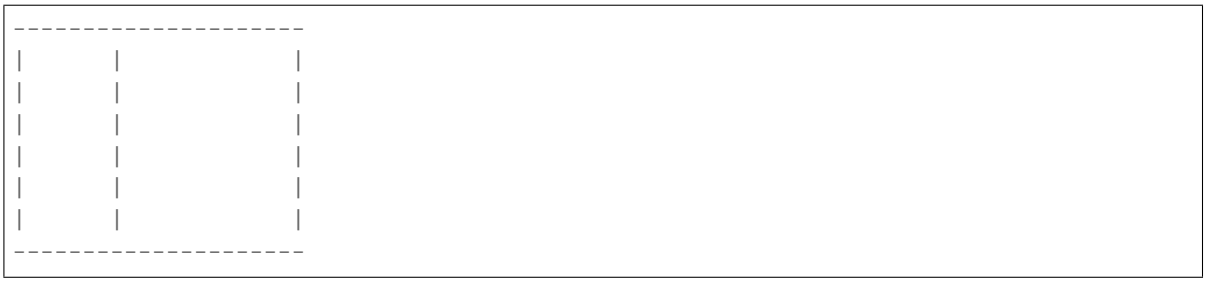
Emulate the behavior of XMonad's default tiling scheme.

Main-Pane:

A main pane that contains a single window takes up a vertical portion of the screen_rect based on the ratio setting. This ratio can be adjusted with the `cmd_grow_main` and `cmd_shrink_main` or, while the main pane is in focus, `cmd_grow` and `cmd_shrink`.

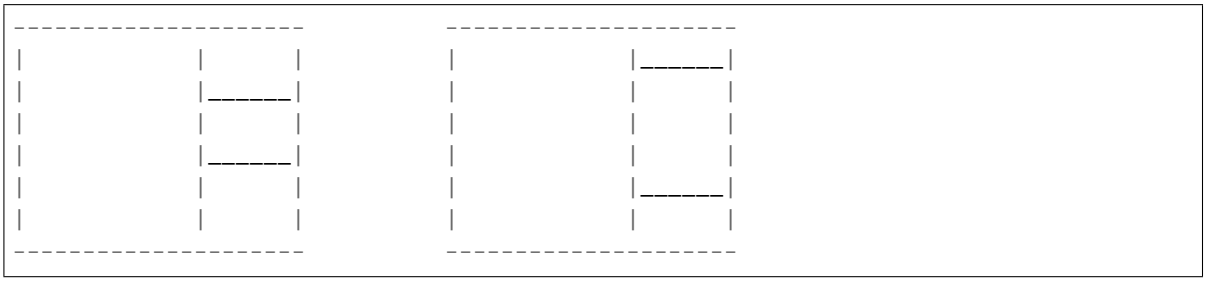


Using the `cmd_flip` method will switch which horizontal side the main pane will occupy. The main pane is considered the "top" of the stack.



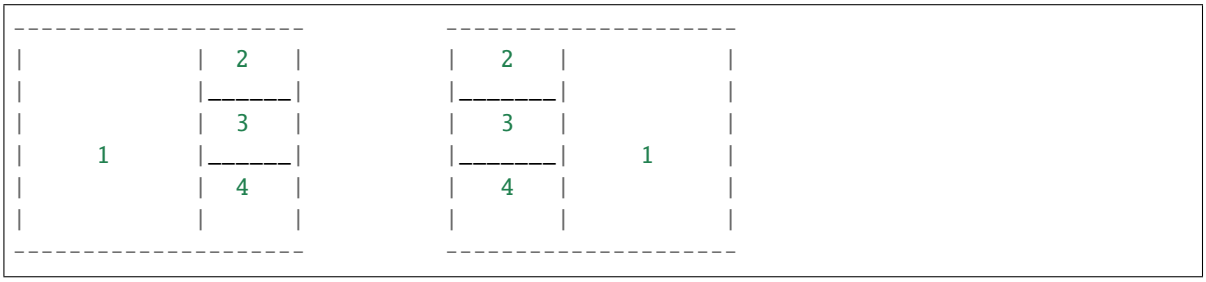
Secondary-panes:

Occupying the rest of the screen_rect are one or more secondary panes. The secondary panes will share the vertical space of the screen_rect however they can be resized at will with the `cmd_grow` and `cmd_shrink` methods. The other secondary panes will adjust their sizes to smoothly fill all of the space.



Panes can be moved with the `cmd_shuffle_up` and `cmd_shuffle_down` methods. As mentioned the main pane is considered the top of the stack; moving up is counter-clockwise and moving down is clockwise.

The opposite is true if the layout is "flipped".



Normalizing/Resetting:

To restore all secondary client windows to their default size ratios use the `cmd_normalize` method.

To reset all client windows to their default sizes, including the primary window, use the `cmd_reset` method.

Maximizing:

To toggle a client window between its minimum and maximum sizes simply use the `cmd_maximize` on a focused client.

Suggested Bindings:

```
Key([modkey], "h", lazy.layout.left()),
Key([modkey], "l", lazy.layout.right()),
Key([modkey], "j", lazy.layout.down()),
Key([modkey], "k", lazy.layout.up()),
Key([modkey, "shift"], "h", lazy.layout.swap_left()),
Key([modkey, "shift"], "l", lazy.layout.swap_right()),
Key([modkey, "shift"], "j", lazy.layout.shuffle_down()),
Key([modkey, "shift"], "k", lazy.layout.shuffle_up()),
Key([modkey], "i", lazy.layout.grow()),
Key([modkey], "m", lazy.layout.shrink()),
Key([modkey], "n", lazy.layout.normalize()),
Key([modkey], "o", lazy.layout.maximize()),
Key([modkey, "shift"], "space", lazy.layout.flip()),
```

key	default	description
align	0	Which side master plane will be placed (one of MonadTall._left or MonadTall._right)
border_focus	'#ff0000'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	2	Border width.
change_ratio	0.05	Resize ratio
change_size	20	Resize change in pixels
margin	0	Margin of the layout
max_ratio	0.75	The percent of the screen-space the master pane should occupy at maximum.
min_ratio	0.25	The percent of the screen-space the master pane should occupy at minimum.
min_secondary_size	85	minimum size in pixel for a secondary pane window
new_client_position	'after_current'	Place new windows: after_current - after the active window. before_current - before the active window, top - at the top of the stack, bottom - at the bottom of the stack,
ratio	0.5	The percent of the screen-space the master pane should occupy by default.
single_border_width	None	Border width for single window
single_margin	None	Margin size for single window

2.3.7 MonadWide

class libqtile.layout.xmonad.**MonadWide**(***config*)

Emulate the behavior of XMonad's horizontal tiling scheme.

This layout attempts to emulate the behavior of XMonad wide tiling scheme.

Main-Pane:

A main pane that contains a single window takes up a horizontal portion of the screen_rect based on the ratio setting. This ratio can be adjusted with the cmd_grow_main and cmd_shrink_main or, while the main pane is in focus, cmd_grow and cmd_shrink.

Using the cmd_flip method will switch which vertical side the main pane will occupy. The main pane is considered the "top" of the stack.

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```
|                    |
---------------------
```

Secondary-panes:

Occupying the rest of the screen_rect are one or more secondary panes. The secondary panes will share the horizontal space of the screen_rect however they can be resized at will with the `cmd_grow` and `cmd_shrink` methods. The other secondary panes will adjust their sizes to smoothly fill all of the space.

```
----------------------          ----------------------
|                    |          |                    |
|                    |          |                    |
|                    |          |                    |
|____________________|          |____________________|
|      |        |    |          |    |            |   |
|      |        |    |          |    |            |   |
----------------------          ----------------------
```

Panes can be moved with the `cmd_shuffle_up` and `cmd_shuffle_down` methods. As mentioned the main pane is considered the top of the stack; moving up is counter-clockwise and moving down is clockwise.

The opposite is true if the layout is "flipped".

```
----------------------          ----------------------
|                    |          |  2  |   3    |  4  |
|          1         |          |_____|________|_____|
|                    |          |                    |
|____________________|          |                    |
|      |        |    |          |         1          |
|  2   |   3    |  4 |          |                    |
----------------------          ----------------------
```

Normalizing/Resetting:

To restore all secondary client windows to their default size ratios use the `cmd_normalize` method.

To reset all client windows to their default sizes, including the primary window, use the `cmd_reset` method.

Maximizing:

To toggle a client window between its minimum and maximum sizes simply use the `cmd_maximize` on a focused client.

Suggested Bindings:

```
Key([modkey], "h", lazy.layout.left()),
Key([modkey], "l", lazy.layout.right()),
Key([modkey], "j", lazy.layout.down()),
Key([modkey], "k", lazy.layout.up()),
Key([modkey, "shift"], "h", lazy.layout.swap_left()),
Key([modkey, "shift"], "l", lazy.layout.swap_right()),
Key([modkey, "shift"], "j", lazy.layout.shuffle_down()),
Key([modkey, "shift"], "k", lazy.layout.shuffle_up()),
Key([modkey], "i", lazy.layout.grow()),
Key([modkey], "m", lazy.layout.shrink()),
Key([modkey], "n", lazy.layout.normalize()),
```

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```
Key([modkey], "o", lazy.layout.maximize()),
Key([modkey, "shift"], "space", lazy.layout.flip()),
```

key	default	description
align	0	Which side master plane will be placed (one of MonadTall._left or MonadTall._right)
border_focus	'#ff0000'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	2	Border width.
change_ratio	0.05	Resize ratio
change_size	20	Resize change in pixels
margin	0	Margin of the layout
max_ratio	0.75	The percent of the screen-space the master pane should occupy at maximum.
min_ratio	0.25	The percent of the screen-space the master pane should occupy at minimum.
min_secondary_size	85	minimum size in pixel for a secondary pane window
new_client_position	'after_current'	Place new windows: after_current - after the active window. before_current - before the active window, top - at the top of the stack, bottom - at the bottom of the stack,
ratio	0.5	The percent of the screen-space the master pane should occupy by default.
single_border_width	None	Border width for single window
single_margin	None	Margin size for single window

2.3.8 RatioTile

class libqtile.layout.ratiotile.**RatioTile**(***config*)

Tries to tile all windows in the width/height ratio passed in

key	default	description
border_focus	'#0000ff'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	1	Border width.
fancy	False	Use a different method to calculate window sizes.
margin	0	Margin of the layout (int or list of ints [N E S W])
ratio	1.618	Ratio of the tiles
ratio_increment	0.1	Amount to increment per ratio increment

2.3.9 Slice

class libqtile.layout.slice.**Slice**(***config*)

Slice layout

This layout cuts piece of screen_rect and places a single window on that piece, and delegates other window placement to other layout

key	default	description
fallback	<libqtile.layout.max.Max object at 0x7fcf58b478d0>	Layout to be used for the non-slice area.
match	None	Match-object describing which window(s) to move to the slice.
side	'left'	Position of the slice (left, right, top, bottom).
width	256	Slice width.

2.3.10 Stack

class libqtile.layout.stack.**Stack**(***config*)

A layout composed of stacks of windows

The stack layout divides the screen_rect horizontally into a set of stacks. Commands allow you to switch between stacks, to next and previous windows within a stack, and to split a stack to show all windows in the stack, or unsplit it to show only the current window.

Unlike the columns layout the number of stacks is fixed.

key	default	description
autosplit	False	Auto split all new stacks.
border_focus	'#0000ff'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_width	1	Border width.
fair	False	Add new windows to the stacks in a round robin way.
margin	0	Margin of the layout (int or list of ints [N E S W])
num_stacks	2	Number of stacks.

2.3.11 Tile

class libqtile.layout.tile.**Tile**(***config*)

A layout with two stacks of windows dividing the screen

The Tile layout divides the screen_rect horizontally into two stacks. The maximum amount of "master" windows can be configured; surplus windows will be displayed in the slave stack on the right. Within their stacks, the windows will be tiled vertically. The windows can be rotated in their entirety by calling up() or down() or, if shift_windows is set to True, individually.

key	default	description
add_after_last	False	Add new clients after all the others. If this is True, it overrides add_on_top.
add_on_top	True	Add new clients before all the others, potentially pushing other windows into slave stack.
border_focus	'#0000ff'	Border colour(s) for the focused window.
border_normal	'#000000'	Border colour(s) for un-focused windows.
border_on_single	True	Whether to draw border if there is only one window.
border_width	1	Border width.
expand	True	Expand the master windows to the full screen width if no slaves are present.
margin	0	Margin of the layout (int or list of ints [N E S W])
margin_on_single	True	Whether to draw margin if there is only one window.
master_length	1	Amount of windows displayed in the master stack. Surplus windows will be moved to the slave stack.
master_match	None	A Match object defining which window(s) should be kept masters (single or a list of Match-objects).
max_ratio	0.85	Maximum width of master windows
min_ratio	0.15	Minimum width of master windows
ratio	0.618	Width-percentage of screen size reserved for master windows.
ratio_increment	0.05	By which amount to change ratio when cmd_decrease_ratio or cmd_increase_ratio are called.
shift_windows	False	Allow to shift windows within the layout. If False, the layout will be rotated instead.

2.3.12 TreeTab

class libqtile.layout.tree.**TreeTab**(***config*)

Tree Tab Layout

This layout works just like Max but displays tree of the windows at the left border of the screen_rect, which allows you to overview all opened windows. It's designed to work with `uzbl-browser` but works with other windows too.

The panel at the left border contains sections, each of which contains windows. Initially the panel looks like flat lists inside its section, and looks like trees if some of the windows are "moved" left or right.

For example, it looks like below with two sections initially:

```
+------------+
|Section Foo |
+------------+
| Window A   |
+------------+
| Window B   |
+------------+
| Window C   |
+------------+
|Section Bar |
+------------+
```

And then it will look like below if "Window B" is moved right and "Window C" is moved right too:

```
+------------+
|Section Foo |
+------------+
| Window A   |
+------------+
|  Window B  |
+------------+
|   Window C |
+------------+
|Section Bar |
+------------+
```

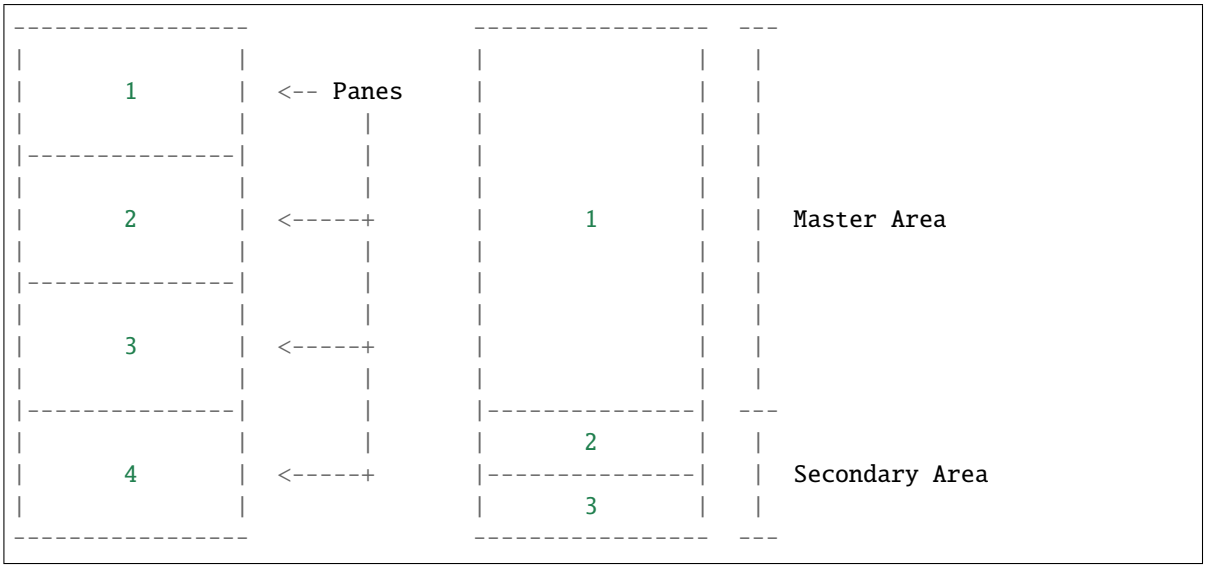
key	default	description
active_bg	'000080'	Background color of active tab
active_fg	'ffffff'	Foreground color of active tab
bg_color	'000000'	Background color of tabs
border_width	2	Width of the border
font	'sans'	Font
fontshadow	None	font shadow color, default is None (no shadow)
fontsize	14	Font pixel size.
inactive_bg	'606060'	Background color of inactive tab
inactive_fg	'ffffff'	Foreground color of inactive tab
level_shift	8	Shift for children tabs
margin_left	6	Left margin of tab panel
margin_y	6	Vertical margin of tab panel
padding_left	6	Left padding for tabs
padding_x	6	Left padding for tab label
padding_y	2	Top padding for tab label
panel_width	150	Width of the left panel
place_right	False	Place the tab panel on the right side
previous_on_rm	False	Focus previous window on close instead of first.
section_bottom	6	Bottom margin of section
section_fg	'ffffff'	Color of section label
section_fontsize	11	Font pixel size of section label
section_left	4	Left margin of section label
section_padding	4	Bottom of margin section label
section_top	4	Top margin of section label
sections	['Default']	Foreground color of inactive tab
urgent_bg	'ff0000'	Background color of urgent tab
urgent_fg	'ffffff'	Foreground color of urgent tab
vspace	2	Space between tabs

2.3.13 VerticalTile

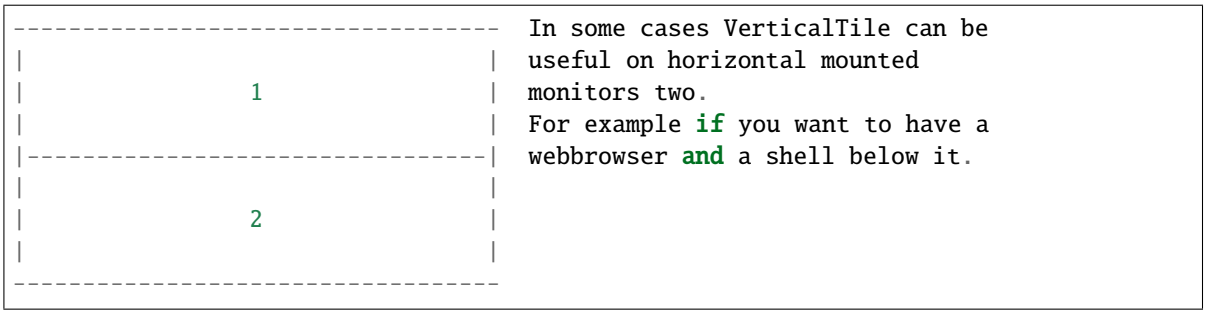
class libqtile.layout.verticaltile.**VerticalTile**(***config*)

Tiling layout that works nice on vertically mounted monitors

The available height gets divided by the number of panes, if no pane is maximized. If one pane has been maximized, the available height gets split in master- and secondary area. The maximized pane (master pane) gets the full height of the master area and the other panes (secondary panes) share the remaining space. The master area (at default 75%) can grow and shrink via keybindings.



Normal behavior. No One maximized pane in the master area maximized pane. No and two secondary panes in the specific areas. secondary area.



Suggested keybindings:

```
Key([modkey], 'j', lazy.layout.down()),
Key([modkey], 'k', lazy.layout.up()),
Key([modkey], 'Tab', lazy.layout.next()),
Key([modkey, 'shift'], 'Tab', lazy.layout.next()),
Key([modkey, 'shift'], 'j', lazy.layout.shuffle_down()),
Key([modkey, 'shift'], 'k', lazy.layout.shuffle_up()),
Key([modkey], 'm', lazy.layout.maximize()),
Key([modkey], 'n', lazy.layout.normalize()),
```

key	default	description
border_focus	'#FF0000'	Border color(s) for the focused window.
border_normal	'#FFFFFF'	Border color(s) for un-focused windows.
border_width	1	Border width.
margin	0	Border margin (int or list of ints [N E S W]).

2.3.14 Zoomy

class libqtile.layout.zoomy.**Zoomy**(***config*)

A layout with single active windows, and few other previews at the right

key	default	description
columnwidth	150	Width of the right column
margin	0	Margin of the layout (int or list of ints [N E S W])
property_big	'1.0'	Property value to set on normal window (X11 only)
property_name	'ZOOM'	Property to set on zoomed window (X11 only)
property_small	'0.1'	Property value to set on zoomed window (X11 only)

2.4 Built-in Widgets

2.4.1 AGroupBox

class libqtile.widget.**AGroupBox**(***config*)

A widget that graphically displays the current group

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border	'000000'	group box border color
borderwidth	3	Current group border width
center_aligned	True	center-aligned group box
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
margin	3	Margin inside the box
margin_x	None	X Margin. Overrides 'margin' if set
margin_y	None	Y Margin. Overrides 'margin' if set
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
padding_x	None	X Padding. Overrides 'padding' if set
padding_y	None	Y Padding. Overrides 'padding' if set

2.4.2 Backlight

class libqtile.widget.**Backlight**(***config*)

A simple widget to show the current brightness of a monitor.

If the change_command parameter is set to None, the widget will attempt to use the interface at /sys/class to change brightness. Depending on the setup, the user may need to be added to the video group to have permission to write to this interface. This depends on having the correct udev rules the brightness file; these are typically installed alongside brightness tools such as brightnessctl (which changes the group to 'video') so installing that is an easy way to get it working.

You can also bind keyboard shortcuts to the backlight widget with:

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
backlight_name	'acpi_video0'	ACPI name of a backlight device
brightness_file	'brightness'	Name of file with the current brightness in /sys/class/backlight/backlight_name
change_command	'xbacklight -set {0}'	Execute command to change value
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{percent:2.0%}'	Display format
markup	True	Whether or not to use pango markup
max_brightness_file	'max_brightness'	Name of file with the maximum brightness in /sys/class/backlight/backlight_name
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
step	10	Percent of backlight every scroll changed
update_interval	0.2	The delay in seconds between updates

2.4.3 Battery

class libqtile.widget.**Battery**(***config*)

A text-based battery monitoring widget currently supporting FreeBSD

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
battery	0	Which battery should be monitored (battery number or name)
charge_char	'^'	Character to indicate the battery is charging
discharge_char	'V'	Character to indicate the battery is discharging
empty_char	'x'	Character to indicate the battery is empty
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{char} {percent:2.0%} {hour:d}:{min:02d} {watt:.2f} W'	Display format
full_char	'='	Character to indicate the battery is full
hide_threshold	None	Hide the text when there is enough energy 0 <= x < 1
low_background	None	Background color on low battery
low_foreground	'FF0000'	Font color on low battery
low_percentage	0.1	Indicates when to use the low_foreground color 0 < x < 1
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
notify_below	None	Send a notification below this battery level.
padding	None	Padding. Calculated if None.
show_short_text	True	Show "Full" or "Empty" rather than formated text
unknown_char	'?'	Character to indicate the battery status is unknown
update_interval	60	Seconds between status updates

2.4.4 BatteryIcon

class libqtile.widget.**BatteryIcon**(***config*)

Battery life indicator widget.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
battery	0	Which battery should be monitored
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
theme_path	'/home/docs/checkouts/readthedocs.org/user_builds/qtile/checkouts/v0.20.0/libqtile/resources/battery-icons'	Path of the icons
update_interval	60	Seconds between status updates

2.4.5 Bluetooth

class libqtile.widget.**Bluetooth**(***config*)

Displays bluetooth status or connected device.

Uses dbus to communicate with the system bus.

Widget requirements: dbus-next.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
hci	'/dev_XX_XX_XX_XX_XX_XX'	hci0 device path, can be found with d-feet or similar dbus explorer.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.

2.4.6 CPU

class libqtile.widget.**CPU**(***config*)

A simple widget to display CPU load and frequency.

Widget requirements: psutil.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'CPU {freq_current}GHz {load_percent}%'	CPU display format
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	1.0	Update interval for the CPU widget

2.4.7 CPUGraph

class libqtile.widget.**CPUGraph**(***config*)

Display CPU usage graph.

Widget requirements: psutil.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border_color	'215578'	Widget border color
border_width	2	Widget border width
core	'all'	Which core to show (all/0/1/2/...)
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
samples	100	Count of graph samples.
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.8 Canto

class libqtile.widget.**Canto**(***config*)

Display RSS feeds updates using the canto console reader

Supported bar orientations: horizontal and vertical

key	default	description
all_format	'{number}'	All feeds display format
background	None	Widget background color
feeds	[]	List of feeds to display, empty for all
fetch	False	Whether to fetch new items on update
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
one_format	'{name}: {number}'	One feed display format
padding	None	Padding. Calculated if None.
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.

2.4.9 CapsNumLockIndicator

class libqtile.widget.**CapsNumLockIndicator**(***config*)

Really simple widget to show the current Caps/Num Lock state.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	0.5	Update Time in seconds.

2.4.10 CheckUpdates

class libqtile.widget.**CheckUpdates**(***config*)

Shows number of pending updates in different unix systems.

Note: It is common for package managers to return a non-zero code when there are no updates. As a result, the widget will treat *any* error as if there are no updates. If you are using a custom commmand/script, you should therefore ensure that it returns zero when it completes if you wish to see the output of your command.

In addition, as no errors are recorded to the log, if the widget is showing no updates and you believe that to be incorrect, you should run the appropriate command in a terminal to view any error messages.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
colour_have_updates	'ffffff'	Colour when there are updates.
colour_no_updates	'ffffff'	Colour when there's no updates.
custom_command	None	Custom shell command for checking updates (counts the lines of the output)
custom_command_modify	<function CheckUpdates. <lambda> at 0x7fcf58672290>	Lambda function to modify line count from custom_command
display_format	'Updates: {updates}'	Display format if updates available
distro	'Arch'	Name of your distribution
execute	None	Command to execute on click
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
no_update_string	''	String to display if no updates available
padding	None	Padding. Calculated if None.
restart_indicator	''	Indicator to represent reboot is required. (Ubuntu only)
update_interval	60	Update interval in seconds.

2.4.11 Chord

class libqtile.widget.**Chord**(*width=CALCULATED*, ***config*)

Display current key chord

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
chords_colors	{}	colors per chord in form of tuple ('bg', 'fg').
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
name_transform	<function Chord. <lambda> at 0x7fcf58672950>	preprocessor for chord name it is pure function string -> string
padding	None	Padding. Calculated if None.

2.4.12 Clipboard

class libqtile.widget.**Clipboard**(*width=CALCULATED*, ***config*)

Display current clipboard contents

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
blacklist	['keepassx']	list with blacklisted wm_class, sadly not every clipboard window sets them, keepassx does.Clipboard contents from blacklisted wm_classes will be replaced by the value of blacklist_text.
blacklist_text	'***********'	text to display when the wm_class is blacklisted
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
max_width	10	maximum number of characters to display (None for all, useful when width is bar.STRETCH)
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
selection	'CLIPBOARD'	the selection to display(CLIPBOARD or PRIMARY)
timeout	10	Default timeout (seconds) for display text, None to keep forever

2.4.13 Clock

class libqtile.widget.**Clock**(***config*)
A simple but flexible text-based clock

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'%H:%M'	A Python datetime format string
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
timezone	None	The timezone to use for this clock, either as string if pytz or dateutil is installed (e.g. "US/Central" or anything in /usr/share/zoneinfo), or as tzinfo (e.g. datetime.timezone.utc). None means the system local timezone and is the default.
update_interval	1.0	Update interval for the clock

2.4.14 Cmus

class libqtile.widget.**Cmus**(***config*)
A simple Cmus widget.

Show the artist and album of now listening song and allow basic mouse control from the bar:

- toggle pause (or play if stopped) on left click;
- skip forward in playlist on scroll up;
- skip backward in playlist on scroll down.

Cmus (https://cmus.github.io) should be installed.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
noplay_color	'cecece'	Text colour when not playing.
padding	None	Padding. Calculated if None.
play_color	'00ff00'	Text colour when playing.
update_interval	0.5	Update Time in seconds.

2.4.15 Countdown

class libqtile.widget.**Countdown**(***config*)

A simple countdown timer text widget

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
date	datetime.datetime(2022, 1, 24, 19, 55, 55, 922108)	The datetime for the end of the countdown
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{D}d {H}h {M}m {S}s'	Format of the displayed text. Available variables:{D} == days, {H} == hours, {M} == minutes, {S} seconds.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	1.0	Update interval in seconds for the clock

2.4.16 CryptoTicker

class libqtile.widget.**CryptoTicker**(***config*)

A cryptocurrency ticker widget, data provided by the coinbase.com API. Defaults to displaying currency in whatever the current locale is. Examples:

display the average price of bitcoin in local currency widget.CryptoTicker()

display it in Euros: widget.CryptoTicker(currency="EUR")

or a different cryptocurrency! widget.CryptoTicker(crypto="ETH")

change the currency symbol: widget.CryptoTicker(currency="EUR", symbol="€")

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
crypto	'BTC'	The cryptocurrency to display.
currency	''	The baseline currency that the value of the crypto is displayed in.
data	None	Post Data
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{crypto}: {symbol}{amount:.2f}'	Display string formatting.
headers	{}	Extra Headers
json	True	Is Json?
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
symbol	''	The symbol for the baseline currency.
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
url	None	Url
user_agent	'Qtile'	Set the user agent
xml	False	Is XML?

2.4.17 CurrentLayout

class libqtile.widget.**CurrentLayout**(*width=CALCULATED*, ***config*)

Display the name of the current layout of the current group of the screen, the bar containing the widget, is on.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.

2.4.18 CurrentLayoutIcon

class libqtile.widget.**CurrentLayoutIcon**(***config*)

Display the icon representing the current layout of the current group of the screen on which the bar containing the widget is.

If you are using custom layouts, a default icon with question mark will be displayed for them. If you want to use custom icon for your own layout, for example, *FooGrid*, then create a file named "layout-foogrid.png" and place it in *~/.icons* directory. You can as well use other directories, but then you need to specify those directories in *custom_icon_paths* argument for this plugin.

The order of icon search is:

- dirs in *custom_icon_paths* config argument
- *~/.icons*
- built-in qtile icons

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
custom_icon_paths	[]	List of folders where to search icons beforeusing built-in icons or icons in ~/.icons dir. This can also be used to providemissing icons for custom layouts. Defaults to empty list.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
scale	1	Scale factor relative to the bar height. Defaults to 1

2.4.19 CurrentScreen

class libqtile.widget.**CurrentScreen**(*width=CALCULATED*, ***config*)

Indicates whether the screen this widget is on is currently active or not

Supported bar orientations: horizontal and vertical

key	default	description
active_color	'00ff00'	Color when screen is active
active_text	'A'	Text displayed when the screen is active
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
inactive_color	'ff0000'	Color when screen is inactive
inactive_text	'I'	Text displayed when the screen is inactive
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.

2.4.20 DF

class libqtile.widget.**DF**(***config*)

Disk Free Widget

By default the widget only displays if the space is less than warn_space.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{p} ({uf}{m}|{r:.0f}%)'	String format (p: partition, s: size, f: free space, uf: user free space, m: measure, r: ratio (uf/s))
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
measure	'G'	Measurement (G, M, B)
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
partition	'/'	the partition to check space
update_interval	60	The update interval.
visible_on_warn	True	Only display if warning
warn_color	'ff0000'	Warning color
warn_space	2	Warning space in scale defined by the measure option.

2.4.21 GenPollText

class libqtile.widget.**GenPollText**(***config*)

A generic text widget that polls using poll function to get the text

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
func	None	Poll Function
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.

2.4.22 GenPollUrl

class libqtile.widget.**GenPollUrl**(***config*)

A generic text widget that polls an url and parses it using parse function

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
data	None	Post Data
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
headers	{}	Extra Headers
json	True	Is Json?
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
url	None	Url
user_agent	'Qtile'	Set the user agent
xml	False	Is XML?

2.4.23 GmailChecker

class libqtile.widget.**GmailChecker**(***config*)

A simple gmail checker. If 'status_only_unseen' is True - set 'fmt' for one argument, ex. 'unseen: {0}'

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
display_fmt	'inbox[{0}], unseen[{1}]'	Display format
email_path	'INBOX'	email_path
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
password	None	password
status_only_unseen	False	Only show unseen messages
update_interval	30	Update time in seconds.
username	None	username

2.4.24 GroupBox

class libqtile.widget.**GroupBox**(***config*)

A widget that graphically displays the current group. All groups are displayed by their label. If the label of a group is the empty string that group will not be displayed.

Supported bar orientations: horizontal only

key	default	description
active	'FFFFFF'	Active group font colour
background	None	Widget background color
block_highlight_text_color	None	Selected group font colour
borderwidth	3	Current group border width
center_aligned	True	center-aligned group box
disable_drag	False	Disable dragging and dropping of group names on widget
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
hide_unused	False	Hide groups that have no windows and that are not displayed on any screen.
highlight_color	['000000', '282828']	Active group highlight color when using 'line' highlight method.
highlight_method	'border'	Method of highlighting ('border', 'block', 'text', or 'line')Uses **_border* color settings
inactive	'404040'	Inactive group font colour
invert_mouse_wheel	False	Whether to invert mouse wheel group movement
margin	3	Margin inside the box
margin_x	None	X Margin. Overrides 'margin' if set

continues on next page

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key	default	description
margin_y	None	Y Margin. Overrides 'margin' if set
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
other_current_screen_border	'404040'	Border or line colour for group on other screen when focused.
other_screen_border	'404040'	Border or line colour for group on other screen when unfocused.
padding	None	Padding. Calculated if None.
padding_x	None	X Padding. Overrides 'padding' if set
padding_y	None	Y Padding. Overrides 'padding' if set
rounded	True	To round or not to round box borders
spacing	None	Spacing between groups(if set to None, will be equal to margin_x)
this_current_screen_border	'215578'	Border or line colour for group on this screen when focused.
this_screen_border	'215578'	Border or line colour for group on this screen when unfocused.
urgent_alert_method	'border'	Method for alerting you of WM urgent hints (one of 'border', 'text', 'block', or 'line')
urgent_border	'FF0000'	Urgent border or line color
urgent_text	'FF0000'	Urgent group font color
use_mouse_wheel	True	Whether to use mouse wheel events
visible_groups	None	Groups that will be visible. If set to None or [], all groups will be visible.Visible groups are identified by name not by their displayed label.

2.4.25 HDDBusyGraph

class libqtile.widget.**HDDBusyGraph**(***config*)

Display HDD busy time graph

Parses /sys/block/<dev>/stat file and extracts overall device IO usage, based on io_ticks's value. See https://www.kernel.org/doc/Documentation/block/stat.txt

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border_color	'215578'	Widget border color
border_width	2	Widget border width
device	'sda'	Block device to display info for
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
samples	100	Count of graph samples.
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.26 HDDGraph

class libqtile.widget.**HDDGraph**(***config*)

Display HDD free or used space graph

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border_color	'215578'	Widget border color
border_width	2	Widget border width
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
path	'/'	Partition mount point.
samples	100	Count of graph samples.
space_type	'used'	free/used
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.27 IdleRPG

class libqtile.widget.**IdleRPG**(***config*)

A widget for monitoring and displaying IdleRPG stats.

```
# display idlerpg stats for the player 'pants' on freenode's #idlerpg
widget.IdleRPG(url="http://xethron.lolhosting.net/xml.php?player=pants")
```

Widget requirements: xmltodict.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
data	None	Post Data
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'IdleRPG: {online} TTL: {ttl}'	Display format
headers	{}	Extra Headers
json	False	Not json :)
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
url	None	Url
user_agent	'Qtile'	Set the user agent
xml	True	Is XML :)

2.4.28 Image

class libqtile.widget.**Image**(*length=CALCULATED*, ***config*)

Display a PNG image on the bar

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
filename	None	Image filename. Can contain '~'
margin	3	Margin inside the box
margin_x	None	X Margin. Overrides 'margin' if set
margin_y	None	Y Margin. Overrides 'margin' if set
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
rotate	0.0	rotate the image in degrees counter-clockwise
scale	True	Enable/Disable image scaling

2.4.29 ImapWidget

class libqtile.widget.**ImapWidget**(***config*)

Email IMAP widget

This widget will scan one of your imap email boxes and report the number of unseen messages present. I've configured it to only work with imap with ssl. Your password is obtained from the Gnome Keyring.

Writing your password to the keyring initially is as simple as (changing out <userid> and <password> for your userid and password):

1) create the file ~/.local/share/python_keyring/keyringrc.cfg with the following contents:

```
[backend]
default-keyring=keyring.backends.Gnome.Keyring
keyring-path=/home/<userid>/.local/share/keyring/
```

2) Execute the following python shell script once:

```
#!/usr/bin/env python3
import keyring
user = <userid>
password = <password>
keyring.set_password('imapwidget', user, password)
```

mbox names must include the path to the mbox (except for the default INBOX). So, for example if your mailroot is `~/Maildir`, and you want to look at the mailbox at HomeMail/fred, the mbox setting would be: `mbox="~/Maildir/HomeMail/fred"`. Note the nested sets of quotes! Labels can be whatever you choose, of course.

Widget requirements: keyring.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
label	'INBOX'	label for display
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mbox	'"INBOX"'	mailbox to fetch
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	None	Padding. Calculated if None.
server	None	email server name
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
user	None	email username

2.4.30 KeyboardKbdd

class libqtile.widget.**KeyboardKbdd**(***config*)

Widget for changing keyboard layouts per window, using kbdd

kbdd should be installed and running, you can get it from: https://github.com/qnikst/kbdd

The widget also requires dbus-next.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
colours	None	foreground colour for each layouteither 'None' or a list of colours.example: ['ffffff', 'E6F0AF'].
configured_keyboards	['us', 'ir']	your predefined list of keyboard layouts.example: ['us', 'ir', 'es']
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	1	Update interval in seconds.

2.4.31 KeyboardLayout

class libqtile.widget.**KeyboardLayout**(***config*)

Widget for changing and displaying the current keyboard layout

To use this widget effectively you need to specify keyboard layouts you want to use (using "configured_keyboards") and bind function "next_keyboard" to specific keys in order to change layouts.

For example:

```
Key([mod], "space", lazy.widget["keyboardlayout"].next_keyboard(), desc="Next keyboard layout."),
```

When running Qtile with the X11 backend, this widget requires setxkbmap to be available.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
configured_keyboards	['us']	A list of predefined keyboard layouts represented as strings. For example: ['us', 'us colemak', 'es', 'fr'].
display_map	{}	Custom display of layout. Key should be in format 'layout variant'. For example: {'us': 'us', 'lt sgs': 'sgs', 'ru phonetic': 'ru'}
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
option	None	string of setxkbmap option. Ex., 'compose:menu,grp_led:scroll'
padding	None	Padding. Calculated if None.
update_interval	1	Update time in seconds.

2.4.32 KhalCalendar

class libqtile.widget.**KhalCalendar**(***config*)

Khal calendar widget

This widget will display the next appointment on your Khal calendar in the qtile status bar. Appointments within the "reminder" time will be highlighted.

Widget requirements: dateutil.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'FFFF33'	default foreground color
lookahead	7	days to look ahead in the calendar
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
reminder_color	'FF0000'	color of calendar entries during reminder time
remindertime	10	reminder time in minutes
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.

2.4.33 LaunchBar

class libqtile.widget.**LaunchBar**(*progs=None*, *width=CALCULATED*, ***config*)

A widget that display icons to launch the associated command

Widget requirements: pyxdg.

Parameters

progs a list of tuples `(software_name, command_to_execute, comment)`, for example:

```
('thunderbird', 'thunderbird -safe-mode', 'launch thunderbird in␣
↪safe mode')
('logout', 'qshell:self.qtile.cmd_shutdown()', 'logout from qtile')
```

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
default_icon	'/usr/share/icons/oxygen/256x256/mimetypes/application-x-executable.png'	Default icon not found
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	2	Padding between icons

2.4.34 Maildir

class libqtile.widget.**Maildir**(***config*)

A simple widget showing the number of new mails in maildir mailboxes

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
empty_color	None	Display color when no new mail is available
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
hide_when_empty	False	Whether not to display anything if the subfolder has no new mail
maildir_path	'~/Mail'	path to the Maildir folder
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
nonempty_color	None	Display color when new mail is available
padding	None	Padding. Calculated if None.
separator	' '	the string to put between the subfolder strings.
sub_folders	[{'label': 'Home mail', 'path': 'INBOX'}, {'label': 'Home junk', 'path': 'spam'}]	List of subfolders to scan. Each subfolder is a dict of *path* and *label*.
subfolder_fmt	'{label}: {value}'	Display format for one subfolder
total	False	Whether or not to sum subfolders into a grand total. The first label will be used.
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.

2.4.35 Memory

class libqtile.widget.**Memory**(***config*)

Displays memory/swap usage

MemUsed: Returns memory in use MemTotal: Returns total amount of memory MemFree: Returns amount of memory free MemPercent: Returns memory in use as a percentage Buffers: Returns buffer amount Active: Returns active memory Inactive: Returns inactive memory Shmem: Returns shared memory SwapTotal: Returns total amount of swap SwapFree: Returns amount of swap free SwapUsed: Returns amount of swap in use SwapPercent: Returns swap in use as a percentage

Widget requirements: psutil.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{MemUsed: .0f}{mm}/ {MemTotal: .0f}{mm}'	Formatting for field names.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
measure_mem	'M'	Measurement for Memory (G, M, K, B)
measure_swap	'M'	Measurement for Swap (G, M, K, B)
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	1.0	Update interval for the Memory

2.4.36 MemoryGraph

class libqtile.widget.**MemoryGraph**(***config*)

Displays a memory usage graph.

Widget requirements: psutil.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border_color	'215578'	Widget border color
border_width	2	Widget border width
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
samples	100	Count of graph samples.
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.37 Mirror

class libqtile.widget.**Mirror**(*reflection*, ***config*)

A widget for showing the same widget content in more than one place, for instance, on bars across multiple screens.

You don't need to use it directly; instead, just instantiate your widget once and hand it in to multiple bars. For instance:

```
cpu = widget.CPUGraph()
clock = widget.Clock()

screens = [
    Screen(top=bar.Bar([widget.GroupBox(), cpu, clock])),
    Screen(top=bar.Bar([widget.GroupBox(), cpu, clock])),
]
```

Widgets can be passed to more than one bar, so that there don't need to be any duplicates executing the same code all the time, and they'll always be visually identical.

This works for all widgets that use *drawers* (and nothing else) to display their contents. Currently, this is all widgets except for *Systray*.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.

2.4.38 Moc

class libqtile.widget.**Moc**(***config*)

A simple MOC widget.

Show the artist and album of now listening song and allow basic mouse control from the bar:

- toggle pause (or play if stopped) on left click;
- skip forward in playlist on scroll up;
- skip backward in playlist on scroll down.

MOC (http://moc.daper.net) should be installed.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
noplay_color	'cecece'	Text colour when not playing.
padding	None	Padding. Calculated if None.
play_color	'00ff00'	Text colour when playing.
update_interval	0.5	Update Time in seconds.

2.4.39 Mpd2

class libqtile.widget.**Mpd2**(***config*)

Mpd2 Object.

Parameters

status_format: format string to display status

For a full list of values, see: MPDClient.status() and MPDClient.currentsong()

https://musicpd.org/doc/protocol/command_reference.html#command_status https://musicpd.org/doc/protocol/tags.html

Default:

```
'{play_status} {artist}/{title} \
    [{repeat}{random}{single}{consume}{updating_db}]'

``play_status`` is a string from ``play_states`` dict

Note that the ``time`` property of the song renamed to ``fulltime``
to prevent conflicts with status information during formating.
```

idle_format: format string to display status when no song is in queue.

Default:

```
'{play_status} {idle_message} \
    [{repeat}{random}{single}{consume}{updating_db}]'
```

idle_message: text to display instead of song information when MPD is idle. (i.e. no song in queue)

Default:: "MPD IDLE"

prepare_status: dict of functions to replace values in status with custom characters.

`f(status, key, space_element) => str`

New functionality allows use of a dictionary of plain strings.

Default:

```
status_dict = {
    'repeat': 'r',
    'random': 'z',
    'single': '1',
    'consume': 'c',
    'updating_db': 'U'
}
```

format_fns: A dict of functions to format the various elements.

'Tag': f(str) => str

Default:: { 'all': lambda s: cgi.escape(s) }

N.B. if 'all' is present, it is processed on every element of song_info before any other formatting is done.

mouse_buttons: A dict of mouse button numbers to actions

Widget requirements: python-mpd2_.

.. _python-mpd2: https://pypi.org/project/python-mpd2/

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
color_progress	None	Text color to indicate track progress.
command	<function default_cmd at 0x7fcf586fab90>	command to be executed by mapped mouse button.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format_fns	{'all': <function escape at 0x7fcf5d83f8c0>}	Dictionary of format methods
host	'localhost'	Host of mpd server
idle_format	'{play_status} {idle_message}[{repeat}{random}{single}{consume}{updating_db}]'	format for status when mpd has no playlist.
idle_message	'MPD IDLE'	text to display when mpd is idle.
idletimeout	5	MPDClient idle command timeout
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_buttons	{1: 'toggle', 3: 'stop', 4: 'previous', 5: 'next'}	b_num -> action.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
no_connection	'No connection'	Text when mpd is disconnected
padding	None	Padding. Calculated if None.
password	None	Password for auth on mpd server
play_states	{'pause': '', 'play': '', 'stop': ''}	Play state mapping
port	6600	Port of mpd server
prepare_status	{'consume': 'c', 'random': 'z', 'repeat': 'r', 'single': '1', 'updating_db': 'U'}	characters to show the status of MPD
space	'-'	Space keeper
status_format	'{play_status} {artist}/ {title} [{repeat}{random}{single}{consume}{updating_db}]'	format for displayed song info.
timeout	30	MPDClient timeout
update_interval	1	Interval of update widget

2.4.40 Mpris2

class libqtile.widget.**Mpris2**(***config*)

An MPRIS 2 widget

A widget which displays the current track/artist of your favorite MPRIS player. This widget scrolls the text if neccessary and information that is displayed is configurable.

Widget requirements: dbus-next.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
display_metadata	['xesam:title', 'xesam:album', 'xesam:artist']	Which metadata identifiers to display. See http://www.freedesktop.org/wiki/Specifications/mpris-spec/metadata/#index5h3 for available values
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
name	'audacious'	Name of the MPRIS widget.
objname	'org.mpris.MediaPlayer2.audacious'	DBUS MPRIS 2 compatible player identifier- Find it out with dbus-monitor - Also see: http://specifications.freedesktop.org/mpris-spec/latest/#Bus-Name-Policy
padding	None	Padding. Calculated if None.
scroll_chars	30	How many chars at once to display.
scroll_interval	0.5	Scroll delay interval.
scroll_wait_intervals	8	Wait x scroll_interval beforescrolling/removing text
stop_pause_text	None	Optional text to display when in the stopped/paused state

2.4.41 Net

class libqtile.widget.**Net**(***config*)

Displays interface down and up speed

Widget requirements: psutil.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{interface}: {down} ↓↑ {up}'	Display format of down/upload/total speed of given interfaces
interface	None	List of interfaces or single NIC as string to monitor, None to display all active NICs combined
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
prefix	None	Use a specific prefix for the unit of the speed.
update_interval	1	The update interval.
use_bits	False	Use bits instead of bytes per second?

2.4.42 NetGraph

class libqtile.widget.**NetGraph**(***config*)

Display a network usage graph.

Widget requirements: psutil.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
bandwidth_type	'down'	down(load)/up(load)
border_color	'215578'	Widget border color
border_width	2	Widget border width
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
interface	'auto'	Interface to display info for ('auto' for detection)
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
samples	100	Count of graph samples.
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.43 Notify

class libqtile.widget.**Notify**(*width=CALCULATED*, ***config*)

A notify widget

This widget can handle actions provided by notification clients. However, only the default action is supported, so if a client provides multiple actions then only the default (first) action can be invoked. Some programs will provide their own notification windows if the notification server does not support actions, so if you want your notifications to handle more than one action then specify `False` for the `action` option to disable all action handling. Unfortunately we cannot specify the capability for exactly one action.

Supported bar orientations: horizontal and vertical

key	default	description
action	True	Enable handling of default action upon right click
audiofile	None	Audiofile played during notifications
background	None	Widget background color
default_timeout	None	Default timeout (seconds) for notifications
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
foreground_low	'dddddd'	Foreground low priority colour
foreground_urgent	'ff0000'	Foreground urgent priority colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	None	Padding. Calculated if None.
parse_text	None	Function to parse and modify notifications. e.g. function in config that removes line returns:def my_func(text) return text.replace('n', '')then set option parse_text=my_func

2.4.44 NvidiaSensors

class libqtile.widget.**NvidiaSensors**(***config*)

Displays temperature, fan speed and performance level Nvidia GPU.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
foreground_alert	'ff0000'	Foreground colour alert
format	'{temp}°C'	Display string format. Three options available: {temp} - temperature, {fan_speed} and {perf} - performance level
gpu_bus_id	''	GPU's Bus ID, ex: 01:00.0. If leave empty will display all available GPU's
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
threshold	70	If the current temperature value is above, then change to foreground_alert colour
update_interval	2	Update interval in seconds.

2.4.45 OpenWeather

class libqtile.widget.**OpenWeather**(***config*)

A weather widget, data provided by the OpenWeather API.

Some format options:

- location_city
- location_cityid
- location_country
- location_lat
- location_long
- weather
- weather_details
- units_temperature
- units_wind_speed
- isotime
- humidity
- pressure
- sunrise
- sunset
- temp
- visibility

- wind_speed
- wind_deg
- wind_direction
- main_feels_like
- main_temp_min
- main_temp_max
- clouds_all
- icon

Icon support is available but you will need a suitable font installed. A default icon mapping is provided (`OpenWeather.symbols`) but changes can be made by setting `weather_symbols`. Available icon codes can be viewed here: https://openweathermap.org/weather-conditions#Icon-list

Supported bar orientations: horizontal and vertical

key	default	description
app_key	'7834197c233888826f58...b14ef49'	OpenWeatherMap api access key. A default is provided, butn for prolonged use obtaining your own is suggested:n https://home.openweathermap.org/users/sign_up
background	None	Widget background color
cityid	None	City ID. Can be looked up on e.g.:n https://openweathermap.org/findn Takes precedence over location and coordinates.n Note that this is not equal to a WOEID.
coordinates	None	Dictionary containing latitude and longituden Example: coordinates={"longitude": "77.22",n "latitude": "28.67"}
data	None	Post Data
dateformat	'%Y-%m-%d '	Format for dates, defaults to ISO.n For details see: https://docs.python.org/3/library/time.html#time.strftime
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{location_city}: {main_temp} °{units_temperature} {humidity}% {weather_details}'	Display format
headers	{}	Extra Headers
json	True	Is Json?
language	'en'	Language of response. List of languages supported cann be seen at: https://openweathermap.org/current undern Multilingual support
location	None	Name of the city. Country name can be appendedn like cambridge,NZ. Takes precedence over zip-code.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
metric	True	True to use metric/C, False to use imperial/F
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
timeformat	'%H:%M'	Format for times, defaults to ISO.n For details see: https://docs.python.org/3/library/time.html#time.strftime
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
url	None	Url
user_agent	'Qtile'	Set the user agent
weather_symbols	{}	Dictionary of weather symbols. Can be used to override default symbols.
xml	False	Is XML?
zip	None	Zip code (USA) or "zip code,country code" forn other countries. E.g. 12345,NZ. Takes precedence overn coordinates.

2.4.46 Pomodoro

class libqtile.widget.**Pomodoro**(***config*)

Pomodoro technique widget

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
color_active	'00ff00'	Colour then pomodoro is running
color_break	'ffff00'	Colour then it is break time
color_inactive	'ff0000'	Colour then pomodoro is inactive
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
length_long_break	15	Length of a long break in minutes
length_pomodori	25	Length of one pomodori in minutes
length_short_break	5	Length of a short break in minutes
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
notification_on	True	Turn notifications on
num_pomodori	4	Number of pomodori to do in a cycle
padding	None	Padding. Calculated if None.
prefix_active	''	Prefix then app is active
prefix_break	'B '	Prefix during short break
prefix_inactive	'POMODORO'	Prefix when app is inactive
prefix_long_break	'LB '	Prefix during long break
prefix_paused	'PAUSE'	Prefix during pause
update_interval	1	Update interval in seconds, if none, the widget updates whenever the event loop is idle.

2.4.47 Prompt

class libqtile.widget.**Prompt**(*name='prompt'*, ***config*)

A widget that prompts for user input

Input should be started using the `.start_input()` method on this class.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
bell_style	'audible'	Alert at the begin/end of the command history. Possible values: 'audible' (X11 only), 'visual' and None.
cursor	True	Show a cursor
cursor_color	'bef098'	Color for the cursor and text over it.
cursorblink	0.5	Cursor blink rate. 0 to disable.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
ignore_dups_history	False	Don't store duplicates in history
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
max_history	100	Commands to keep in history. 0 for no limit.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
prompt	'{prompt}: '	Text displayed at the prompt
record_history	True	Keep a record of executed commands
visual_bell_color	'ff0000'	Color for the visual bell (changes prompt background).
visual_bell_time	0.2	Visual bell duration (in seconds).

2.4.48 PulseVolume

class libqtile.widget.**PulseVolume**(***config*)

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
cardid	None	Card Id
channel	'Master'	Channel
device	'default'	Device Name
emoji	False	Use emoji to display volume states, only if theme_path is not set.The specified font needs to contain the correct unicode characters.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
get_volume_command	None	Command to get the current volume
limit_max_volume	False	Limit maximum volume to 100%
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
mute_command	None	Mute command
padding	3	Padding left and right. Calculated if None.
step	2	Volume change for up an down commands in percentage.Only used if volume_up_command and volume_down_command are not set.
theme_path	None	Path of the icons
update_interval	0.2	Update time in seconds.
volume_app	None	App to control volume
volume_down_command	None	Volume down command
volume_up_command	None	Volume up command

2.4.49 QuickExit

class libqtile.widget.**QuickExit**(*widget=CALCULATED*, ***config*)

A button of exiting the running qtile easily. When clicked this button, a countdown start. If the button pushed with in the countdown again, the qtile shutdown.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
countdown_format	'[{} seconds]'	This text is showed when counting down.
countdown_start	5	Time to accept the second pushing.
default_text	'[shutdown]'	A text displayed as a button
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
timer_interval	1	A countdown interval.

2.4.50 Sep

class libqtile.widget.**Sep**(***config*)

A visible widget separator

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
foreground	'888888'	Separator line colour.
linewidth	1	Width of separator line.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	2	Padding on either side of separator.
size_percent	80	Size as a percentage of bar size (0-100).

2.4.51 She

class libqtile.widget.**She**(***config*)

Widget to display the Super Hybrid Engine status

Can display either the mode or CPU speed on eeepc computers.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
device	'/sys/devices/platform/eeepc/cpufv'	sys path to cpufv
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'speed'	Type of info to display "speed" or "name"
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	0.5	Update Time in seconds.

2.4.52 Spacer

class libqtile.widget.**Spacer**(*length=STRETCH*, ***config*)

Just an empty space on the bar

Often used with length equal to bar.STRETCH to push bar widgets to the right or bottom edge of the screen.

Parameters

length Length of the widget. Can be either `bar.STRETCH` or a length in pixels.

width DEPRECATED, same as `length`.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.

2.4.53 StatusNotifier

class libqtile.widget.**StatusNotifier**(***config*)

A 'system tray' widget using the freedesktop StatusNotifierItem specification.

As per the specification, app icons are first retrieved from the user's current theme. If this is not available then the app may provide its own icon. In order to use this functionality, users are recommended to install the xdg module to support retrieving icons from the selected theme.

Letf-clicking an icon will trigger an activate event.

Note: Context menus are not currently supported by the official widget. However, a modded version of the widget which provides basic menu support is available from elParaguayo's qtile-extras repo.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
icon_size	16	Icon width
icon_theme	None	Name of theme to use for app icons
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	3	Padding between icons

2.4.54 StockTicker

class libqtile.widget.**StockTicker**(***config*)

A stock ticker widget, based on the alphavantage API. Users must acquire an API key from https://www.alphavantage.co/support/#api-key

The widget defaults to the TIME_SERIES_INTRADAY API function (i.e. stock symbols), but arbitrary Alpha Vantage API queries can be made by passing extra arguments to the constructor.

```
# Display AMZN
widget.StockTicker(apikey=..., symbol="AMZN")

# Display BTC
widget.StockTicker(
    apikey=..., function="DIGITAL_CURRENCY_INTRADAY", symbol="BTC", market="USD"
)
```

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
data	None	Post Data
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
function	'TIME_SERIES_INTRADAY'	The default API function to query
headers	{}	Extra Headers
interval	'1min'	The default latency to query
json	True	Is Json?
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
update_interval	600	Update interval in seconds, if none, the widget updates whenever it's done.
url	None	Url
user_agent	'Qtile'	Set the user agent
xml	False	Is XML?

2.4.55 SwapGraph

class libqtile.widget.**SwapGraph**(***config*)

Display a swap info graph.

Widget requirements: psutil.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border_color	'215578'	Widget border color
border_width	2	Widget border width
fill_color	'1667EB.3'	Fill color for linefill graph
frequency	1	Update frequency in seconds
graph_color	'18BAEB'	Graph color
line_width	3	Line width
margin_x	3	Margin X
margin_y	3	Margin Y
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
samples	100	Count of graph samples.
start_pos	'bottom'	Drawer starting position ('bottom'/'top')
type	'linefill'	'box', 'line', 'linefill'

2.4.56 Systray

class libqtile.widget.**Systray**(***config*)

A widget that manages system tray.

Only one Systray widget is allowed. Adding additional Systray widgets will result in a ConfigError.

Note: Icons will not render correctly where the bar/widget is drawn with a semi-transparent background. Instead, icons will be drawn with a transparent background.

If using this widget it is therefore recommended to use a fully opaque background colour or a fully transparent one.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
icon_size	20	Icon width
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	5	Padding between icons

2.4.57 TaskList

class libqtile.widget.**TaskList**(***config*)

Displays the icon and name of each window in the current group

Contrary to WindowTabs this is an interactive widget. The window that currently has focus is highlighted.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
border	'215578'	Border colour
borderwidth	2	Current group border width
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
highlight_method	'border'	Method of highlighting (one of 'border' or 'block') Uses *_*_border* color settings
icon_size	None	Icon size. (Calculated if set to None. Icons are hidden if set to 0.)
margin	3	Margin inside the box
margin_x	None	X Margin. Overrides 'margin' if set
margin_y	None	Y Margin. Overrides 'margin' if set
markup_floating	None	Text markup of the floating window state. Supports pangomarkup with markup=True.e.g., "{}" or "{}"
markup_focused	None	Text markup of the focused window state. Supports pangomarkup with markup=True.e.g., "{}" or "{}"
markup_maximized	None	Text markup of the maximized window state. Supports pangomarkup with markup=True.e.g., "{}" or "{}"
markup_minimized	None	Text markup of the minimized window state. Supports pangomarkup with markup=True.e.g., "{}" or "{}"
markup_normal	None	Text markup of the normal window state. Supports pangomarkup with markup=True.e.g., "{}" or "{}"
max_title_width	None	Max size in pixels of task title.(if set to None, as much as available.)
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	3	Padding inside the box
padding_x	None	X Padding. Overrides 'padding' if set
padding_y	None	Y Padding. Overrides 'padding' if set
parse_text	None	Function to parse and modify window names. e.g. function in config that removes excess strings from window name: def my_func(text) for string in [" - Chromium", " - Firefox"]: text = text.replace(string, "") return textthen set option parse_text=my_func
rounded	True	To round or not to round borders
spacing	None	Spacing between tasks.(if set to None, will be equal to margin_x)

continues on next page

Table 2 – continued from previous page

key	default	description
title_width_method	None	Method to compute the width of task title. (None, 'uniform'.)Defaults to None, the normal behaviour.
txt_floating	'V '	Text representation of the floating window state. e.g., "V " or " "
txt_maximized	'[] '	Text representation of the maximized window state. e.g., "[] " or " "
txt_minimized	'_ '	Text representation of the minimized window state. e.g., "_ " or " "
unfocused_border	None	Border color for unfocused windows. Affects only hightlight_method 'border' and 'block'. Defaults to None, which means no special color.
urgent_alert_method	'border'	Method for alerting you of WM urgent hints (one of 'border' or 'text')
urgent_border	'FF0000'	Urgent border color

2.4.58 TextBox

class libqtile.widget.**TextBox**(*text=' '*, *width=CALCULATED*, ***config*)

A flexible textbox that can be updated from bound keys, scripts, and qshell.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Text font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font pixel size. Calculated if None.
foreground	'#ffffff'	Foreground colour.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	None	Padding left and right. Calculated if None.

2.4.59 ThermalSensor

class libqtile.widget.**ThermalSensor**(***config*)

Widget to display temperature sensor information

For using the thermal sensor widget you need to have lm-sensors installed. You can get a list of the tag_sensors executing "sensors" in your terminal. Then you can choose which you want, otherwise it will display the first available.

Widget requirements: psutil.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
foreground_alert	'ff0000'	Foreground colour alert
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
metric	True	True to use metric/C, False to use imperial/F
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
show_tag	False	Show tag sensor
tag_sensor	None	Tag of the temperature sensor. For example: "temp1" or "Core 0"
threshold	70	If the current temperature value is above, then change to foreground_alert colour
update_interval	2	Update interval in seconds

2.4.60 ThermalZone

class libqtile.widget.**ThermalZone**(***config*)

Thermal zone widget.

This widget was made to read thermal zone files and transform values to human readable format. You can set zone parameter to any standard thermal zone file from /sys/class/thermal directory.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
crit	70	Critical temperature level
fgcolor_crit	'ff0000'	Font color on critical values
fgcolor_high	'ffaa00'	Font color on high values
fgcolor_normal	'ffffff'	Font color on normal values
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{temp}°C'	Display format
format_crit	'{temp}°C CRIT!'	Critical display format
hidden	False	Set True to only show if critical value reached
high	50	High themperature level
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	2.0	Update interval
zone	'/sys/class/thermal/thermal_zone0/temp'	Thermal zone

2.4.61 Volume

class libqtile.widget.**Volume**(***config*)

Widget that display and change volume

By default, this widget uses `amixer` to get and set the volume so users will need to make sure this is installed. Alternatively, users may set the relevant parameters for the widget to use a different application.

If theme_path is set it draw widget as icons.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
cardid	None	Card Id
channel	'Master'	Channel
device	'default'	Device Name
emoji	False	Use emoji to display volume states, only if theme_path is not set.The specified font needs to contain the correct unicode characters.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
get_volume_command	None	Command to get the current volume
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
mute_command	None	Mute command
padding	3	Padding left and right. Calculated if None.
step	2	Volume change for up an down commands in percentage.Only used if volume_up_command and volume_down_command are not set.
theme_path	None	Path of the icons
update_interval	0.2	Update time in seconds.
volume_app	None	App to control volume
volume_down_command	None	Volume down command
volume_up_command	None	Volume up command

2.4.62 Wallpaper

class libqtile.widget.**Wallpaper**(***config*)

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
directory	'~/Pictures/wallpapers/'	Wallpaper Directory
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
label	None	Use a fixed label instead of image name.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
option	'fill'	How to fit the wallpaper when wallpaper_command isNone. None, 'fill' or 'stretch'.
padding	None	Padding. Calculated if None.
random_selection	False	If set, use random initial wallpaper and randomly cycle through the wallpapers.
wallpaper	None	Wallpaper
wallpaper_command	['feh', '--bg-fill']	Wallpaper command. If None, thewallpaper will be painted without the use of a helper.

2.4.63 WidgetBox

class libqtile.widget.**WidgetBox**(*widgets: Optional[list] = None*, ***config*)

A widget to declutter your bar.

WidgetBox is a widget that hides widgets by default but shows them when the box is opened.

Widgets that are hidden will still update etc. as if they were on the main bar.

Button clicks are passed to widgets when they are visible so callbacks will work.

Widgets in the box also remain accessible via command interfaces.

Widgets can only be added to the box via the configuration file. The widget is configured by adding widgets to the "widgets" parameter as follows:

```
widget.WidgetBox(widgets=[
    widget.TextBox(text="This widget is in the box"),
    widget.Memory()
    ]
),
```

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
close_button_location	'left'	Location of close button when box open ('left' or 'right')
font	'sans'	Text font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font pixel size. Calculated if None.
foreground	'#ffffff'	Foreground colour.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
text_closed	'[<]'	Text when box is closed
text_open	'[>]'	Text when box is open

2.4.64 WindowCount

class libqtile.widget.**WindowCount**(*text=' '*, *width=CALCULATED*, ***config*)

A simple widget to display the number of windows in the current group of the screen on which the widget is.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Text font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font pixel size. Calculated if None.
foreground	'#ffffff'	Foreground colour.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding left and right. Calculated if None.
show_zero	False	Show window count when no windows
text_format	'{num}'	Format for message

2.4.65 WindowName

class libqtile.widget.**WindowName**(*width=STRETCH*, ***config*)

Displays the name of the window that currently has focus

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
empty_group_string	' '	string to display when no windows are focused on current group
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
for_current_screen	False	instead of this bars screen use currently active screen
foreground	'ffffff'	Foreground colour
format	'{state}{name}'	format of the text
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse_text	None	Function to parse and modify window names. e.g. function in config that removes excess strings from window name: def my_func(text) for string in [" - Chromium", " - Firefox"]: text = text.replace(string, "") return textthen set option parse_text=my_func

2.4.66 WindowTabs

class libqtile.widget.**WindowTabs**(***config*)

Displays the name of each window in the current group. Contrary to TaskList this is not an interactive widget. The window that currently has focus is highlighted.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
parse_text	None	Function to parse and modify window names. e.g. function in config that removes excess strings from window name: def my_func(text) for string in [" - Chromium", " - Firefox"]: text = text.replace(string, "") return textthen set option parse_text=my_func
selected	('', '')	Selected task indicator
separator	' | '	Task separator text.

2.4.67 Wlan

class libqtile.widget.**Wlan**(***config*)

Displays Wifi SSID and quality.

Widget requirements: iwlib.

Supported bar orientations: horizontal only

key	default	description
background	None	Widget background color
disconnected_message	'Disconnected'	String to show when the wlan is diconnected.
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'{essid} {quality}/70'	Display format. For percents you can use "{essid} {percent:2.0%}"
interface	'wlan0'	The interface to monitor
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and lazy calls.
padding	None	Padding. Calculated if None.
update_interval	1	The update interval.

2.4.68 Wttr

class libqtile.widget.**Wttr**(***config*)

Display weather widget provided by wttr.in.

To specify your own custom output format, use the special %-notation (example: 'My_city: %t(%f), wind: %w'):

- %c Weather condition,
- %C Weather condition textual name,
- %h Humidity,
- %t Temperature (Actual),
- %f Temperature (Feels Like),
- %w Wind,
- %l Location,
- %m Moonphase ,
- %M Moonday,
- %p precipitation (mm),
- %P pressure (hPa),
- %D Dawn !,
- %S Sunrise !,

- %z Zenith !,
- %s Sunset !,
- %d Dusk !. (!times are shown in the local timezone)

Add the character ~ at the beginning to get weather for some special location: `~Vostok Station` or `~Eiffel Tower`.

Also can use IP-addresses (direct) or domain names (prefixed with @) to specify a location: `@github.com`, `123.456.678.123`

Specify multiple locations as dictionary

```
location={
    'Minsk': 'Minsk',
    '64.127146,-21.873472': 'Reykjavik',
}
```

Cities will change randomly every update.

Supported bar orientations: horizontal and vertical

key	default	description
background	None	Widget background color
data	None	Post Data
fmt	'{}'	How to format the text
font	'sans'	Default font
fontshadow	None	font shadow color, default is None(no shadow)
fontsize	None	Font size. Calculated if None.
foreground	'ffffff'	Foreground colour
format	'3'	Display text format. Choose presets in range 1-4 (Ex. "1") or build your own custom output format, use the special %-notation. See https://github.com/chubin/wttr.in#one-line-output
headers	{}	Extra Headers
json	False	Is Json?
lang	'en'	Display text language. List of supported languages https://wttr.in/:translation
location	None	Dictionary. Key is a city or place name, or GPS coordinates. Value is a display name.
markup	True	Whether or not to use pango markup
max_chars	0	Maximum number of characters to display in widget.
mouse_callbacks	{}	Dict of mouse button press callback functions. Acceps functions and `lazy` calls.
padding	None	Padding. Calculated if None.
parse	None	Parse Function
units	'm'	'm' - metric, 'M' - show wind speed in m/s, 'u' - United States units
update_interval	600	Update interval in seconds. Recommendation: if you want to display multiple locations alternately, maybe set a smaller interval, ex. 30.
url	None	Url
user_agent	'Qtile'	Set the user agent
xml	False	Is XML?

2.5 Default Config File

```
# Copyright (c) 2010 Aldo Cortesi
# Copyright (c) 2010, 2014 dequis
# Copyright (c) 2012 Randall Ma
# Copyright (c) 2012-2014 Tycho Andersen
# Copyright (c) 2012 Craig Barnes
# Copyright (c) 2013 horsik
# Copyright (c) 2013 Tao Sauvage
#
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# in the Software without restriction, including without limitation the rights
# to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
# copies of the Software, and to permit persons to whom the Software is
# furnished to do so, subject to the following conditions:
#
# The above copyright notice and this permission notice shall be included in
# all copies or substantial portions of the Software.
#
# THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
# IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
# FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
# AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
# LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
# OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
# SOFTWARE.

from typing import List  # noqa: F401

from libqtile import bar, layout, widget
from libqtile.config import Click, Drag, Group, Key, Match, Screen
from libqtile.lazy import lazy
from libqtile.utils import guess_terminal

mod = "mod4"
terminal = guess_terminal()

keys = [
    # A list of available commands that can be bound to keys can be found
    # at https://docs.qtile.org/en/latest/manual/config/lazy.html
    # Switch between windows
    Key([mod], "h", lazy.layout.left(), desc="Move focus to left"),
    Key([mod], "l", lazy.layout.right(), desc="Move focus to right"),
    Key([mod], "j", lazy.layout.down(), desc="Move focus down"),
    Key([mod], "k", lazy.layout.up(), desc="Move focus up"),
    Key([mod], "space", lazy.layout.next(), desc="Move window focus to other window"),
    # Move windows between left/right columns or move up/down in current stack.
    # Moving out of range in Columns layout will create new column.
    Key([mod, "shift"], "h", lazy.layout.shuffle_left(), desc="Move window to the left"),
    Key([mod, "shift"], "l", lazy.layout.shuffle_right(), desc="Move window to the right
↪"),
```

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```
    Key([mod, "shift"], "j", lazy.layout.shuffle_down(), desc="Move window down"),
    Key([mod, "shift"], "k", lazy.layout.shuffle_up(), desc="Move window up"),
    # Grow windows. If current window is on the edge of screen and direction
    # will be to screen edge - window would shrink.
    Key([mod, "control"], "h", lazy.layout.grow_left(), desc="Grow window to the left"),
    Key([mod, "control"], "l", lazy.layout.grow_right(), desc="Grow window to the right
↪"),
    Key([mod, "control"], "j", lazy.layout.grow_down(), desc="Grow window down"),
    Key([mod, "control"], "k", lazy.layout.grow_up(), desc="Grow window up"),
    Key([mod], "n", lazy.layout.normalize(), desc="Reset all window sizes"),
    # Toggle between split and unsplit sides of stack.
    # Split = all windows displayed
    # Unsplit = 1 window displayed, like Max layout, but still with
    # multiple stack panes
    Key(
        [mod, "shift"],
        "Return",
        lazy.layout.toggle_split(),
        desc="Toggle between split and unsplit sides of stack",
    ),
    Key([mod], "Return", lazy.spawn(terminal), desc="Launch terminal"),
    # Toggle between different layouts as defined below
    Key([mod], "Tab", lazy.next_layout(), desc="Toggle between layouts"),
    Key([mod], "w", lazy.window.kill(), desc="Kill focused window"),
    Key([mod, "control"], "r", lazy.reload_config(), desc="Reload the config"),
    Key([mod, "control"], "q", lazy.shutdown(), desc="Shutdown Qtile"),
    Key([mod], "r", lazy.spawncmd(), desc="Spawn a command using a prompt widget"),
]

groups = [Group(i) for i in "123456789"]

for i in groups:
    keys.extend(
        [
            # mod1 + letter of group = switch to group
            Key(
                [mod],
                i.name,
                lazy.group[i.name].toscreen(),
                desc="Switch to group {}".format(i.name),
            ),
            # mod1 + shift + letter of group = switch to & move focused window to group
            Key(
                [mod, "shift"],
                i.name,
                lazy.window.togroup(i.name, switch_group=True),
                desc="Switch to & move focused window to group {}".format(i.name),
            ),
            # Or, use below if you prefer not to switch to that group.
            # # mod1 + shift + letter of group = move focused window to group
            # Key([mod, "shift"], i.name, lazy.window.togroup(i.name),
            #     desc="move focused window to group {}".format(i.name)),
```

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```
        ]
    )

layouts = [
    layout.Columns(border_focus_stack=["#d75f5f", "#8f3d3d"], border_width=4),
    layout.Max(),
    # Try more layouts by unleashing below layouts.
    # layout.Stack(num_stacks=2),
    # layout.Bsp(),
    # layout.Matrix(),
    # layout.MonadTall(),
    # layout.MonadWide(),
    # layout.RatioTile(),
    # layout.Tile(),
    # layout.TreeTab(),
    # layout.VerticalTile(),
    # layout.Zoomy(),
]

widget_defaults = dict(
    font="sans",
    fontsize=12,
    padding=3,
)
extension_defaults = widget_defaults.copy()

screens = [
    Screen(
        bottom=bar.Bar(
            [
                widget.CurrentLayout(),
                widget.GroupBox(),
                widget.Prompt(),
                widget.WindowName(),
                widget.Chord(
                    chords_colors={
                        "launch": ("#ff0000", "#ffffff"),
                    },
                    name_transform=lambda name: name.upper(),
                ),
                widget.TextBox("default config", name="default"),
                widget.TextBox("Press &lt;M-r&gt; to spawn", foreground="#d75f5f"),
                widget.Systray(),
                widget.Clock(format="%Y-%m-%d %a %I:%M %p"),
                widget.QuickExit(),
            ],
            24,
            # border_width=[2, 0, 2, 0],  # Draw top and bottom borders
            # border_color=["ff00ff", "000000", "ff00ff", "000000"]  # Borders are␣
↪magenta
        ),
    ),
```

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```
]

# Drag floating layouts.
mouse = [
    Drag([mod], "Button1", lazy.window.set_position_floating(), start=lazy.window.get_
↪position()),
    Drag([mod], "Button3", lazy.window.set_size_floating(), start=lazy.window.get_
↪size()),
    Click([mod], "Button2", lazy.window.bring_to_front()),
]

dgroups_key_binder = None
dgroups_app_rules = []  # type: List
follow_mouse_focus = True
bring_front_click = False
cursor_warp = False
floating_layout = layout.Floating(
    float_rules=[
        # Run the utility of `xprop` to see the wm class and name of an X client.
        *layout.Floating.default_float_rules,
        Match(wm_class="confirmreset"),  # gitk
        Match(wm_class="makebranch"),  # gitk
        Match(wm_class="maketag"),  # gitk
        Match(wm_class="ssh-askpass"),  # ssh-askpass
        Match(title="branchdialog"),  # gitk
        Match(title="pinentry"),  # GPG key password entry
    ]
)
auto_fullscreen = True
focus_on_window_activation = "smart"
reconfigure_screens = True

# If things like steam games want to auto-minimize themselves when losing
# focus, should we respect this or not?
auto_minimize = True

# XXX: Gasp! We're lying here. In fact, nobody really uses or cares about this
# string besides java UI toolkits; you can see several discussions on the
# mailing lists, GitHub issues, and other WM documentation that suggest setting
# this string if your java app doesn't work correctly. We may as well just lie
# and say that we're a working one by default.
#
# We choose LG3D to maximize irony: it is a 3D non-reparenting WM written in
# java that happens to be on java's whitelist.
wmname = "LG3D"
```

CHAPTER

THREE

ADVANCED SCRIPTING

3.1 Scripting

3.1.1 Client-Server Scripting Model

Qtile has a client-server control model - the main Qtile instance listens on a named pipe, over which marshalled command calls and response data is passed. This allows Qtile to be controlled fully from external scripts. Remote interaction occurs through an instance of the `libqtile.command.interface.IPCCommandInterface` class. This class establishes a connection to the currently running instance of Qtile. A `libqtile.command.client.InteractiveCommandClient` can use this connection to dispatch commands to the running instance. Commands then appear as methods with the appropriate signature on the `InteractiveCommandClient` object. The object hierarchy is described in the *Commands API* section of this manual. Full command documentation is available through the *Qtile Shell*.

3.1.2 Example

Below is a very minimal example script that inspects the current Qtile instance, and returns the integer offset of the current screen.

```
from libqtile.command.client import InteractiveCommandClient
c = InteractiveCommandClient()
print(c.screen.info()["index"])
```

3.2 Commands API

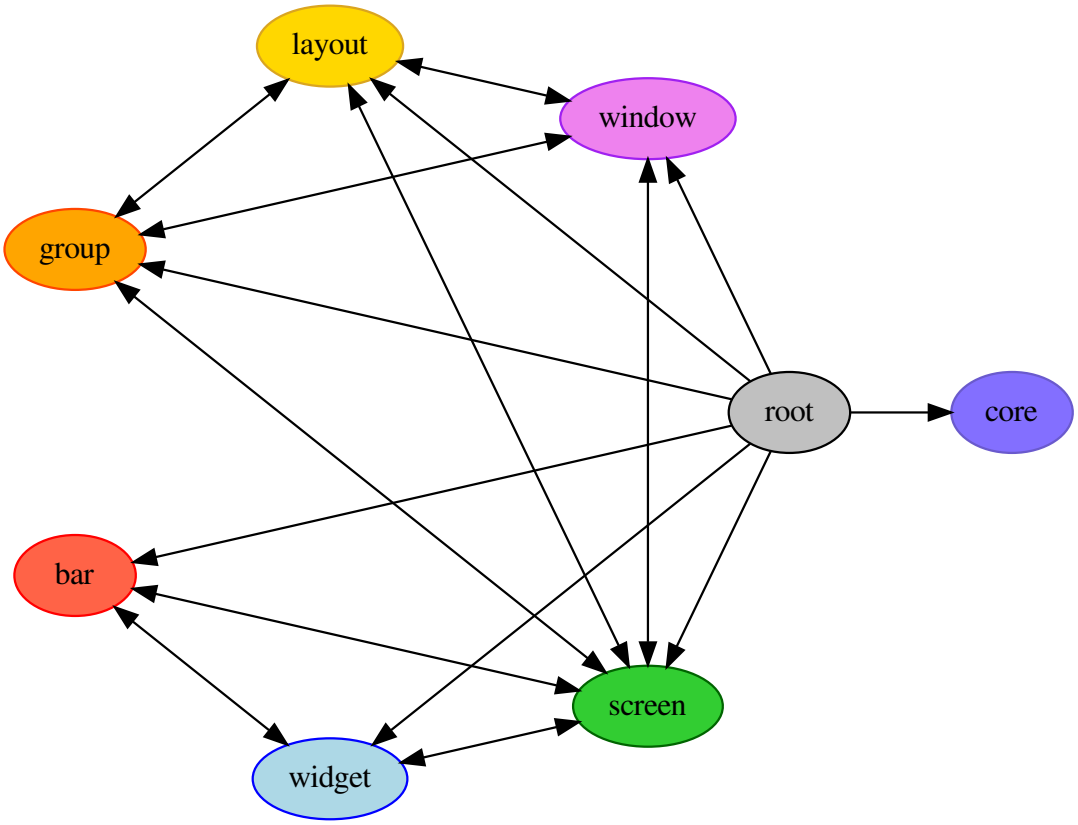
Qtile's command API is based on a graph of objects, where each object has a set of associated commands. The graph and object commands are used in a number of different places:

- Commands can be *bound to keys* in the Qtile configuration file.
- Commands can be *called through qtile shell*, the Qtile shell.
- The shell can also be hooked into a Jupyter kernel *called iqshell*.
- Commands can be *called from a script* to interact with Qtile from Python.

If the explanation below seems a bit complex, please take a moment to explore the API using the `qtile shell` command shell. Command lists and detailed documentation can be accessed from its built-in help command.

3.2.1 Introduction: Object Graph

The objects in Qtile's object graph come in seven flavours, matching the seven basic components of the window manager: `layouts`, `windows`, `groups`, `bars`, `widgets`, `screens`, and a special `root` node. Objects are addressed by a path specification that starts at the root, and follows the edges of the graph. This is what the graph looks like:



Each arrow can be read as "holds a reference to". So, we can see that a `widget` object *holds a reference to* objects of type `bar`, `screen` and `group`. Lets start with some simple examples of how the addressing works. Which particular objects we hold reference to depends on the context - for instance, widgets hold a reference to the screen that they appear on, and the bar they are attached to.

Lets look at an example, starting at the root node. The following script runs the `status` command on the root node, which, in this case, is represented by the `InteractiveCommandClient` object:

```
from libqtile.command.client import InteractiveCommandClient
c = InteractiveCommandClient()
print(c.status())
```

The `InteractiveCommandClient` is a class that allows us to traverse the command graph using attributes to select child nodes or commands. In this example, we have resolved the `status()` command on the root object. The interactive command client will automatically find and connect to a running Qtile instance, and which it will use to dispatch the call and print out the return.

An alternative is to use the `CommandClient`, which allows for a more precise resolution of command graph objects,

but is not as easy to interact with from a REPL:

```
from libqtile.command.client import CommandClient
c = CommandClient()
print(c.call("status")())
```

Like the interactive client, the command client will automatically connect to a running Qtile instance. Here, we first resolve the `status()` command with the `.call("status")`, which simply located the function, then we can invoke the call with no arguments.

For the rest of this example, we will use the interactive command client. From the graph, we can see that the root node holds a reference to `group` nodes. We can access the "info" command on the current group like so:

```
c.group.info()
```

To access a specific group, regardless of whether or not it is current, we use the Python mapping lookup syntax. This command sends group "b" to screen 1 (by the `libqtile.config.Group.to_screen()` method):

```
c.group["b"].to_screen(1)
```

In different contexts, it is possible to access a default object, where in other contexts a key is required. From the root of the graph, the current `group`, `layout`, `screen` and `window` can be accessed by simply leaving the key specifier out. The key specifier is mandatory for `widget` and `bar` nodes.

With this context, we can now drill down deeper in the graph, following the edges in the graphic above. To access the screen currently displaying group "b", we can do this:

```
c.group["b"].screen.info()
```

Be aware, however, that group "b" might not currently be displayed. In that case, it has no associated screen, the path resolves to a non-existent node, and we get an exception:

```
libqtile.command.CommandError: No object screen in path 'group['b'].screen'
```

The graph is not a tree, since it can contain cycles. This path (redundantly) specifies the group belonging to the screen that belongs to group "b":

```
c.group["b"].screen.group
```

This amout of connectivity makes it easy to reach out from a given object when callbacks and events fire on that object to related objects.

3.2.2 Keys

The key specifier for the various object types are as follows:

Object	Key	Optional?	Example
bar	"top", "bottom"	No	c.screen.bar["bottom"]
group	Name string	Yes	c.group["one"] c.group
layout	Integer index	Yes	c.layout[2] c.layout
screen	Integer index	Yes	c.screen[1] c.screen
widget	Widget name	No	c.widget["textbox"]
window	Integer window ID	Yes	c.window[123456] c.window

3.2.3 Digging Deeper: Command Objects

If you just want to script your Qtile window manager the above information, in addition to the documentation on the *various scripting commands* should be enough to get started. To develop the Qtile manager itself, we can dig into how Qtile represents these objects, which will lead to the way the commands are dispatched.

All of the configured objects setup by Qtile are `CommandObject` subclasses. These objects are so named because we can issue commands against them using the command scripting API. Looking through the code, the commands that are exposed are commands named `cmd_*`. When writing custom layouts, widgets, or any other object, you can add your own custom `cmd_` functions and they will be callable using the standard command infrastructure. An available command can be extracted by calling `.command()` with the name of the command.

In addition to having a set of associated commands, each command object also has a collection of items associated with it. This is what forms the graph that is shown above. For a given object type, the `items()` method returns all of the names of the associated objects of that type and whether or not there is a defaultable value. For example, from the root, `.items("group")` returns the name of all of the groups and that there is a default value, the currently focused group.

To navigate from one command object to the next, the `.select()` method is used. This method resolves a requested object from the command graph by iteratively selecting objects. A selector like `[("group", "b"), ("screen", None)]` would be to first resolve group "b", then the screen associated to the group.

3.2.4 The Command Graph

In order to help in specifying command objects, there is the abstract command graph structure. The command graph structure allows us to address any valid command object and issue any command against it without needing to have any Qtile instance running or have anything to resolve the objects to. This is particularly useful when constructing lazy calls, where the Qtile instance does not exist to specify the path that will be resolved when the command is executed. The only limitation of traversing the command graph is that it must follow the allowed edges specified in the first section above.

Every object in the command graph is represented by a `CommandGraphNode`. Any call can be resolved from a given node. In addition, each node knows about all of the children objects that can be reached from it and have the ability to `.navigate()` to the other nodes in the command graph. Each of the object types are represented as `CommandGraphObject` types and the root node of the graph, the `CommandGraphRoot` represents the Qtile instance. When a call is performed on an object, it returns a `CommandGraphCall`. Each call will know its own name as well as be able to resolve the path through the command graph to be able to find itself.

Note that the command graph itself can standalone, there is no other functionality within Qtile that it relies on. While we could have started here and built up, it is helpful to understand the objects that the graph is meant to represent, as the graph is just a representation of a traversal of the real objects in a running Qtile window manager. In order to tie the running Qtile instance to the abstract command graph, we move on to the command interface.

3.2.5 Executing graph commands: Command Interface

The `CommandInterface` is what lets us take an abstract call on the command graph and resolve it against a running command object. Put another way, this is what takes the graph traversal `.group["b"].screen.info()` and executes the `info()` command against the addressed `screen` object. Additional functionality can be used to check that a given traversal resolves to actual objcets and that the requested command actually exists. Note that by construction of the command graph, the traversals here must be feasible, even if they cannot be resolved for a given configuration state. For example, it is possible to check the screen assoctiated to a group, even though the group may not be on a screen, but it is not possible to check the widget associated to a group.

The simplest form of the command interface is the `QtileCommandInterface`, which can take an in-process `Qtile` instance as the root `CommandObject` and execute requested commands. This is typically how we run the unit tests for Qtile.

The other primary example of this is the `IPCCommandInterface` which is able to then route all calls through an IPC client connected to a running Qtile instance. In this case, the command graph call can be constructed on the client side without having to dispatch to Qtile and once the call is constructed and deemed valid, the call can be executed.

In both of these cases, executing a command on a command interface will return the result of executing the command on a running Qtile instance. To support lazy execution, the `LazyCommandInterface` instead returns a `LazyCall` which is able to be resolved later by the running Qtile instance when it is configured to fire.

3.2.6 Tying it together: Command Client

So far, we have our running Command Objects and the Command Interface to dispatch commands against these objects as well as the Command Graph structure itself which encodes how to traverse the connections between the objects. The final component which ties everything together is the Command Client, which allows us to navigate through the graph to resolve objects, find their associated commands, and execute the commands against the held command interface.

The idea of the command client is that it is created with a reference into the command graph and a command interface. All navigation can be done against the command graph, and traversal is done by creating a new command client starting from the new node. When a command is executed against a node, that command is dispatched to the held command interface. The key decision here is how to perform the traversal. The command client exists in two different flavors: the standard `CommandClient` which is useful for handling more programatic traversal of the graph, calling methods to

traverse the graph, and the `InteractiveCommandClient` which behaves more like a standard Python object, traversing by accessing properties and performing key lookups.

Returning to our examples above, we now have the full context to see what is going on when we call:

```
from libqtile.command.client import CommandClient
c = CommandClient()
print(c.call("status")())
from libqtile.command.client import InteractiveCommandClient
c = InteractiveCommandClient()
print(c.status())
```

In both cases, the command clients are constructed with the default command interface, which sets up an IPC connection to the running Qtile instance, and starts the client at the graph root. When we call `c.call("status")` or `c.status`, we navigate the command client to the `status` command on the root graph object. When these are invoked, the commands graph calls are dispatched via the IPC command interface and the results then sent back and printed on the local command line.

The power that can be realized by separating out the traversal and resolution of objects in the command graph from actually invoking or looking up any objects within the graph can be seen in the `lazy` module. By creating a lazy evaluated command client, we can expose the graph traversal and object resolution functionality via the same `InteractiveCommandClient` that is used to perform live command execution in the Qtile prompt.

3.3 Scripting Commands

Here is documented some of the commands available on objects in the command tree when running `qtile shell` or scripting commands to qtile. Note that this is an incomplete list, some objects, such as *layouts* and *widgets*, may implement their own set of commands beyond those given here.

3.3.1 Qtile

class libqtile.core.manager.**Qtile**(*kore: base.Core*, *config*, *no_spawn: bool = False*, *state: Optional[str] = None*, *socket_path: Optional[str] = None*)

This object is the *root* of the command graph

cmd_add_rule(*match_args: Dict[str, Any]*, *rule_args: Dict[str, Any]*, *min_priorty: bool = False*)

Add a dgroup rule, returns rule_id needed to remove it

Parameters

match_args config.Match arguments

rule_args config.Rule arguments

min_priorty If the rule is added with minimum priority (last) (default: False)

cmd_addgroup(*group: str*, *label: Optional[str] = None*, *layout: Optional[str] = None*, *layouts: Optional[List[Layout]] = None*) → bool

Add a group with the given name

cmd_commands() → List[str]

Returns a list of possible commands for this object

Used by __qsh__ for command completion and online help

cmd_critical() → None

Set log level to CRITICAL

cmd_debug() → None
Set log level to DEBUG

cmd_delgroup(*group: str*) → None
Delete a group with the given name

cmd_display_kb(**args*) → str
Display table of key bindings

cmd_doc(*name*) → str
Returns the documentation for a specified command name

Used by __qsh__ to provide online help.

cmd_error() → None
Set log level to ERROR

cmd_eval(*code: str*) → Tuple[bool, Optional[str]]
Evaluates code in the same context as this function

Return value is tuple *(success, result)*, success being a boolean and result being a string representing the return value of eval, or None if exec was used instead.

cmd_findwindow(*prompt: str = 'window'*, *widget: str = 'prompt'*) → None
Launch prompt widget to find a window of the given name

Parameters

prompt Text with which to prompt user (default: "window")

widget Name of the prompt widget (default: "prompt")

cmd_function(*function*, **args*, ***kwargs*) → None
Call a function with current object as argument

cmd_get_state() → str
Get pickled state for restarting qtile

cmd_get_test_data() → Any
Returns any content arbitrarily set in the self.test_data attribute. Useful in tests.

cmd_groups() → Dict[str, Dict[str, Any]]
Return a dictionary containing information for all groups

Examples

groups()

cmd_hide_show_bar(*position: Literal['top', 'bottom', 'left', 'right', 'all'] = 'all'*) → None
Toggle visibility of a given bar

Parameters

position one of: "top", "bottom", "left", "right", or "all" (default: "all")

cmd_info() → None
Set log level to INFO

cmd_internal_windows() → List[Dict[str, Any]]
Return info for each internal window (bars, for example)

cmd_items(*name*) → Tuple[bool, Optional[List[Union[str, int]]]]
Returns a list of contained items for the specified name

Used by __qsh__ to allow navigation of the object graph.

cmd_labelgroup(*prompt: str = 'label'*, *widget: str = 'prompt'*) → None
Launch prompt widget to label the current group

Parameters

prompt Text with which to prompt user (default: "label")

widget Name of the prompt widget (default: "prompt")

cmd_list_widgets() → List[str]
List of all addressible widget names

cmd_loglevel() → int

cmd_loglevelname() → str

cmd_next_layout(*name: Optional[str] = None*) → None
Switch to the next layout.

Parameters

name Group name. If not specified, the current group is assumed

cmd_next_screen() → None
Move to next screen

cmd_next_urgent() → None
Focus next window with urgent hint

cmd_pause() → None
Drops into pdb

cmd_prev_layout(*name: Optional[str] = None*) → None
Switch to the previous layout.

Parameters

name Group name. If not specified, the current group is assumed

cmd_prev_screen() → None
Move to the previous screen

cmd_qtile_info() → Dict
Returns a dictionary of info on the Qtile instance

cmd_qtilecmd(*prompt: str = 'command'*, *widget: str = 'prompt'*, *messenger: str = 'xmessage'*) → None
Execute a Qtile command using the client syntax

Tab completion aids navigation of the command tree

Parameters

prompt Text to display at the prompt (default: "command: ")

widget Name of the prompt widget (default: "prompt")

messenger Command to display output, set this to None to disable (default: "xmessage")

cmd_reconfigure_screens(*ev: Any = None*) → None
This can be used to set up screens again during run time. Intended usage is to be called when the screen_change hook is fired, responding to changes in physical monitor setup by configuring qtile.screens accordingly. The ev kwarg is ignored; it is here in case this function is hooked directly to screen_change.

cmd_reload_config() → None
Reload the configuration file.

Can also be triggered by sending Qtile a SIGUSR1 signal.

cmd_remove_rule(*rule_id: int*) → None
Remove a dgroup rule by rule_id

cmd_restart() → None
Restart Qtile.

Can also be triggered by sending Qtile a SIGUSR2 signal.

cmd_run_extension(*extension: libqtile.extension.base._Extension*) → None
Run extensions

cmd_screens() → List[Dict[str, Any]]
Return a list of dictionaries providing information on all screens

cmd_shutdown() → None
Quit Qtile

cmd_simulate_keypress(*modifiers*, *key*) → None
Simulates a keypress on the focused window.

Parameters

modifiers A list of modifier specification strings. Modifiers can be one of "shift", "lock", "control" and "mod1" - "mod5".

key Key specification.

Examples

simulate_keypress(["control", "mod2"], "k")

cmd_spawn(*cmd: Union[str, List[str]]*, *shell: bool = False*) → int
Run cmd, in a shell or not (default).

cmd may be a string or a list (similar to subprocess.Popen).

Examples

spawn("firefox")

spawn(["xterm", "-T", "Temporary terminal"])

cmd_spawncmd(*prompt: str = 'spawn'*, *widget: str = 'prompt'*, *command: str = '%s'*, *complete: str = 'cmd'*, *shell: bool = True*, *aliases: Optional[Dict[str, str]] = None*) → None
Spawn a command using a prompt widget, with tab-completion.

Parameters

prompt Text with which to prompt user (default: "spawn: ").

widget Name of the prompt widget (default: "prompt").

command command template (default: "%s").

complete Tab completion function (default: "cmd")

shell Execute the command with /bin/sh (default: True)

aliases Dictionary mapping aliases to commands. If the entered command is a key in this dict, the command it maps to will be executed instead.

cmd_status() → Literal['OK']
Return "OK" if Qtile is running

cmd_switch_groups(*namea: str*, *nameb: str*) → None
Switch position of two groups by name

cmd_switchgroup(*prompt: str = 'group'*, *widget: str = 'prompt'*) → None
Launch prompt widget to switch to a given group to the current screen

Parameters

prompt Text with which to prompt user (default: "group")

widget Name of the prompt widget (default: "prompt")

cmd_sync() → None
Sync the backend's event queue. Should only be used for development.

cmd_to_layout_index(*index: str*, *name: Optional[str] = None*) → None
Switch to the layout with the given index in self.layouts.

Parameters

index Index of the layout in the list of layouts.

name Group name. If not specified, the current group is assumed.

cmd_to_screen(*n: int*) → None
Warp focus to screen n, where n is a 0-based screen number

Examples

to_screen(0)

cmd_togroup(*prompt: str = 'group'*, *widget: str = 'prompt'*) → None
Launch prompt widget to move current window to a given group

Parameters

prompt Text with which to prompt user (default: "group")

widget Name of the prompt widget (default: "prompt")

cmd_tracemalloc_dump() → Tuple[bool, str]
Dump tracemalloc snapshot

cmd_tracemalloc_toggle() → None
Toggle tracemalloc status

Running tracemalloc is required for *qtile top*

cmd_ungrab_all_chords() → None
Leave all chord modes and grab the root bindings

cmd_ungrab_chord() → None
Leave a chord mode

cmd_validate_config() → None

cmd_warning() → None
Set log level to WARNING

cmd_windows() → List[Dict[str, Any]]
Return info for each client window

3.3.2 Bar

class libqtile.bar.**Bar**(*widgets*, *size*, ***config*)
A bar, which can contain widgets

Parameters

widgets A list of widget objects.

size The "thickness" of the bar, i.e. the height of a horizontal bar, or the width of a vertical bar.

key	default	description
background	'#000000'	Background colour.
border_color	'#000000'	Border colour as str or list of str [N E S W]
border_width	0	Width of border as int of list of ints [N E S W]
margin	0	Space around bar as int or list of ints [N E S W].
opacity	1	Bar window opacity.

cmd_commands() → List[str]
Returns a list of possible commands for this object

Used by __qsh__ for command completion and online help

cmd_doc(*name*) → str
Returns the documentation for a specified command name

Used by __qsh__ to provide online help.

cmd_eval(*code: str*) → Tuple[bool, Optional[str]]
Evaluates code in the same context as this function

Return value is tuple *(success, result)*, success being a boolean and result being a string representing the return value of eval, or None if exec was used instead.

cmd_fake_button_press(*screen*, *position*, *x*, *y*, *button=1*)
Fake a mouse-button-press on the bar. Co-ordinates are relative to the top-left corner of the bar.

:screen The integer screen offset :position One of "top", "bottom", "left", or "right"

cmd_function(*function*, **args*, ***kwargs*) → None
Call a function with current object as argument

cmd_info()
Info for this object.

cmd_items(*name*) → Tuple[bool, Optional[List[Union[str, int]]]]
Returns a list of contained items for the specified name

Used by __qsh__ to allow navigation of the object graph.

3.3.3 Group

class libqtile.config.**Group**(*name: str*, *matches: Optional[List[libqtile.config.Match]] = None*, *exclusive=False*, *spawn: Optional[Union[str, List[str]]] = None*, *layout: Optional[str] = None*, *layouts: Optional[List] = None*, *persist=True*, *init=True*, *layout_opts=None*, *screen_affinity=None*, *position=9223372036854775807*, *label: Optional[str] = None*)

Represents a "dynamic" group

These groups can spawn apps, only allow certain Matched windows to be on them, hide when they're not in use, etc. Groups are identified by their name.

Parameters

name: string the name of this group

matches: default ``None`` list of `Match` objects whose windows will be assigned to this group

exclusive: boolean when other apps are started in this group, should we allow them here or not?

spawn: string or list of strings this will be `exec()` d when the group is created, you can pass either a program name or a list of programs to `exec()`

layout: string the name of default layout for this group (e.g. 'max' or 'stack'). This is the name specified for a particular layout in config.py or if not defined it defaults in general the class name in all lower case.

layouts: list the group layouts list overriding global layouts. Use this to define a separate list of layouts for this particular group.

persist: boolean should this group stay alive with no member windows?

init: boolean is this group alive when qtile starts?

position int group position

label: string the display name of the group. Use this to define a display name other than name of the group. If set to None, the display name is set to the name.

3.3.4 Screen

class libqtile.config.**Screen**(*top: Optional[Union[libqtile.bar.Bar, libqtile.bar.Gap]] = None*, *bottom: Optional[Union[libqtile.bar.Bar, libqtile.bar.Gap]] = None*, *left: Optional[Union[libqtile.bar.Bar, libqtile.bar.Gap]] = None*, *right: Optional[Union[libqtile.bar.Bar, libqtile.bar.Gap]] = None*, *wallpaper: Optional[str] = None*, *wallpaper_mode: Optional[str] = None*, *x: Optional[int] = None*, *y: Optional[int] = None*, *width: Optional[int] = None*, *height: Optional[int] = None*)

A physical screen, and its associated paraphernalia.

Define a screen with a given set of Bars of a specific geometry. Note that bar.Bar objects can only be placed at the top or the bottom of the screen (bar.Gap objects can be placed anywhere). Also, `x`, `y`, `width`, and `height` aren't specified usually unless you are using 'fake screens'.

The `wallpaper` parameter, if given, should be a path to an image file. How this image is painted to the screen is specified by the `wallpaper_mode` parameter. By default, the image will be placed at the screens origin and retain its own dimensions. If the mode is 'fill', the image will be centred on the screen and resized to fill it. If the mode is 'stretch', the image is stretched to fit all of it into the screen.

cmd_commands() → List[str]
Returns a list of possible commands for this object

Used by __qsh__ for command completion and online help

cmd_doc(*name*) → str
Returns the documentation for a specified command name

Used by __qsh__ to provide online help.

cmd_eval(*code: str*) → Tuple[bool, Optional[str]]
Evaluates code in the same context as this function

Return value is tuple *(success, result)*, success being a boolean and result being a string representing the return value of eval, or None if exec was used instead.

cmd_function(*function*, **args*, ***kwargs*) → None
Call a function with current object as argument

cmd_info()
Returns a dictionary of info for this screen.

cmd_items(*name*) → Tuple[bool, Optional[List[Union[str, int]]]]
Returns a list of contained items for the specified name

Used by __qsh__ to allow navigation of the object graph.

cmd_next_group(*skip_empty=False*, *skip_managed=False*)
Switch to the next group

cmd_prev_group(*skip_empty=False*, *skip_managed=False*, *warp=True*)
Switch to the previous group

cmd_resize(*x=None*, *y=None*, *w=None*, *h=None*)
Resize the screen

cmd_toggle_group(*group_name=None*, *warp=True*)
Switch to the selected group or to the previously active one

3.3.5 Window

class libqtile.backend.base.**Window**
A regular Window belonging to a client.

Abstract methods are required to be defined as part of a specific backend's implementation. Non-abstract methods have default implementations here to be shared across backends.

abstract cmd_bring_to_front() → None
Bring the window to the front

cmd_commands() → List[str]
Returns a list of possible commands for this object

Used by __qsh__ for command completion and online help

abstract cmd_disable_floating() → None
Tile the window.

abstract cmd_disable_fullscreen() → None
Un-fullscreen the window

cmd_doc(*name*) → str
Returns the documentation for a specified command name

Used by __qsh__ to provide online help.

cmd_down_opacity() → None
Decrease the window's opacity by 10%.

abstract cmd_enable_floating() → None
Float the window.

abstract cmd_enable_fullscreen() → None
Fullscreen the window

cmd_eval(*code: str*) → Tuple[bool, Optional[str]]
Evaluates code in the same context as this function

Return value is tuple *(success, result)*, success being a boolean and result being a string representing the return value of eval, or None if exec was used instead.

abstract cmd_focus(*warp: bool = True*) → None
Focuses the window.

cmd_function(*function*, **args*, ***kwargs*) → None
Call a function with current object as argument

abstract cmd_get_position() → Tuple[int, int]
Get the (x, y) of the window

abstract cmd_get_size() → Tuple[int, int]
Get the (width, height) of the window

cmd_info() → Dict
Return a dictionary of info.

cmd_items(*name*) → Tuple[bool, Optional[List[Union[str, int]]]]
Returns a list of contained items for the specified name

Used by __qsh__ to allow navigation of the object graph.

abstract cmd_kill() → None
Kill the window. Try to be polite.

cmd_match(**args*, ***kwargs*) → bool

abstract cmd_move_floating(*dx: int*, *dy: int*) → None
Move window by dx and dy

cmd_opacity(*opacity: float*) → None
Set the window's opacity.

The value must be between 0 and 1 inclusive.

abstract cmd_place(*x*, *y*, *width*, *height*, *borderwidth*, *bordercolor*, *above=False*, *margin=None*) → None
Place the window with the given position and geometry.

abstract cmd_resize_floating(*dw: int*, *dh: int*) → None
Add dw and dh to size of window

abstract cmd_set_position(*x: int*, *y: int*) → None
Move floating window to x and y; swap tiling window with the window under the pointer.

abstract cmd_set_position_floating(*x: int*, *y: int*) → None
Move window to x and y

abstract cmd_set_size_floating(*w: int*, *h: int*) → None
Set window dimensions to w and h

abstract cmd_static(*screen: Optional[int] = None*, *x: Optional[int] = None*, *y: Optional[int] = None*, *width: Optional[int] = None*, *height: Optional[int] = None*) → None
Makes this window a static window, attached to a Screen.

Values left unspecified are taken from the existing window state.

abstract cmd_toggle_floating() → None
Toggle the floating state of the window.

abstract cmd_toggle_fullscreen() → None
Toggle the fullscreen state of the window.

abstract cmd_toggle_maximize() → None
Toggle the maximize state of the window.

abstract cmd_toggle_minimize() → None
Toggle the minimize state of the window.

cmd_togroup(*group_name: Optional[str] = None*, *groupName: Optional[str] = None*, *switch_group: bool = False*) → None
Move window to a specified group

Also switch to that group if *switch_group* is True.

groupName is deprecated and will be dropped soon. Please use *group_name* instead.

cmd_toscreen(*index: Optional[int] = None*) → None
Move window to a specified screen.

If index is not specified, we assume the current screen

Examples

Move window to current screen:

```
toscreen()
```

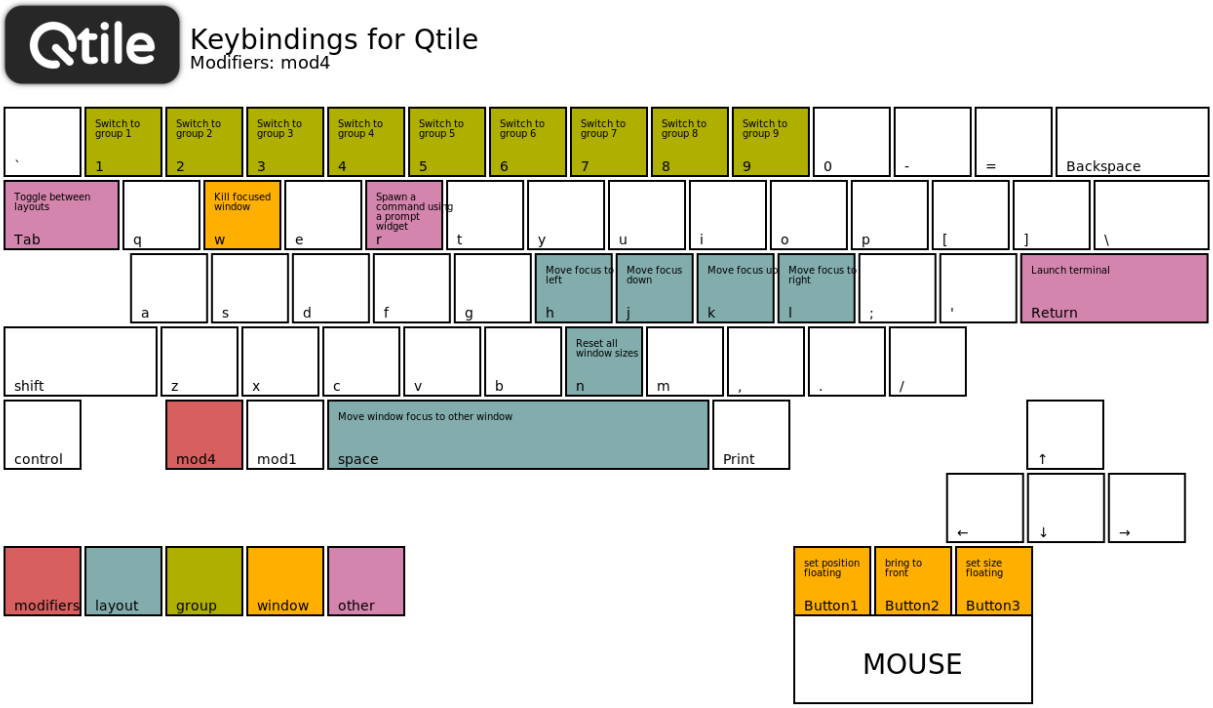
Move window to screen 0:

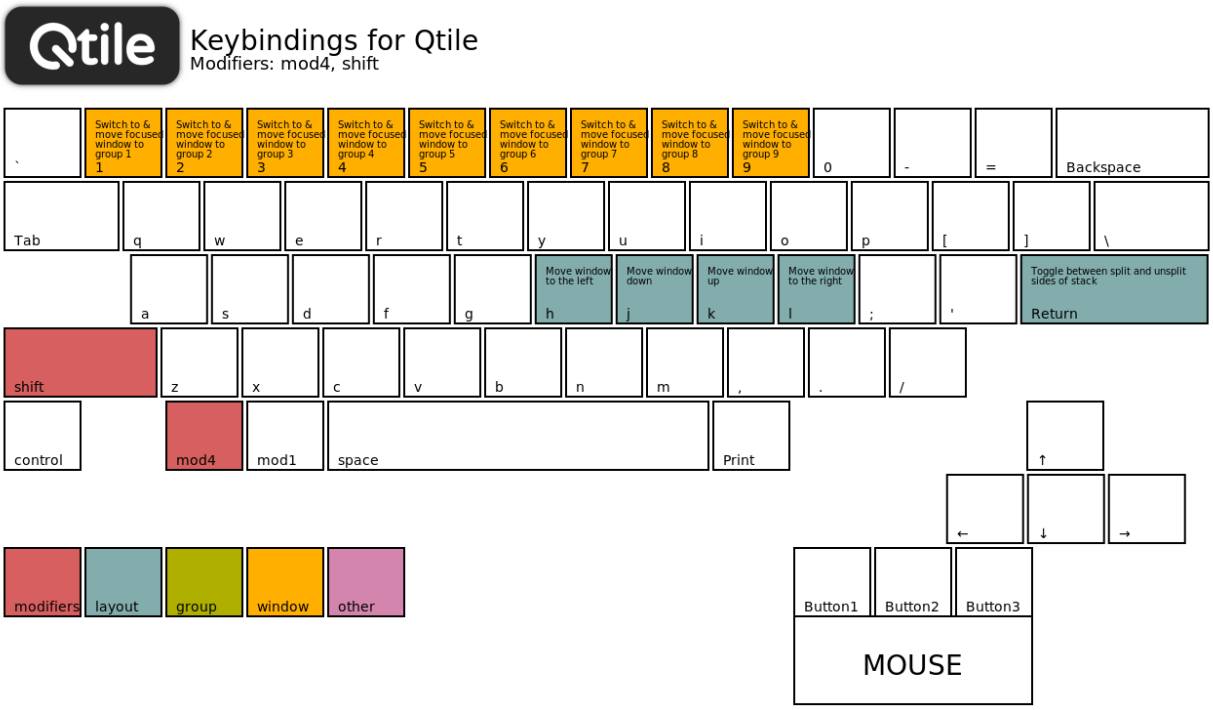
```
toscreen(0)
```

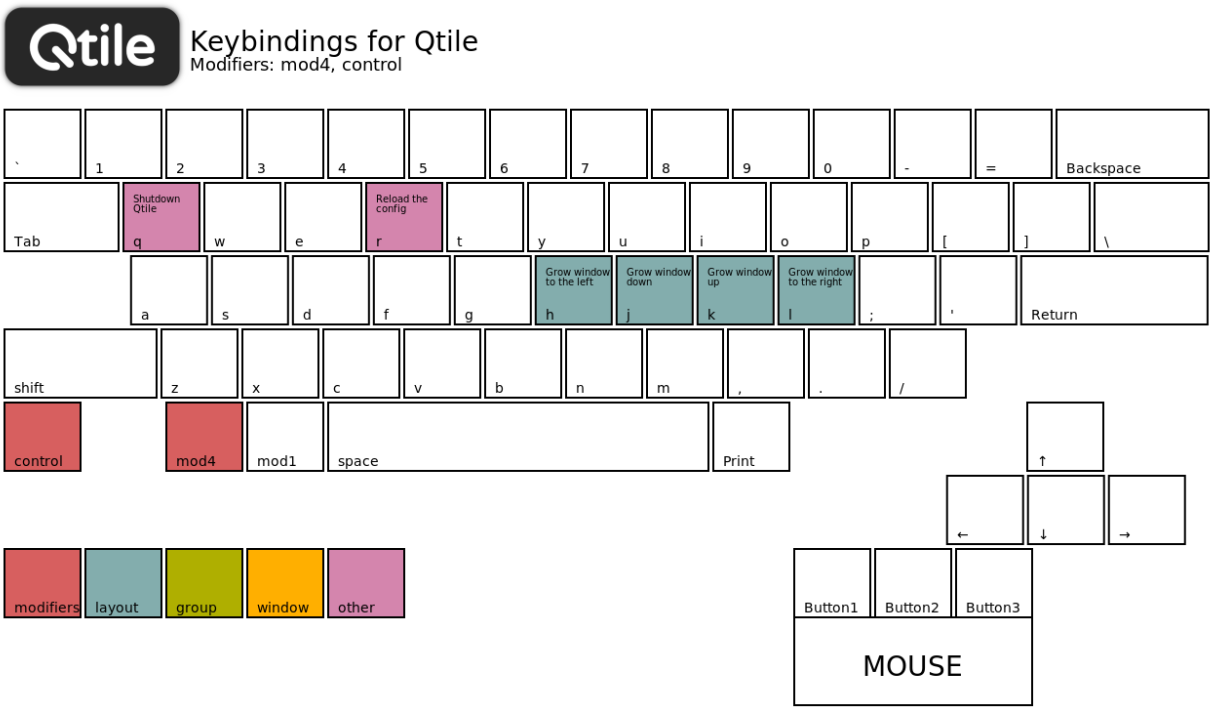
cmd_up_opacity() → None
Increase the window's opacity by 10%.

3.4 Keybindings in images

3.4.1 Default configuration




Keybindings for Qtile
Modifiers: mod4, shift
` Switch to & move focused window to group 1 1 Switch to & move focused window to group 2 2 Switch to & move focused window to group 3 3 Switch to & move focused window to group 4 4 Switch to & move focused window to group 5 5 Switch to & move focused window to group 6 6 Switch to & move focused window to group 7 7 Switch to & move focused window to group 8 8 Switch to & move focused window to group 9 9 0 - = Backspace
Tab q w e r t y u i o p [ ] \
a s d f g Move window to the left h Move window down j Move window up k Move window to the right l ; ' Toggle between split and unsplit sides of stack Return
shift z x c v b n m , . /
control mod4 mod1 space Print
↑
← ↓ →
modifiers layout group window other
Button1 Button2 Button3
MOUSE


Keybindings for Qtile
Modifiers: mod4, control
` 1 2 3 4 5 6 7 8 9 0 - = Backspace
Tab Shutdown Qtile q w e Reload the config r t y u i o p [ ] \
a s d f g Grow window to the left h Grow window down j Grow window up k Grow window to the right l ; ' Return
shift z x c v b n m , . /
control mod4 mod1 space Print
↑
← ↓ →
modifiers layout group window other
Button1 Button2 Button3
MOUSE

3.4.2 Generate your own images

Qtile provides a tiny helper script to generate keybindings images from a config file. In the repository, the script is located under `scripts/gen-keybinding-img`.

This script accepts a configuration file and an output directory. If no argument is given, the default configuration will be used and files will be placed in same directory where the command has been run.

```
usage: gen-keybinding-img [-h] [-c CONFIGFILE] [-o OUTPUT_DIR]

Qtile keybindings image generator

optional arguments:
    -h, --help          show this help message and exit
    -c CONFIGFILE, --config CONFIGFILE
                        use specified configuration file. If no presented
                        default will be used
    -o OUTPUT_DIR, --output-dir OUTPUT_DIR
                        set directory to export all images to
```

CHAPTER

FOUR

GETTING INVOLVED

4.1 Hacking on Qtile

4.1.1 Requirements

Here are Qtile's additional dependencies that may be required for tests:

Dependency	Ubuntu Package	Needed for
pytest	python3-pytest	Running tests
PyGObject	python3-gi	Running tests (test windows)
Xephyr	xserver-xephyr	Testing with X11 backend (optional, see below)
mypy	python3-mypy	Testing `qtile check` (optional)
imagemagick>=6.8	imagemagick	`test/test_images*` (optional)
gtk-layer-shell	libgtk-layer-shell0	Testing notification windows in Wayland (optional)
dbus-launch	dbus-x11	Testing dbus-using widgets (optional)
notifiy-send	libnotify-bin	Testing `Notify` widget (optional)
xvfb	xvfb	Testing with X11 headless (optional)

Backends

The test suite can be run using the X11 or Wayland backend, or both. By default, only the X11 backend is used for tests. To test a single backend or both backends, specify as arguments to pytest:

```
pytest --backend wayland  # Test just Wayland backend
pytest --backend x11 --backend wayland  # Test both
```

Testing with the X11 backend requires Xephyr (and xvfb for headless mode) in addition to the core dependencies.

4.1.2 Building cffi module

Qtile ships with a small in-tree pangocairo binding built using cffi, `pangocffi.py`, and also binds to xcursor with cffi. The bindings are not built at run time and will have to be generated manually when the code is downloaded or when any changes are made to the cffi library. This can be done by calling:

```
./scripts/ffibuild
```

4.1.3 Setting up the environment

In the root of the project, run `./dev.sh`. It will create a virtualenv called `venv`.

Activate this virtualenv with `. venv/bin/activate`. Deactivate it with the `deactivate` command.

4.1.4 Building the documentation

To build the documentation, you will also need to install graphviz.

Go into the `docs/` directory and run `pip install -r requirements.txt`.

Build the documentation with `make html`.

Check the result by opening `_build/html/index.html` in your browser.

4.1.5 Development and testing

In practice, the development cycle looks something like this:

1. make minor code change
2. run appropriate test: `pytest tests/test_module.py` or `pytest -k PATTERN`
3. GOTO 1, until hackage is complete
4. run entire test suite: `pytest`
5. commit

Of course, your patches should also pass the unit tests as well (i.e. `make check`). These will be run by ci on every pull request so you can see whether or not your contribution passes.

4.1.6 Coding style

While not all of our code follows PEP8, we do try to adhere to it where possible. All new code should be PEP8 compliant.

The `make lint` command will run a linter with our configuration over libqtile to ensure your patch complies with reasonable formatting constraints. We also request that git commit messages follow the standard format.

4.1.7 Logging

Logs are important to us because they are our best way to see what Qtile is doing when something abnormal happens. However, our goal is not to have as many logs as possible, as this hinders readability. What we want are relevant logs.

To decide which log level to use, refer to the following scenarios:

- ERROR: a problem affects the behavior of Qtile in a way that is noticeable to the end user, and we can't work around it.
- WARNING: a problem causes Qtile to operate in a suboptimal manner.
- INFO: the state of Qtile has changed.
- DEBUG: information is worth giving to help the developer better understand which branch the process is in.

Be careful not to overuse DEBUG and clutter the logs. No information should be duplicated between two messages.

Also, keep in mind that any other level than DEBUG is aimed at users who don't necessarily have advanced programming knowledge; adapt your message accordingly. If it can't make sense to your grandma, it's probably meant to be a DEBUG message.

4.1.8 Deprecation policy

When a widget API is changed, you should deprecate the change using `libqtile.widget.base.deprecated` to warn users, in addition to adding it to the appropriate place in the changelog. We will typically remove deprecated APIs one tag after they are deprecated.

4.1.9 Using Xephyr

Qtile has a very extensive test suite, using the Xephyr nested X server. When tests are run, a nested X server with a nested instance of Qtile is fired up, and then tests interact with the Qtile instance through the client API. The fact that we can do this is a great demonstration of just how completely scriptable Qtile is. In fact, Qtile is designed expressly to be scriptable enough to allow unit testing in a nested environment.

The Qtile repo includes a tiny helper script to let you quickly pull up a nested instance of Qtile in Xephyr, using your current configuration. Run it from the top-level of the repository, like this:

```
./scripts/xephyr
```

Change the screen size by setting the `SCREEN_SIZE` environment variable. Default: 800x600. Example:

```
SCREEN_SIZE=1920x1080 ./scripts/xephyr
```

Change the log level by setting the `LOG_LEVEL` environment variable. Default: INFO. Example:

```
LOG_LEVEL=DEBUG ./scripts/xephyr
```

The script will also pass any additional options to Qtile. For example, you can use a specific configuration file like this:

```
./scripts/xephyr -c ~/.config/qtile/other_config.py
```

Once the Xephyr window is running and focused, you can enable capturing the keyboard shortcuts by hitting Control+Shift. Hitting them again will disable the capture and let you use your personal keyboard shortcuts again.

You can close the Xephyr window by enabling the capture of keyboard shortcuts and hit Mod4+Control+Q. Mod4 (or Mod) is usually the Super key (or Windows key). You can also close the Xephyr window by running `qtile cmd-obj -o cmd -f shutdown` in a terminal (from inside the Xephyr window of course).

You don't need to run the Xephyr script in order to run the tests as the test runner will launch its own Xephyr instances.

4.1.10 Second X Session

Some users prefer to test Qtile in a second, completely separate X session: Just switch to a new tty and run `startx` normally to use the `~/.xinitrc` X startup script.

It's likely though that you want to use a different, customized startup script for testing purposes, for example `~/.config/qtile/xinitrc`. You can do so by launching X with:

```
startx ~/.config/qtile/xinitrc
```

`startx` deals with multiple X sessions automatically. If you want to use `xinit` instead, you need to first copy `/etc/X11/xinit/xserverrc` to `~/.xserverrc`; when launching it, you have to specify a new session number:

```
xinit ~/.config/qtile/xinitrc -- :1
```

Examples of custom X startup scripts are available in qtile-examples.

4.1.11 Debugging in PyCharm

Make sure to have all the requirements installed and your development environment setup.

PyCharm should automatically detect the `venv` virtualenv when opening the project. If you are using another viirtualenv, just instruct PyCharm to use it in `Settings -> Project: qtile -> Project interpreter`.

In the project tree, on the left, right-click on the `libqtile` folder, and click on `Mark Directory as -> Sources Root`.

Next, add a Configuration using a Python template with these fields:

- Script path: `bin/qtile`, or the absolute path to it
- Parameters: `-c libqtile/resources/default_config.py`, or nothing if you want to use your own config file in `~/.config/qtile/config.py`
- Environment variables: `PYTHONUNBUFFERED=1;DISPLAY=:1`
- Working directory: the root of the project
- Add contents root to PYTHONPATH: yes
- Add source root to PYTHONPATH: yes

Then, in a terminal, run:

    Xephyr +extension RANDR -screen 1920x1040 :1 -ac &

Note that we used the same display, `:1`, in both the terminal command and the PyCharm configuration environment variables. Feel free to change the screen size to fit your own screen.

Finally, place your breakpoints in the code and click on `Debug`!

Once you finished debugging, you can close the Xephyr window with `kill PID` (use the `jobs` builtin to get its PID).

4.1.12 Debugging in VSCode

Make sure to have all the requirements installed and your development environment setup.

Open the root of the repo in VSCode. If you have created it, VSCode should detect the `venv` virtualenv, if not, select it.

Create a launch.json file with the following lines.

```
{
  "version": "0.2.0",
  "configurations": [
      {
          "name": "Python: Qtile",
          "type": "python",
          "request": "launch",
          "program": "${workspaceFolder}/bin/qtile",
          "cwd": "${workspaceFolder}",
          "args": ["-c", "libqtile/resources/default_config.py"],
          "console": "integratedTerminal",
          "env": {"PYTHONUNBUFFERED":"1", "DISPLAY":":1"}
      }
  ]
}
```

Then, in a terminal, run:

    Xephyr +extension RANDR -screen 1920x1040 :1 -ac &

Note that we used the same display, `:1`, in both the terminal command and the VSCode configuration environment variables. Then `debug` usually in VSCode. Feel free to change the screen size to fit your own screen.

4.1.13 Resources

Here are a number of resources that may come in handy:

- Inter-Client Conventions Manual
- Extended Window Manager Hints
- A reasonable basic Xlib Manual

4.1.14 Troubleshoot

Cairo errors

When running the Xephyr script (`./scripts/xephyr`), you might see tracebacks with attribute errors like the following or similar:

```
AttributeError: cffi library 'libcairo.so.2' has no function, constant or global␣
↪variable named 'cairo_xcb_surface_create'
```

If it happens, it might be because the `cairocffi` and `xcffib` dependencies were installed in the wrong order.

To fix this:

1. uninstall them from your environment: with `pip uninstall cairocffi xcffib` if using a virtualenv, or with your system package-manager if you installed the development version of Qtile system-wide.
2. re-install them sequentially (again, with pip or with your package-manager):

```
pip install xcffib
pip install --no-cache-dir cairocffi
```

See this issue comment for more information.

If you are using your system package-manager and the issue still happens, the packaging of `cairocffi` might be broken for your distribution. Try to contact the persons responsible for `cairocffi`'s packaging on your distribution, or to install it from the sources with `xcffib` available.

Fonts errors

When running the test suite or the Xephyr script (`./scripts/xephyr`), you might see errors in the output like the following or similar:

- Xephyr script:

```
xterm: cannot load font "-Misc-Fixed-medium-R-*-*-13-120-75-75-C-120-ISO10646-1"
xterm: cannot load font "-misc-fixed-medium-r-semicondensed--13-120-75-75-c-60-
↪iso10646-1"
```

- `pytest`:

```
---------- Captured stderr call ----------
Warning: Cannot convert string "8x13" to type FontStruct
Warning: Unable to load any usable ISO8859 font
Warning: Unable to load any usable ISO8859 font
Error: Aborting: no font found

-------- Captured stderr teardown --------
Qtile exited with exitcode: -9
```

If it happens, it might be because you're missing fonts on your system.

On ArchLinux, you can fix this by installing `xorg-fonts-misc`:

```
sudo pacman -S xorg-fonts-misc
```

Try to search for "xorg fonts misc" with your distribution name on the internet to find how to install them.

4.2 Contributing

4.2.1 Reporting bugs

Perhaps the easiest way to contribute to Qtile is to report any bugs you run into on the GitHub issue tracker.

Useful bug reports are ones that get bugs fixed. A useful bug report normally has two qualities:

1. **Reproducible.** If your bug is not reproducible it will never get fixed. You should clearly mention the steps to reproduce the bug. Do not assume or skip any reproducing step. Described the issue, step-by-step, so that it is easy to reproduce and fix.

2. **Specific.** Do not write a essay about the problem. Be Specific and to the point. Try to summarize the problem in minimum words yet in effective way. Do not combine multiple problems even they seem to be similar. Write different reports for each problem.

Ensure to include any appropriate log entries from `~/.local/share/qtile/qtile.log` and/or `~/.xsession-errors`! Sometimes, an `xtrace` is requested. If that is the case, refer to *capturing an xtrace*.

4.2.2 Writing code

To get started writing code for Qtile, check out our guide to *Hacking on Qtile*. A more detailed page on creating widgets is available *here*.

Important: Use a separate **git branch** to make rebasing easy. Ideally, you would `git checkout -b <my_feature_branch_name>` before starting your work.

See also: *using git*.

Submit a pull request

You've done your hacking and are ready to submit your patch to Qtile. Great! Now it's time to submit a pull request to our issue tracker on GitHub.

Important: Pull requests are not considered complete until they include all of the following:

- **Code** that conforms to PEP8 and is formatted by black.
- **Unit tests** that pass locally and in our CI environment (More below). *Please add unit tests* to ensure that your code works and stays working!
- **Documentation** updates on an as needed basis.
- A `qtile migrate` **migration** is required for config-breaking changes. See migrate.py for examples and consult the bowler documentation for detailed help and documentation.
- **Code** that does not include *unrelated changes*. Examples for this are formatting changes, replacing quotes or whitespace in other parts of the code or "fixing" linter warnings popping up in your editor on existing code. *Do not include anything like the above!*
- **Widgets** don't need to catch their own exceptions, or introduce their own polling infrastructure. The code in `libqtile.widget.base.*` does all of this. Your widget should generally only include whatever parsing/rendering code is necessary, any other changes should go at the framework level. Make sure to double-check that you are not re-implementing parts of `libqtile.widget.base`.
- **Commit messages** are more important that Github PR notes, since this is what people see when they are spelunking via `git blame`. Please include all relevant detail in the actual git commit message (things like exact stack traces, copy/pastes of discussion in IRC/mailing lists, links to specifications or other API docs are all good). If your PR fixes a Github issue, it might also be wise to link to it with `#1234` in the commit message.
- PRs with **multiple commits** should not introduce code in one patch to then change it in a later patch. Please do a patch-by-patch review of your PR, and make sure each commit passes CI and makes logical sense on its own. In other words: *do* introduce your feature in one commit and maybe add the tests and documentation in a seperate commit. *Don't* push commits that partially implement a feature and are basically broken.

Note: Others might ban *force-pushes*, we allow them and prefer them over incomplete commits or commits that have a bad and meaningless commit description.

Feel free to add your contribution (no matter how small) to the appropriate place in the CHANGELOG as well!

Unit testing

We must test each *unit* of code to ensure that new changes to the code do not break existing functionality. The framework we use to test Qtile is pytest. How pytest works is outside of the scope of this documentation, but there are tutorials online that explain how it is used.

Our tests are written inside the `test` folder at the top level of the repository. Reading through these, you can get a feel for the approach we take to test a given unit. Most of the tests involve an object called `manager`. This is the test manager (defined in test/helpers.py), which exposes a command client at `manager.c` that we use to test a Qtile instance running in a separate thread as if we were using a command client from within a running Qtile session.

For any Qtile-specific question on testing, feel free to ask on our issue tracker or on IRC (#qtile on irc.oftc.net).

Running tests locally

This section gives an overview about `tox` so that you don't have to search its documentation just to get started. Checks are grouped in so-called `environments`. Some of them are configured to check that the code works (the usual unit test, e.g. `py39`, `pypy3`), others make sure that your code conforms to the style guide (`pep8`, `codestyle`, `mypy`). A third kind of test verifies that the documentation and packaging processes work (`docs`, `docstyle`, `packaging`).

The following examples show how to run tests locally:

- To run the functional tests, use `tox -e py39` (or a different environment). You can specify to only run a specific test file or even a specific test within that file with the following commands:

```
tox -e py39 # Run all tests with python 3.9 as the interpreter
tox -e py39 -- -x test/widgets/test_widgetbox.py  # run a single file
tox -e py39 -- -x test/widgets/test_widgetbox.py::test_widgetbox_widget
```

- To run style and building checks, use `tox -e docs,packaging,pep8,...`. You can use `-p auto` to run the environments in parallel.

Important: The CI is configured to run all the environments. Hence it can be time- consuming to make all the tests pass. As stated above, pull requests that don't pass the tests are considered incomplete. Don't forget that this does not only include the functionality, but the style, typing annotations (if necessary) and documentation as well!

CHAPTER

FIVE

MISCELLANEOUS

5.1 Frequently Asked Questions

5.1.1 Why the name Qtile?

Users often wonder, why the Q? Does it have something to do with Qt? No. Below is an IRC excerpt where cortesi explains the great trial that ultimately brought Qtile into existence, thanks to the benevolence of the Open Source Gods. Praise be to the OSG!

```
ramnes:  what does Qtile mean?
ramnes:  what's the Q?
@tych0:  ramnes: it doesn't :)
@tych0:  cortesi was just looking for the first letter that wasn't registered
         in a domain name with "tile" as a suffix
@tych0:  qtile it was :)
cortesi: tych0, dx: we really should have something more compelling to
         explain the name. one day i was swimming at manly beach in sydney,
         where i lived at the time. suddenly, i saw an enormous great white
         right beside me. it went for my leg with massive, gaping jaws, but
         quick as a flash, i thumb-punched it in both eyes. when it reared
         back in agony, i saw that it had a jagged, gnarly scar on its
         stomach... a scar shaped like the letter "Q".
cortesi: while it was distracted, i surfed a wave to shore. i knew that i
         had to dedicate my next open source project to the ocean gods, in
         thanks for my lucky escape. and thus, qtile got its name...
```

5.1.2 When I first start xterm/urxvt/rxvt containing an instance of Vim, I see text and layout corruption. What gives?

Vim is not handling terminal resizes correctly. You can fix the problem by starting your xterm with the "-wf" option, like so:

```
xterm -wf -e vim
```

Alternatively, you can just cycle through your layouts a few times, which usually seems to fix it.

5.1.3 How do I know which modifier specification maps to which key?

To see a list of modifier names and their matching keys, use the `xmodmap` command. On my system, the output looks like this:

```
$ xmodmap
xmodmap:  up to 3 keys per modifier, (keycodes in parentheses):

shift       Shift_L (0x32),  Shift_R (0x3e)
lock        Caps_Lock (0x9)
control     Control_L (0x25),  Control_R (0x69)
mod1        Alt_L (0x40),  Alt_R (0x6c),  Meta_L (0xcd)
mod2        Num_Lock (0x4d)
mod3
mod4        Super_L (0xce),  Hyper_L (0xcf)
mod5        ISO_Level3_Shift (0x5c),  Mode_switch (0xcb)
```

5.1.4 My "pointer mouse cursor" isn't the one I expect it to be!

Qtile should set the default cursor to left_ptr, you must install xcb-util-cursor if you want support for themed cursors.

5.1.5 LibreOffice menus don't appear or don't stay visible

A workaround for problem with the mouse in libreoffice is setting the environment variable »SAL_USE_VCLPLUGIN=gen«. It is dependet on your system configuration where to do this. e.g. ArchLinux with libreoffice-fresh in /etc/profile.d/libreoffice-fresh.sh.

5.1.6 How can I get my groups to stick to screens?

This behaviour can be replicated by configuring your keybindings to not move groups between screens. For example if you want groups `"1"`, `"2"` and `"3"` on one screen and `"q"`, `"w"`, and `"e"` on the other, instead of binding keys to `lazy.group[name].toscreen()`, use this:

```
def go_to_group(name: str) -> Callable:
    def _inner(qtile: Qtile) -> None:
        if len(qtile.screens) == 1:
            qtile.groups_map[name].cmd_toscreen()
            return

        if name in '123':
            qtile.focus_screen(0)
            qtile.groups_map[name].cmd_toscreen()
        else:
            qtile.focus_screen(1)
            qtile.groups_map[name].cmd_toscreen()

    return _inner

for i in groups:
    keys.append(Key([mod], i.name, lazy.function(go_to_group(i.name))))
```

If you use the GroupBox widget you can make it reflect this behaviour:

```
groupbox1 = widget.GroupBox(visible_groups=['1', '2', '3'])
groupbox2 = widget.GroupBox(visible_groups=['q', 'w', 'e'])
```

And if you jump between having single and double screens then modifying the visible groups on the fly may be useful:

```
@hook.subscribe.screens_reconfigured
async def _():
    if len(qtile.screens) > 1:
        groupbox1.visible_groups = ['1', '2', '3']
    else:
        groupbox1.visible_groups = ['1', '2', '3', 'q', 'w', 'e']
    if hasattr(groupbox1, 'bar'):
        groupbox1.bar.draw()
```

5.1.7 Where can I find example configurations and other scripts?

Please visit our qtile-examples repo which contains examples of users' configurations, scripts and other useful links.

5.2 License

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CHAPTER

SIX

TIPS & TRICKS

6.1 How to create a widget

The aim of this page is to explain the main components of qtile widgets, how they work, and how you can use them to create your own widgets.

Note: This page is not meant to be an exhaustive summary of everything needed to make a widget.

It is highly recommended that users wishing to create their own widget refer to the source documentation of existing widgets to familiarise themselves with the code.

However, the detail below may prove helpful when read in conjunction with the source code.

6.1.1 What is a widget?

In Qtile, a widget is a small drawing that is displayed on the user's bar. The widget can display text, images and drawings. In addition, the widget can be configured to update based on timers, hooks, dbus_events etc. and can also respond to mouse events (clicks, scrolls and hover).

6.1.2 Widget base classes

Qtile provides a number of base classes for widgets than can be used to implement commonly required features (e.g. display text).

Your widget should inherit one of these classes. Whichever base class you inherit for your widget, if you override either the `__init__` and/or `_configure` methods, you should make sure that your widget calls the equivalent method from the superclass.

```
class MyCustomWidget(base._TextBox):

    def __init__(self, **config):
        super().__init__("", **config)
        # My widget's initialisation code here
```

The functions of the various base classes are explained further below.

_Widget

This is the base widget class that defines the core components required for a widget. All other base classes are based off this class.

This is like a blank canvas so you're free to do what you want but you don't have any of the extra functionality provided by the other base classes.

The `base._Widget` class is therefore typically used for widgets that want to draw graphics on the widget as opposed to displaying text.

_TextBox

The `base._TextBox` class builds on the bare widget and adds a `drawer.TextLayout` which is accessible via the `self.layout` property. The widget will adjust its size to fit the amount of text to be displayed.

Text can be updated via the `self.text` property but note that this does not trigger a redrawing of the widget.

Parameters including `font`, `fontsize`, `fontshadow`, `padding` and `foreground` (font colour) can be configured. It is recommended not to hard-code these parameters as users may wish to have consistency across units.

InLoopPollText

The `base.InLoopPollText` class builds on the `base._TextBox` by adding a timer to periodically refresh the displayed text.

Widgets using this class should override the `poll` method to include a function that returns the required text.

Note: This loop runs in the event loop so it is important that the poll method does not call some blocking function. If this is required, widgets should inherit the `base.ThreadPoolText` class (see below).

ThreadPoolText

The `base.ThreadPoolText` class is very similar to the `base.InLoopPollText` class. The key difference is that the `poll` method is run asynchronously and triggers a callback once the function completes. This allows widgets to get text from long-running functions without blocking Qtile.

6.1.3 Mixins

As well as inheriting from one of the base classes above, widgets can also inherit one or more mixins to provide some additional functionality to the widget.

PaddingMixin

This provides the `padding(_x|_y|)` attributes which can be used to change the appearance of the widget.

If you use this mixin in your widget, you need to add the following line to your `__init__` method:

```
self.add_defaults(base.PaddingMixin.defaults)
```

MarginMixin

The `MarginMixin` is essentially effectively exactly the same as the `PaddingMixin` but, instead, it provides the `margin(_x|_y|)` attributes.

As above, if you use this mixin in your widget, you need to add the following line to your `__init__` method:

```
self.add_defaults(base.MarginMixin.defaults)
```

6.1.4 Configuration

Now you know which class to base your widget on, you need to know how the widget gets configured.

Defining Parameters

Each widget will likely have a number of parameters that users can change to customise the look and feel and/or behaviour of the widget for their own needs.

The widget should therefore provide the default values of these parameters as a class attribute called `defaults`. The format of this attribute is a list of tuples.

```
defaults = [
    ("parameter_name",
     default_parameter_value,
     "Short text explaining what parameter does")
]
```

Users can override the default value when creating their `config.py` file.

```
MyCustomWidget(parameter_name=updated_value)
```

Once the widget is initialised, these parameters are available at `self.parameter_name`.

The __init__ method

Parameters that should not be changed by users can be defined in the `__init__` method.

This method is run when the widgets are initially created. This happens before the `qtile` object is available.

The _configure method

The `_configure` method is called by the `bar` object and sets the `self.bar` and `self.qtile` attributes of the widget. It also creates the `self.drawer` attribute which is necessary for displaying any content.

Once this method has been run, your widget should be ready to display content as the bar will draw once it has finished its configuration.

Calls to methods required to prepare the content for your widget should therefore be made from this method rather than `__init__`.

6.1.5 Displaying output

A Qtile widget is just a drawing that is displayed at a certain location the user's bar. The widget's job is therefore to create a small drawing surface that can be placed in the appropriate location on the bar.

The "draw" method

The `draw` method is called when the widget needs to update its appearance. This can be triggered by the widget itself (e.g. if the content has changed) or by the bar (e.g. if the bar needs to redraw its entire contents).

This method therefore needs to contain all the relevant code to draw the various components that make up the widget. Examples of displaying text, icons and drawings are set out below.

It is important to note that the bar controls the placing of the widget by assigning the `offsetx` value (for horizontal positioning) and `offsety` value (for vertical positioning). Widgets should use this at the end of the `draw` method. Both `offsetx` and `offsety` are required as both values will be set if the bar is drawing a border.

```
self.drawer.draw(offsetx=self.offsetx, offsety=self.offsety, width=self.width)
```

Note: If you need to trigger a redrawing of your widget, you should call `self.draw()` if the width of your widget is unchanged. Otherwise you need to call `self.bar.draw()` as this method means the bar recalculates the position of all widgets.

Displaying text

Text is displayed by using a `drawer.TextLayout` object. If all you are doing is displaying text then it's highly recommended that you use the `base._TextBox` superclass as this simplifies adding and updating text.

If you wish to implement this manually then you can create a your own `drawer.TextLayout` by using the `self.drawer.textlayout` method of the widget (only available after the *_configure* method has been run). object to include in your widget.

Some additional formatting of Text can be displayed using pango markup and ensuring the `markup` parameter is set to `True`.

```
self.textlayout = self.drawer.textlayout(
                    "Text",
                    "fffff",       # Font colour
                    "sans",        # Font family
                    12,            # Font size
                    None,          # Font shadow
```

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```
                    markup=False,   # Pango markup (False by default)
                    wrap=True       # Wrap long lines (True by default)
                    )
```

Displaying icons and images

Qtile provides a helper library to convert images to a `surface` that can be drawn by the widget. If the images are static then you should only load them once when the widget is configured. Given the small size of the bar, this is most commonly used to draw icons but the same method applies to other images.

```
from libqtile import images

def setup_images(self):

    self.surfaces = {}

    # File names to load (will become keys to the `surfaces` dictionary)
    names = (
        "audio-volume-muted",
        "audio-volume-low",
        "audio-volume-medium",
        "audio-volume-high"
    )

    d_images = images.Loader(self.imagefolder)(*names)  # images.Loader can take more␣
↪than one folder as an argument

    for name, img in d_images.items():
        new_height = self.bar.height - 1
        img.resize(height=new_height)   # Resize images to fit widget
        self.surfaces[name] = img.pattern  # Images added to the `surfaces` dictionary
```

Drawing the image is then just a matter of painting it to the relevant surface:

```
def draw(self):
    self.drawer.ctx.set_source(self.surfaces[img_name])  # Use correct key here for your␣
↪image
    self.drawer.ctx.paint()
    self.drawer.draw(offsetx=self.offset, width=self.length)
```

Drawing shapes

It is possible to draw shapes directly to the widget. The `Drawer` class (available in your widget after configuration as `self.drawer`) provides some basic functions `rounded_rectangle`, `rounded_fillrect`, `rectangle` and `fillrect`.

In addition, you can access the Cairo context drawing functions via `self.drawer.ctx`.

For example, the following code can draw a wifi icon showing signal strength:

```
import math

...

def to_rads(self, degrees):
    return degrees * math.pi / 180.0

def draw_wifi(self, percentage):

    WIFI_HEIGHT = 12
    WIFI_ARC_DEGREES = 90

    y_margin = (self.bar.height - WIFI_HEIGHT) / 2
    half_arc = WIFI_ARC_DEGREES / 2

    # Draw grey background
    self.drawer.ctx.new_sub_path()
    self.drawer.ctx.move_to(WIFI_HEIGHT, y_margin + WIFI_HEIGHT)
    self.drawer.ctx.arc(WIFI_HEIGHT,
                        y_margin + WIFI_HEIGHT,
                        WIFI_HEIGHT,
                        self.to_rads(270 - half_arc),
                        self.to_rads(270 + half_arc))
    self.drawer.set_source_rgb("666666")
    self.drawer.ctx.fill()

    # Draw white section to represent signal strength
    self.drawer.ctx.new_sub_path()
    self.drawer.ctx.move_to(WIFI_HEIGHT, y_margin + WIFI_HEIGHT)
    self.drawer.ctx.arc(WIFI_HEIGHT
                        y_margin + WIFI_HEIGHT,
                        WIFI_HEIGHT * percentage,
                        self.to_rads(270 - half_arc),
                        self.to_rads(270 + half_arc))
    self.drawer.set_source_rgb("ffffff")
    self.drawer.ctx.fill()
```

This creates something looking like this: .

Background

At the start of the `draw` method, the widget should clear the drawer by drawing the background. Usually this is done by including the following line at the start of the method:

```
self.drawer.clear(self.background or self.bar.background)
```

The background can be a single colour or a list of colours which will result in a linear gradient from top to bottom.

6.1.6 Updating the widget

Widgets will usually need to update their content periodically. There are numerous ways that this can be done. Some of the most common are summarised below.

Timers

A non-blocking timer can be called by using the `self.timeout_add` method.

```
self.timeout_add(delay_in_seconds, method_to_call, (method_args))
```

Note: Consider using the `ThreadPoolText` superclass where you are calling a function repeatedly and displaying its output as text.

Hooks

Qtile has a number of hooks built in which are triggered on certain events.

The `WindowCount` widget is a good example of using hooks to trigger updates. It includes the following method which is run when the widget is configured:

```
from libqtile import hook

...

def _setup_hooks(self):
    hook.subscribe.client_killed(self._win_killed)
    hook.subscribe.client_managed(self._wincount)
    hook.subscribe.current_screen_change(self._wincount)
    hook.subscribe.setgroup(self._wincount)
```

Read the *Built-in Hooks* page for details of which hooks are available and which arguments are passed to the callback function.

Using dbus

Qtile uses `dbus-next` for interacting with dbus.

If you just want to listen for signals then Qtile provides a helper method called `add_signal_receiver` which can subscribe to a signal and trigegr a callback whenever that signal is broadcast.

Note: Qtile uses the `asyncio` based functions of `dbus-next` so your widget must make sure, where necessary, calls to dbus are made via coroutines.

There is a `_config_async` coroutine in the base widget class which can be overriden to provide an entry point for asyncio calls in your widget.

For example, the Mpris2 widget uses the following code:

```
from libqtile.utils import add_signal_receiver

...

async def _config_async(self):
    subscribe = await add_signal_receiver(
                    self.message,  # Callback function
                    session_bus=True,
                    signal_name="PropertiesChanged",
                    bus_name=self.objname,
                    path="/org/mpris/MediaPlayer2",
                    dbus_interface="org.freedesktop.DBus.Properties")
```

`dbus-next` can also be used to query properties, call methods etc. on dbus interfaces. Refer to the dbus-next documentation for more information on how to use the module.

6.1.7 Mouse events

By default, widgets handle button presses and will call any function that is bound to the button in the `mouse_callbacks` dictionary. The dictionary keys are as follows:

- `Button1`: Left click
- `Button2`: Middle click
- `Button3`: Right click
- `Button4`: Scroll up
- `Button5`: Scroll down
- `Button6`: Scroll left
- `Button7`: Scroll right

You can then define your button bindings in your widget (e.g. in `__init__`):

```
class MyWidget(widget.TextBox)

    def __init__(self, *args, **config):
        widget.TextBox.__init__(self, *args, **kwargs)
        self.add_callbacks(
            {
                "Button1": self.left_click_method,
                "Button3": self.right_click_method
            }
        )
```

Note: As well as functions, you can also bind `LazyCall` objects to button presses. For example:

```
self.add_callbacks(
    {
        "Button1": lazy.spawn("xterm"),
    }
)
```

In addition to button presses, you can also respond to mouse enter and leave events. For example, to make a clock show a longer date when you put your mouse over it, you can do the following:

```
class MouseOverClock(widget.Clock):
    defaults = [
        (
            "long_format",
            "%A %d %B %Y | %H:%M",
            "Format to show when mouse is over widget."
        )
    ]

    def __init__(self, **config):
        widget.Clock.__init__(self, **config)
        self.add_defaults(MouseOverClock.defaults)
        self.short_format = self.format

    def mouse_enter(self, *args, **kwargs):
        self.format = self.long_format
        self.bar.draw()

    def mouse_leave(self, *args, **kwargs):
        self.format = self.short_format
        self.bar.draw()
```

6.1.8 Debugging

You can use the `logger` object to record messages in the Qtile log file to help debug your development.

```
from libqtile.log_utils import logger

...

logger.debug("Callback function triggered")
```

Note: The default log level for the Qtile log is `INFO` so you may either want to change this when debugging or use `logger.info` instead.

Debugging messages should be removed from your code before submitting pull requests.

6.1.9 Including the widget in libqtile.widget

You should include your widget in the `widgets` dict in `libqtile.widget.__init__.py`. The relevant format is `{"ClassName": "modulename"}`.

This has a number of benefits:

- Lazy imports
- Graceful handling of import errors (useful where widget relies on third party modules)
- Inclusion in basic unit testing (see below)

6.1.10 Testing

Any new widgets should include an accompanying unit test.

Basic initialisation and configurations (using defaults) will automatically be tested by `test/widgets/test_widget_init_configure.py` if the widget has been included in `libqtile.widget.__init__.py` (see above).

However, where possible, it is strongly encouraged that widgets include additional unit tests that test specific functionality of the widget (e.g. reaction to hooks).

See *Unit testing* for more.

6.1.11 Getting help

If you still need help with developing your widget then please submit a question in the qtile-dev group or submit an issue on the github page if you believe there's an error in the codebase.

6.2 Using `git`

`git` is the version control system that is used to manage all of the source code. It is very powerful, but might be frightening at first. This page should give you a quick overview, but for a complete guide you will have to search the web on your own. Another great resource to get started practically without having to try out the newly-learned commands on a pre-existing repository is learn git branching. You should probably learn the basic `git` vocabulary and then come back to find out how you can use all that practically. This guide will be oriented on how to create a pull request and things might be in a different order compared to the introductory guides.

> **Warning:** This guide is not complete and never will be. If something isn't clear, consult other sources until you are confident you know what you are doing.

6.2.1 I want to try out a feature somebody is working on

If you see a pull request on GitHub that you want to try out, have a look at the line where it says:

```
user wants to merge n commits into qtile:master from user:branch
```

Right now you probably have one *remote* from which you can fetch changes, the `origin`. If you cloned `qtile/qtile`, `git remote show origin` will spit out the *upstream* url. If you cloned your fork, `origin` points to it and you probably want to `git remote add upstream https://www.github.com/qtile/qtile`. To try out somebody's work, you can add their fork as a new remote:

```
git remote add <user> https://www.github.com/user/qtile
```

where you fill in the username from the line we asked you to search for before. Then you can load data from that remote with `git fetch` and then ultimately check out the branch with `git checkout <user>/<branch>`.

Alternatively, it is also possible to fetch and checkout pull requests without needing to add other remotes. The upstream remote is sufficient:

```
git fetch upstream pull/<id>/head:pr<id>
git checkout pr<id>
```

The numeric pull request id can be found in the url or next to the title (preceeded by a # symbol).

Note: Having the feature branch checked out doesn't mean that it is installed and will be loaded when you restart qtile. You might still need to install it with `pip`.

6.2.2 I committed changes and the tests failed

You can easily change your last commit: After you have done your work, `git add` everything you need and use `git commit --amend` to change your last commit. This causes the git history of your local clone to be diverged from your fork on GitHub, so you need to force-push your changes with:

```
git push -f <origin> <feature-branch>
```

where origin might be your user name or `origin` if you cloned your fork and feature-branch is to be replaced by the name of the branch you are working on.

Assuming the feature branch is currently checked out, you can usually omit it and just specify the origin.

6.2.3 I was told to rebase my work

If *upstream/master* is changed and you happened to change the same files as the commits that were added upstream, you should rebase your work onto the most recent *upstream/master*. Checkout your master, pull from *upstream*, checkout your branch again and then rebase it:

```
git checkout master
git pull upstream/master
git checkout <feature-branch>
git rebase upstream/master
```

You will be asked to solve conflicts where your diff cannot be applied with confidence to the work that was pushed upstream. If that is the case, open the files in your text editor and resolve the conflicts manually. You possibly need to `git rebase --continue` after you have resolved conflicts for one commit if you are rebasing multiple commits.

Note that the above doesn't work if you didn't create a branch. In that case you will find guides elsewhere to fix this problem, ideally by creating a branch and resetting your master branch to where it should be.

6.2.4 I was told to squash some commits

If you introduce changes in one commit and replace them in another, you are told to squash these changes into one single commit without the intermediate step:

```
git rebase -i master
```

opens a text editor with your commits and a comment block reminding you what you can do with your commits. You can reword them to change the commit message, reorder them or choose `fixup` to squash the changes of a commit into the commit on the line above.

This also changes your git history and you will need to force-push your changes afterwards.

Note that interactive rebasing also allows you to split, reorder and edit commits.

6.2.5 I was told to edit a commit message

If you need to edit the commit message of the last commit you did, use:

```
git commit --amend
```

to open an editor giving you the possibility to reword the message. If you want to reword the message of an older commit or multiple commits, use `git rebase -i` as above with the `reword` command in the editor.

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