

EXWM

Emacs X Windows Manager



What is it?

- Tiled windows manager
- Compatible X.org

Tiling example

The image shows a tiling window manager interface with three windows:

- YouTube Window:** Displays a video player for a Star Wars video. The URL is `https://www.youtube.com/watch?v=xmXp802sFgQ`. The video title is "Star Wars Reborn". The "Up next" section lists several related videos, including "We've Seen the Star Wars Season 3 Premiere - Star Wars IGN", "Star Wars Archaeology Panel | Star Wars Celebration Europe 2019", "Ahsoka's Untold Tales Panel | Star Wars Celebration Europe 2019", and "Droids of The Force Awakens Panel | Star Wars Celebration Europe 2019".
- Hacker News Window:** Displays a list of news items from `https://news.ycombinator.com/`. The top item is "59 points by adamnemecek 10 hours ago | hide | 13 comments". The list includes items 13 through 25, each with a title, score, author, and time.
- Terminal Window:** Shows a shell prompt `U:%%- chromium-browser All (1,0) (EXWM: line)` with a cursor on the line below. The bottom terminal window shows `U:%%- Lxterminal All (1,0) (EXWM: line)`.

The Hacker News list items are:

13. [Microsoft Orleans-build distributed, high-scale applications in .NET easily \(dotnet.github.io\)](#)
79 points by [hitr](#) 13 hours ago | [hide](#) | [22 comments](#)
14. [Writing custom type systems for Python in Prolog \(alehander42.me\)](#)
92 points by [type0](#) 15 hours ago | [hide](#) | [26 comments](#)
15. [Algebraic patterns - Semigroup \(philipnilsson.github.io\)](#)
26 points by [lebek](#) 9 hours ago | [hide](#) | [9 comments](#)
16. [The Great Lightbulb Conspiracy \(2014\) \(lee.org\)](#)
105 points by [mmastrac](#) 16 hours ago | [hide](#) | [63 comments](#)
17. [Nepal's Ban on Production and Use of Plastic Bags Comes into Effect \(thehimalayantimes.com\)](#)
40 points by [dpflan](#) 11 hours ago | [hide](#) | [29 comments](#)
18. [MacHeap: OS X malloc introspection tool \(github.com\)](#)
18 points by [adamnemecek](#) 10 hours ago | [hide](#) | [discuss](#)
19. [Check Widening in LLVM \(playingwithpointers.com\)](#)
31 points by [sanjoy_das](#) 11 hours ago | [hide](#) | [1 comment](#)
20. [Destroy All ifs - A Perspective from Functional Programming \(degoes.net\)](#)
248 points by [buffyoda](#) 18 hours ago | [hide](#) | [158 comments](#)
21. [CrossOver for Android Runs on ChromeBooks \(codeweavers.com\)](#)
17 points by [doener](#) 3 hours ago | [hide](#) | [1 comment](#)
22. [Move Over, Madagascar: Luzon Has the Most Unique Mammals \(smithsonianmag.com\)](#)
44 points by [palmdeezy](#) 17 hours ago | [hide](#) | [2 comments](#)
23. [Rwanda is becoming a hub for expanding tech companies \(cnn.com\)](#)
21 points by [edward](#) 3 hours ago | [hide](#) | [7 comments](#)
24. [Just: A library of dependency-free JS utilities that do just do one thing \(github.com\)](#)
76 points by [arash_milani](#) 17 hours ago | [hide](#) | [52 comments](#)
25. [Dissonant tones sound fine to people not raised on Western music](#)

Side by side

```
\begin{equation*}
\left.\begin{aligned}
B' &= -\partial \times E, \\
E' &= \partial \times B - 4\pi j,
\end{aligned}
\right\}
\quad \text{Maxwell's equations}
\end{equation*}
\end{verbatim}
Like the \env{array} environment, these \texttt{-ed} variants also take an optional \verb'[t]' or \verb'[b]' argument to specify vertical positioning.
```

Cases constructions like the following are common in mathematics:

```
\begin{equation}\label{eq:C}
P_{-j} =
\begin{cases}
0 & \text{if } r-j \text{ is odd,} \\
r!(-1)^{(r-j)/2} & \text{if } r-j \text{ is even.}
\end{cases}
\end{equation}
```

and in the `\pkg{amsmath}` package there is a `\env{cases}` environment to make them easy to write:

```
\begin{verbatim}
P_{-j} = \begin{cases}
0 & \text{if } r-j \text{ is odd,} \\
r!(-1)^{(r-j)/2} & \text{if } r-j \text{ is even.}
\end{cases}
\end{verbatim}
```

Notice the use of `\cn{text}` (cf. `\secref{text}`) and the nested math formulas.

Adjusting tag placement

Placing equation numbers can be a rather complex problem in multiline displays. The environments of the `\pkg{amsmath}` package try hard to avoid overprinting an equation number on the equation contents, if necessary moving the number down or up to a separate line. Difficulties in accurately calculating the profile of an equation can occasionally result in number movement that doesn't look right. There is a `\cn{raisetag}` command provided to adjust the vertical position of the current equation number, if it has been shifted away from its normal position. To move a particular number up by six points, write

```
--- amsldoc.tex 26% (712,0) (LaTeX/PS Ref)
```

12 of 40 amsldoc.pdf 113.29%

8 3. DISPLAYED EQUATIONS

Like the `array` environment, these `-ed` variants also take an optional `[t]` or `[b]` argument to specify vertical positioning.

“Cases” constructions like the following are common in mathematics:

(3.21)
$$P_{-j} = \begin{cases} 0 & \text{if } r-j \text{ is odd,} \\ r!(-1)^{(r-j)/2} & \text{if } r-j \text{ is even.} \end{cases}$$

and in the `amsmath` package there is a `cases` environment to make them easy to write:

```
P_{-j} = \begin{cases}
0 & \text{if } r-j \text{ is odd,} \\
r!(-1)^{(r-j)/2} & \text{if } r-j \text{ is even.}
\end{cases}
```

Notice the use of `\text` (cf. §6) and the nested math formulas.

3.8 Adjusting tag placement

Placing equation numbers can be a rather complex problem in multiline displays. The environments of the `amsmath` package try hard to avoid overprinting an equation number on the equation contents, if necessary moving the number down or up to a separate line. Difficulties in accurately calculating the profile of an equation can occasionally result in number movement that doesn't look right. There is a `\raisetag` command provided to adjust the vertical position of the current equation number, if it has been shifted away from its normal position. To move a particular number up by six points, write `\raisetag{6pt}`. This kind of adjustment is fine tuning like line breaks and page breaks, and should therefore be left undone until your document is nearly finalized, or you may end up redoing the fine tuning several times to keep up with changing document contents.

3.9 Vertical spacing and page breaks in multiline displays

You can use the `\[dimension]` command to get extra vertical space between lines in all the `amsmath` displayed equation environments, as is usual in \LaTeX . When the `amsmath` package is in use page breaks between equation lines are normally disallowed; the philosophy is that page breaks in such material should receive individual attention from the author. To get an individual page break inside a particular displayed equation, a `displaybreak` command is provided. `\displaybreak` is best placed immediately before the `\` where it is to take effect. Like \LaTeX 's `\pagebreak`, `\displaybreak` takes an optional argument between 0 and 4 denoting the desirability of the page-break. `\displaybreak[0]` means “it is permissible to break here” without encouraging a break; `\displaybreak` with no optional argument is the same as `\displaybreak[4]` and forces a break.

If you prefer a strategy of letting page breaks fall where they may, even in the middle of a multi-line equation, then you might put `\allowdisplaybreaks[1]` in the preamble of your document. An optional argument 1-4 can be used for

U:%%- Evince All (1,0) (EXWM: line)

Alternatives

- i3 - (vi like keybindings)
- awesome
- dwm
- ratpoison

Why?

- Fast & Low resources
- Keyboard driven
- Same keybindings as all emacs
- No distractions
- Smart use of space
- Easy to read code
- Heaps of packages (3500+)
- Documentation
- Chris Feng (Creator of exwm)

Installation

Requirements

	Package Manager
X11 server (recent)	System
Emacs 24.4 or above	System
EXWM	emacs
Xelb	emacs

Install emacs

```
sudo apt-get install emacs
```

Install exwm & xelb

Start emacs

```
emacs
```

Within emacs

```
alt+x (M-x)  
package-install exwm  
package-install xelb
```

Add to ~/.emacs

```
(require 'exwm)  
(require 'exwm-config)  
(exwm-config-default)
```

Add to ~/.xinitrc

```
#!/usr/bin/env bash
xhost +SI:localuser:$USER          # Disable access control
xsetroot -cursor_name left_ptr     # Fallback cursor
setxkbmap -layout us -option ctrl:nocaps # Set capslock as ctrl

export VISUAL=emacsclient
export EDITOR="$VISUAL"
export TERM="xterm"
export DISPLAY=:0

xset b off &
xhost +
numlockx off                        # Turn off numlock

# Autostarts go here

exec dbus-launch --exit-with-session emacs
```

Start for the first time

1. Stop any login managers, eg;

```
sudo service lightdm stop
```

2. Login to VT2

3. Start emacs

```
xinit -- vt01
```

Configure session

- For use with your Desktop Manager (eg: LightDM)
- Configure as your default session

```
ln -s ~/.xinitrc ~/.xsession  
sudo service lightdm start
```

- Start lightdm

```
sudo service lightdm start
```

Autostart

Standard items

- Enter into `.xinitrc` before emacs starts like so;

```
xfce4-power-manager &  
xscreensaver -no-splash &  
nm-applet & # Network Manager  
blueman-applet & # Bluetooth  
pulseaudio --kill # Kill pulseaudio  
pulseaudio --start # Start pulseaudio  
vold & # Volume manager  
udiskie --tray & # Disk mount utility  
syncthing -no-browser & # Syncthing
```


System tray items

~/.emacs.d/.emacs.autostart.el

```
;; Autostart Dropbox  
(call-process-shell-command "(sleep 10s && ~/.dropbox-dist/dropboxd) &" nil 0)
```

This is loaded through my config later.

Tiling mode

- Arrange your buffers any way you want
- Save layouts
- Resize with the keyboard
- Switch focus fast

Floating mode

- Turn a window into a floating window (C-c C-t C-f)
- Good for dialogs and nothing else
- Move with (S-<left mouse btn>)
- Resize with (S-<right mouse btn>)

Multi-monitor

~/.emacs.d/.emacs.randr.el

```
;; Home setup
(setq exwm-randr-workspace-output-plist '(0 "LVDS1" 1 "LVDS1" 2 "DP2"))
(add-hook 'exwm-randr-screen-change-hook
  (lambda ()
    (start-process-shell-command
      "xrandr" nil "xrandr --output DP2 --right-of LVDS1 --output DP2 --mode 1920x1080")))
(exwm-randr-enable)
```

System Tray

- Part of exwm itself
- Load (in my 100-exwm.el file)

```
;; System tray  
(require 'exwm-systemtray)  
(exwm-systemtray-enable)
```

Workspaces

- Used to switch multiple screen setups
- <super> <workspace number>

```
;; Enable workspace  
(setq exwm-workspace-number 10)
```

Compositing Manager (NEW)

- transparency
- custom opacity

Optional extras

Redshift

Great for using the computer at night

```
;; Redshift off
(exwm-input-set-key (kbd "s-x")
  (lambda () (interactive) (start-process "" nil "redshift" "-x" )))

;; Redshift on
(exwm-input-set-key (kbd "s-z")
  (lambda () (interactive) (start-process "" nil "redshift" "-0" "3500")))
```

Capslock

```
;; Turn on capslock  
(exwm-input-set-key (kbd "s-c")  
  (lambda () (interactive) (start-process "" nil "setxkbmap" "-layout" "us" "-
```

Lock screen

I use slock from i3lock package

```
;; + 'slock' is a simple X display locker provided by suckless tools. 'i3lock'  
;;   is a more feature-rich alternative.  
(exwm-input-set-key (kbd "s-l")  
                    (lambda () (interactive) (start-process "" nil "slock")))
```

Suspend

```
;; Suspend nicely  
(exwm-input-set-key (kbd "s-<f12>")  
  (lambda () (interactive) (start-process "" nil "gksudo" "pm-suspend")))
```

winner-mode

- Undo previous layout (S-[])
- Redo layout (S-[])

Use

Super + & (s-&)	starts a GUI program
Super + w	Switch workspaces
Super + No (s-N)	Switch to a workspace
C-c C-m	Move GUI to workspace
C-c C-t C-f	Toggle float

Emacs within Emacs

- Start emacs within a buffer
- Capture all keyboard input into that buffer

`exwm-input-toggle-keyboard`

References

- Chris Feng - creator of exwm
- [GitHub - ch11ng/exwm: Emacs X Window Manager](#)
- My Setup: <https://github.com/map7/emacs-config>

Conclusion

I use EXWM for speed, low resources and good use of space.

Questions

Email	map7777@gmail.com
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Twitter	@map7
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Github	github: map7
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