

Doom Emacs Configuration

Emacs configuration for work and life!

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August 13, 2022

Contents

1	This repository	5
1.1	How to install	5
1.2	Emacs stuff	6
2	Intro	6
2.1	This file	6
3	Doom configuration files	7
3.1	Pseudo early-init	7
3.1.1	Fixes	7
3.1.2	Useful functions	7
3.1.3	Check for external tools	8
3.2	Doom modules (<code>init.el</code>)	8
3.2.1	File skeleton	8
3.2.2	Input (<code>:input</code>)	9
3.2.3	General (<code>:config</code>)	9
3.2.4	Completion (<code>:completion</code>)	9
3.2.5	User interface (<code>:ui</code>)	10
3.2.6	Editor (<code>:editor</code>)	10
3.2.7	Emacs builtin stuff (<code>:emacs</code>)	10
3.2.8	Terminals (<code>:term</code>)	10
3.2.9	Checkers (<code>:checkers</code>)	11
3.2.10	Tools (<code>:tools</code>)	11
3.2.11	Operating system (<code>:os</code>)	11
3.2.12	Language support (<code>:lang</code>)	11
3.2.13	Email (<code>:email</code>)	12
3.2.14	Apps (<code>:app</code>)	12
3.3	Additional packages (<code>packages.el</code>)	12
4	General Emacs settings	12
4.1	User information	12
4.2	Secrets	12
4.3	Better defaults	13
4.3.1	File deletion	13
4.3.2	Window	13
4.3.3	Messages buffer	13
4.3.4	Undo and auto-save	14
4.3.5	Editing	15
4.3.6	Emacs sources	15

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4.3.7	Frame	15
5	Emacs daemon	15
5.1	Initialization	15
5.2	Tweaks	16
5.2.1	Save recent files	16
6	Package configuration	16
6.1	User interface	16
6.1.1	Font	16
6.1.2	Theme	17
6.1.3	Modeline	19
6.1.4	Set transparency	19
6.1.5	Dashboard	19
6.1.6	Which key	20
6.1.7	Window title	20
6.1.8	Company	20
6.1.9	SVG tag	21
6.1.10	Focus	21
6.1.11	Smooth scrolling	21
6.1.12	All the icons	22
6.2	Editing	22
6.2.1	Scratch buffer	22
6.2.2	Mouse buttons	22
6.2.3	Page break lines	22
6.2.4	Binary files	22
6.2.5	Very large files	23
6.2.6	Evil	23
6.2.7	Aggressive indent	23
6.2.8	YASnippet	23
6.3	Literate configuration	23
6.3.1	Allow babel execution in doom CLI actions	23
6.3.2	Asynchronous tangling	24
6.4	Completion & IDE	25
6.4.1	Treemacs	25
6.4.2	Projectile	26
6.4.3	Tramp	26
6.4.4	Eros-eval	26
6.4.5	dir-locals.el	27
6.4.6	Language Server Protocol	27
6.4.7	Cppcheck	30
6.4.8	Project CMake	30
6.4.9	Clang-format	30
6.4.10	Auto-include C++ headers	30
6.4.11	Emacs Refactor	31
6.4.12	Lorem ipsum	31
6.5	Symbols	31
6.5.1	Emojify	31
6.5.2	Ligatures	32
6.6	Checkers (spell & grammar)	32
6.6.1	Spell-Fu	32
6.6.2	Guess language	33
6.6.3	Grammarly	33
6.6.4	Grammalecte	35
6.6.5	LanguageTool	35
6.6.6	Go Translate (Google, Bing and DeepL)	38

6.7	System tools	39
6.7.1	Disk usage	39
6.7.2	Chezmoi	39
6.7.3	Aweshell	40
6.7.4	Lemon	40
6.7.5	eCryptfs	41
6.8	Features	42
6.8.1	Weather	42
6.8.2	OpenStreetMap	42
6.8.3	Islamic prayer times	42
6.8.4	Info colors	43
6.8.5	Zotero Zotxt	43
6.8.6	CRDT	43
6.8.7	The Silver Searcher	43
6.8.8	Emacs Application Framework	44
6.8.9	Bitwarden	46
6.8.10	PDF tools	47
6.8.11	LTDR	47
6.8.12	FZF	48
6.9	Fun	48
6.9.1	Speed Type	48
6.9.2	2048 Game	48
6.9.3	Snow	49
6.9.4	xkcd	49
7	Applications	49
7.1	Calendar	49
7.2	e-Books (nov)	49
7.3	News feed (elfeed)	50
7.4	VPN configuration	51
7.4.1	NetExtender wrapper	51
7.4.2	Emacs + NetExtender	51
7.5	Email (mu4e)	51
7.5.1	IMAP (mbsync)	52
7.5.2	SMTP (msmtp)	54
7.5.3	Mail client and indexer (mu and mu4e)	55
7.6	IRC	58
7.7	Multimedia	58
7.7.1	MPD, MPC, and MPV	58
7.7.2	EMMS	59
7.7.3	Elfeed :heart: MPV	61
7.7.4	Keybindings	62
7.7.5	Cycle song information in mode line	62
7.8	Maxima	63
7.8.1	Maxima	63
7.8.2	IMaxima	64
7.9	FriCAS	64
8	Programming	64
8.1	File templates	64
8.2	CSV rainbow	64
8.3	Vim	65
8.4	ESS	65
8.5	Python IDE	65
8.6	GNU Octave	65
8.7	ROS	66

8.7.1	Extensions	66
8.7.2	ROS bags	66
8.7.3	<code>ros.el</code>	66
8.8	Scheme	67
8.9	Embedded systems	67
8.9.1	<code>Embed.el</code>	67
8.9.2	Arduino	68
8.9.3	Bitbake (Yocto)	68
8.10	Debugging	68
8.10.1	DAP	68
8.10.2	The Grand “Cathedral” Debugger	69
8.10.3	GDB	71
8.10.4	Valgrind	73
8.11	Git & VC	73
8.11.1	Magit	73
8.11.2	Repo	74
8.11.3	Blamer	75
8.12	Assembly	75
8.13	Disaster	76
8.14	Devdocs	76
8.15	Systemd	76
8.16	PKGBUILD	77
8.17	Franca IDL	77
8.18	\LaTeX	77
8.19	Flycheck + Projectile	77
8.20	Graphviz	77
8.21	Modula-II	78
8.22	Mermaid	78
8.23	Inspector	78
9	Office	78
9.1	Org mode additional packages	78
9.2	Org mode	79
9.2.1	Intro	79
9.2.2	Behavior	79
9.2.3	Custom links	90
9.2.4	Visuals	91
9.2.5	Bibliography	98
9.2.6	Exporting	99
9.3	Text editing	103
9.3.1	Plain text	103
9.3.2	Academic phrases	103
9.3.3	Quarto	103
9.3.4	French apostrophes	104
9.3.5	Yanking multi-lines paragraphs	104
10	System configuration	104
10.1	Mime types	104
10.1.1	Org mode files	104
10.1.2	Registering <code>org-protocol://</code>	105
10.1.3	Configuring Chrome/Brave	105
10.2	Git	106
10.2.1	Git diffs	106
10.2.2	Apache Tika App wrapper	108
10.3	Emacs’ Systemd daemon	109
10.4	Emacs Client	110

10.4.1	Desktop integration	110
10.4.2	Command-line wrapper	110
10.5	AppImage	112
10.6	Oh-my-Zsh	113
10.6.1	Path	113
10.6.2	Themes and customization:	113
10.6.3	Behavior	113
10.6.4	Plugins	114
10.6.5	Bootstrap Oh-my-Zsh	114
10.6.6	Aliases	114
10.7	Zsh user configuration	114
10.7.1	pbcopy and pbpaste	114
10.7.2	netpaste	115
10.7.3	Sudo GUI!	115
10.7.4	Neovim	115
10.7.5	ESP-IDF	115
10.7.6	CLI wttrin client	116
10.7.7	Minicom	116
10.7.8	Rust	116
10.7.9	Clang-format	116
10.7.10	CMake	116
10.7.11	Node	116
10.7.12	tmux	117
10.7.13	Other stuff	117
10.8	Rust format	117
10.9	eCryptfs	118
10.9.1	Unlock and mount script	118
10.9.2	Desktop integration	119
10.10	GDB	120
10.10.1	Early init	120
10.10.2	Init	120
10.11	GnuPG	121
10.12	Packages	121
10.13	KDE Plasma	122

1 This repository

This repository (abougouffa/dotfiles) contains my configuration files for **Zsh**, **Emacs**, **Vim**, **Alacritty** and other Linux related stuff.

If you want to reuse some of these configurations, you will need to modify some directories and add some user specific information (usernames, passwords...)

This is the main configuration file `.doom.d/config.org`, (available also as a PDF file), it contains the literal configuration for Doom Emacs, and I use it to generate some other user configuration files (define aliases, environment variables, user tools, Git configuration...).

1.1 How to install

Since commit 55c92810, I'm using **chezmoi** to manage my Dotfiles.

Now the Dotfiles can be installed using the following command; however, I don't recommend installing all of my dotfiles, try instead to adapt them or to copy some interesting chunks.

```
1 sudo pacman -S chezmoi
2 chezmoi init --apply abougouffa
```

1.2 Emacs stuff

To use my Doom Emacs configuration, you need first to install Doom Emacs to `~/.config/emacs` or `.emacs.d`:

```
1 git clone https://github.com/doomemacs/doomemacs.git ~/.config/emacs
2
3 ~/.config/emacs/bin/doom install
```

Until 12b3d20e, I was using Chemacs2 to manage multiple Emacs profiles. Since I'm using only Doom Emacs and Doom recently introduced a new feature to bootstrap other Emacs configs, so I switched to a plain Doom Emacs config.

2 Intro

I've been using Linux exclusively since 2010, **GNU Emacs** was always installed on my machine, but I didn't discover the **real** Emacs until 2020, in the beginning, I started my Vanilla Emacs configuration from scratch, but after a while, it becomes a mess. As a new Emacs user, I didn't understand the in the beginning how to optimize my configuration and how to do things correctly. I discovered then Spacemacs, which made things much easier, but it was a little slow, and just after, I found the awesome Doom Emacs, and since, I didn't quit my Emacs screen!

In the beginning, I was basically copying chunks of Emacs Lisp code from the internet, which quickly becomes a mess, specially because I was using a mixture of vanilla Emacs style configurations and Doom style ones.

Now I decided to rewrite a cleaner version of my configuration which will be more Doom friendly, and for that, I found an excellent example in *tecosaur's* emacs-config, so my current configuration is heavily inspired by *tecosaur's* one.

2.1 This file

This is my literate configuration file, I use it to generate Doom's config files (`$DOOMDIR/init.el`, `$DOOMDIR/packages.el` and `$DOOMDIR/config.el`), as well as some other shell scripts, app installers, app launchers... etc.

Make `config.el` run (slightly) faster with lexical binding (see this blog post for more info).

```
1 ;; config.el -*- coding: utf-8-unix; lexical-binding: t; -*-
```

Add the shebang and the description to the `setup.sh` file, which will be used to set system settings and install some missing dependencies.

```
1 #!/bin/bash
2
3 # This is an automatically generated setup file, it installes some missing
4 # dependencies, configure system services, set system settings form better
5 # desktop integration... etc.
6 # Abdelhak BOUGOUFFA (c) 2022
```

Add an initial comment to the `~/.zshrc` file.

```
1 # -*- mode: sh; -*-
2
3 # This file is automatically generated from my Org literate configuration.
4 # Abdelhak BOUGOUFFA (c) 2022
```

3 Doom configuration files

3.1 Pseudo early-init

This file will be loaded before the content of Doom's private `init.el`, I add some special stuff which I want to load very early.

```
1 ;; pseudo-early-init.el -*- coding: utf-8-unix; lexical-binding: t; -*-
2
```

3.1.1 Fixes

```
1 ;; Fixes to apply early
2
3 (when (daemonp)
4   ;; When starting Emacs in daemon mode,
5   ;; I need to have a valid passphrase in the gpg-agent.
6   (let ((try-again 3))
7     (while (not (or (zerop try-again)
8                     (zerop (shell-command "gpg -q --no-tty --logger-file /dev/null --batch -d ~/.authinfo.gpg >
↪ /dev/null" nil nil))))
9       (setq try-again (1- try-again))
10      (message "GPG: Failed to unlock, please try again (%d)" try-again))))
```

3.1.2 Useful functions

Here we define some useful functions, some of them are available via other packages like `cl-lib`, `dash.el` or `s.el`, but I don't like to load too much third party libraries, particularly in early stage, so let's define here.

```
1 ;; (+bool "someval") ;; ==> t
2 (defun +bool (val) (not (null val)))
3
4 ;; (+foldr (lambda (a b) (message "(%d + %d)" a b) (+ a b)) 0 '(1 2 3 4 5)) ;; ==> 15
5 ;; (5 + 0) -> (4 + 5) -> (3 + 9) -> (2 + 12) --> (1 + 14)
6 (defun +foldr (fun acc seq)
7   (if (null seq) acc
8       (funcall fun (car seq) (+foldr fun acc (cdr seq)))))
9
10 ;; (+foldl (lambda (a b) (message "(%d + %d)" a b) (+ a b)) 0 '(1 2 3 4 5)) ;; ==> 15
11 ;; (0 + 1) -> (1 + 2) -> (3 + 3) -> (6 + 4) -> (10 + 5)
12 (defun +foldl (fun acc seq)
13   (if (null seq) acc
14       (+foldl fun (funcall fun acc (car seq)) (cdr seq))))
15
16 ;; (+all '(83 88 t "txt")) ;; ==> t
17 (defun +all (seq)
18   (+foldr (lambda (r l) (and r l)) t seq))
19
20 ;; (+some '(nil nil "txt" nil 2)) ;; ==> t
21 (defun +some (seq)
22   (+bool (+foldr (lambda (r l) (or r l)) nil seq)))
23
24 ;; (+filter 'stringp '("A" 2 "C" nil 3)) ;; ==> ("A" "C")
25 (defun +filter (fun seq)
26   (if (null seq) nil
27       (let ((head (car seq))
28             (tail (cdr seq)))
29         (if (funcall fun head)
30             (cons head (+filter fun tail))
31             (+filter fun tail)))))
32
33 ;; (+str-join " " '("foo" "10" "bar")) ;; ==> "foo, 10, bar"
34 (defun +str-join (sep seq)
```

```

35 (+foldl (lambda (l r) (concat l sep r))
36         (car seq) (cdr seq)))
37
38 ;; (+str-split "foo, 10, bar" ", ") ;; ==> ("foo" "10" "bar")
39 (defun +str-split (str sep)
40   (let ((s (string-search sep str)))
41     (if s (cons (substring str 0 s)
42                 (+str-split (substring str (+ s (length sep))) sep))
43         (list str))))
44
45 ;; (+zip '(1 2 3 4) '(a b c d) '("A" "B" "C" "D")) ;; ==> ((1 a "A") (2 b "B") (3 c "C") (4 d "D"))
46 (defun +zip (&rest seqs)
47   (if (null (car seqs)) nil
48       (cons (mapcar #'car seqs)
49             (apply #'zip (mapcar #'cdr seqs)))))

```

3.1.3 Check for external tools

Some added packages require external tools, I like to check for these tools and store the result in global constants.

```

1 (defconst EAF-DIR (expand-file-name "eaf/eaf-repo" doom-etc-dir))
2 (defconst IS-LUCID (+bool (string-search "LUCID" system-configuration-features)))
3
4 (defconst AG-P (+bool (executable-find "ag")))
5 (defconst EAF-P (+bool (and (not IS-LUCID) (file-directory-p EAF-DIR))))
6 (defconst MPD-P (+all (mapcar #'executable-find '("mpc" "mpd"))))
7 (defconst MPV-P (+bool (executable-find "mpv")))
8 (defconst REPO-P (+bool (executable-find "repo")))
9 (defconst FRICAS-P (+bool (and (executable-find "fricas") (file-directory-p "/usr/lib/fricas/emacs"))))
10 (defconst MAXIMA-P (+bool (executable-find "maxima")))
11 (defconst QUARTO-P (+bool (executable-find "quarto")))
12 (defconst ROSBAG-P (+bool (executable-find "rosbag")))
13 (defconst ZOTERO-P (+bool (executable-find "zotero")))
14 (defconst CHEZMOI-P (+bool (executable-find "chezmoi")))
15 (defconst ECRYPTFS-P (+all (mapcar #'executable-find '("ecryptfs-add-passphrase"
16   ↪ "/sbin/mount.ecryptfs_private"))))
17 (defconst BITWARDEN-P (+bool (executable-find "bw")))
18 (defconst YOUTUBE-DL-P (+bool (+some (mapcar #'executable-find '("yt-dlp" "youtube-dl")))))
19 (defconst NETEXTENDER-P (+bool (and (executable-find "netExtender") (+all (mapcar #'file-exists-p
20   ↪ '("~/local/bin/netextender" "~/ssh/sslvpn.gpg")))))
21 (defconst CLANG-FORMAT-P (+bool (executable-find "clang-format")))
22 (defconst LANGUAGETOOL-P (+bool (executable-find "languagetool")))

```

3.2 Doom modules (init.el)

Here is the literate configuration which generates the Doom's `init.el` file, this file contains all the enabled Doom modules with the appropriate flags.

This section defines the default source blocks arguments . All source blocks in this section inherits these headers, so they will not be tangled unless overwriting in the block's header.

3.2.1 File skeleton

This first section defines the template for the subsections, it uses the `no-web` syntax to include subsections specified as `<<sub-section-name>>`.

```

1 ;;; init.el -*- coding: utf-8-unix; lexical-binding: t; -*-
2
3 ;; This file controls what Doom modules are enabled and what order they load in.
4 ;; Press 'K' on a module to view its documentation, and 'gd' to browse its directory.
5
6 ;; I add some special stuff wich I want to load very early.
7 (load! "pseudo-early-init.el")
8

```



```
9 (doom!  
10   :input  
11   <<doom-input>>  
12  
13   :completion  
14   <<doom-completion>>  
15  
16   :ui  
17   <<doom-ui>>  
18  
19   :editor  
20   <<doom-editor>>  
21  
22   :emacs  
23   <<doom-emacs>>  
24  
25   :term  
26   <<doom-term>>  
27  
28   :checkers  
29   <<doom-checkers>>  
30  
31   :tools  
32   <<doom-tools>>  
33  
34   :os  
35   <<doom-os>>  
36  
37   :lang  
38   <<doom-lang>>  
39  
40   :email  
41   <<doom-email>>  
42  
43   :app  
44   <<doom-app>>  
45  
46   :config  
47   <<doom-config>>  
48 )
```

3.2.2 Input (:input)

Enable bidirectional languages support (*bid*).

```
1 bid
```

3.2.3 General (:config)

Enable *literate* configuration (like this file!), and some defaults.

```
1 literate  
2 (default +bindings +smartparens)
```

3.2.4 Completion (:completion)

I'm lazy, I like Emacs to complete my writings.

```
1 (vertico +icons)  
2 company
```

3.2.5 User interface (:ui)

Enables some user interface features for better user experience, the beautiful `modeline`, the `treemacs` project tree, better version control integration with `vc-gutter`... and other useful stuff.

```
1  deft
2  doom
3  doom-dashboard
4  hl-todo
5  hydra
6  modeline
7  zen
8  ophints
9  nav-flash
10 (vc-gutter +diff-hl +pretty)
11 (window-select +numbers)
12 (ligatures +extra)
13 (popup +all +defaults)
14 (emoji +ascii +unicode +github)
15 (treemacs +lsp)
16 workspaces
```

3.2.6 Editor (:editor)

Some editing modules, the most important feature is `EVIL` to enable Vim style editing in Emacs. I like also to edit with multiple cursors, enable `yasnipet` support, wrap long lines, auto format support.

```
1  (evil +everywhere)
2  file-templates
3  fold
4  format
5  multiple-cursors
6  parinfer
7  snippets
8  word-wrap
```

3.2.7 Emacs builtin stuff (:emacs)

Beautify Emacs builtin packages.

```
1  (dired +dirvish +icons)
2  (ibuffer +icons)
3  undo
4  vc
```

3.2.8 Terminals (:term)

Run commands in terminal from Emacs. I use mainly `vterm` on my local machine, however, I like to have `eshell`, `shell` and `term` installed to use them for remote file editing (via Tramp).

```
1  eshell
2  vterm
3  shell
4  term
```

3.2.9 Checkers (:checkers)

I like to check my documents for errors while I'm typing. The **grammar** module enables LanguageTool support.

```

1 (syntax +childframe)
2 (spell +aspell)

```

3.2.10 Tools (:tools)

I enable some useful tools which facilitate my work flow, I like to enable Docker support, EditorConfig is a good feature to have. I like to enable **lsp-mode** and **dap-mode** for coding and debugging by enabling the **lsp** and **debugger** modules with **+lsp** support (further customization for **lsp** and **dap** below). **pdf** adds support through **pdf-tools**, which are great for viewing PDF files inside Emacs, I also enable some extra tools, like **magit**, **lookup**, **tmux**... etc.

```

1 ein
2 pdf
3 rgb
4 gist
5 make
6 tmux
7 direnv
8 upload
9 tree-sitter
10 editorconfig
11 (lsp +peek)
12 (docker +lsp)
13 (magit +forge)
14 (debugger +lsp)
15 (eval +overlay)
16 (lookup +docsets +dictionary +offline)

```

3.2.11 Operating system (:os)

I enable **tty** for better support of terminal editing.

```

1 (tty +osc)

```

3.2.12 Language support (:lang)

Most of the projects I'm working on are mainly written in C/C++, Python, Rust and some Lisp stuff, I edit also a lot of configuration and data files in several formats (**csv**, **yaml**, **xml**, **json**, **shell** scripts...). I use Org-mode to manage all my papers and notes, so I need to enable as many features as I need, I do enable **plantuml** also to quickly plot UML models withing Org documents.

```

1 plantuml
2 emacs-lisp
3 common-lisp
4 data
5 qt
6 (markdown +grip)
7 (ocaml +tree-sitter)
8 (cc +lsp +tree-sitter)
9 (json +lsp +tree-sitter)
10 (julia +lsp +tree-sitter)
11 (latex +lsp +latexmk +fold)
12 (rust +lsp +tree-sitter)
13 (ess +lsp)
14 (yaml +lsp)
15 (sh +lsp +tree-sitter)

```

```

16 (python +lsp +pyenv +pyright +tree-sitter)
17 (racket +lsp +xp)
18 (scheme +chez +mit +chicken +gauche +guile +chibi)
19 (org +dragndrop +gnuplot +jupyter +pandoc +noter +journal +hugo +present +pomodoro +roam2)
20 (web +tree-sitter)

```

3.2.13 Email (:email)

I like to use `mu4e` to manage mail mailboxes. The `+org` flag adds `org-msg` support and `+gmail` adds better management of Gmail accounts.

```

1 (:if (executable-find "mu") (mu4e +org +gmail))

```

3.2.14 Apps (:app)

Emacs contains a ton of applications, some of them are supported by Doom, I like to use Emacs manage my calendar, chat on IRC, and receive news. I do use EMMS sometimes to play music without leaving Emacs, and I like to enable support for `emacs-everywhere`.

```

1 calendar
2 irc
3 emms
4 everywhere
5 (rss +org)

```

3.3 Additional packages (`packages.el`)

This section generates Doom's `packages.el`, with the associated configurations (`use-package!` blocks). This file shouldn't be byte compiled.

```

1 ;; -*- coding: utf-8-unix; no-byte-compile: t; -*-

```

4 General Emacs settings

4.1 User information

```

1 (setq user-full-name "Abdelhak Bougouffa"
2       user-mail-address "abougouffa@fedoraproject.org")

```

4.2 Secrets

Set the path to my GPG encrypted secrets. I like to set the cache expiry to `nil` instead of the default 2 hours.

```

1 (setq auth-sources '("~/authinfo.gpg")
2       auth-source-do-cache t
3       auth-source-cache-expiry 86400 ; All day, default is 2h (7200)
4       password-cache t
5       password-cache-expiry 86400)
6
7 (after! epa
8   (setq-default epa-file-encrypt-to '("F808A020A3E1AC37"))))

```

4.3 Better defaults

4.3.1 File deletion

Delete files by moving them to trash.

```
1 (setq-default delete-by-moving-to-trash t
2               trash-directory nil) ;; Use freedesktop.org trashcan
```

4.3.2 Window

Take new window space from all other windows (not just current).

```
1 (setq-default window-combination-resize t)
```

Split defaults Split horizontally to right, vertically below the current window.

```
1 (setq evil-vsplt-window-right t
2       evil-split-window-below t)
```

Show list of buffers when splitting.

```
1 (defadvice! prompt-for-buffer (&rest _)
2   :after '(evil-window-split evil-window-vsplt)
3   (consult-buffer))
```

4.3.3 Messages buffer

Stick to buffer tail, useful with `*Messages*` buffer. Derived from this answer.

```
1 (defvar +messages-buffer-auto-tail--enabled nil)
2
3 (defun +messages-buffer-auto-tail--advice (&rest arg)
4   "Make *Messages* buffer auto-scroll to the end after each message."
5   (let* ((buf-name (buffer-name (messages-buffer)))
6          ;; Create *Messages* buffer if it does not exist
7          (buf (get-buffer-create buf-name)))
8     ;; Activate this advice only if the point is _not_ in the *Messages* buffer
9     ;; to begin with. This condition is required; otherwise you will not be
10    ;; able to use `isearch' and other stuff within the *Messages* buffer as
11    ;; the point will keep moving to the end of buffer :P
12    (when (not (string= buf-name (buffer-name)))
13      ;; Go to the end of buffer in all *Messages* buffer windows that are
14      ;; *live* (`get-buffer-window-list' returns a list of only live windows).
15      (dolist (win (get-buffer-window-list buf-name nil :all-frames))
16        (with-selected-window win
17          (goto-char (point-max)))))
18      ;; Go to the end of the *Messages* buffer even if it is not in one of
19      ;; the live windows.
20      (with-current-buffer buf
21        (goto-char (point-max))))))
22
23 (defun +messages-buffer-toggle-auto-tail ()
24   "Auto tail the '*Messages*' buffer."
25   (interactive)
26   ;; Add/remove an advice from the 'message' function.
27   (cond (+messages-buffer-auto-tail--enabled
28         (advice-remove 'message '+messages-buffer-auto-tail--advice)
29         (setq +messages-buffer-auto-tail--enabled nil)
30         (message "+messages-buffer-auto-tail: Disabled."))
```

```

31      (t
32        (advice-add 'message :after '+messages-buffer-auto-tail--advice)
33        (setq +messages-buffer-auto-tail--enabled t)
34        (message "+messages-buffer-auto-tail: Enabled.))))

```

4.3.4 Undo and auto-save

```

1 (package! super-save
2   :disable t)

```

Auto-save

```

1 (use-package! super-save
2   :ensure t
3   :config
4   (setq auto-save-default t ;; nil to switch off the built-in `auto-save-mode', maybe leave it t to have a
↪ backup!
5     super-save-exclude '(".gpg")
6     super-save-remote-files nil
7     super-save-auto-save-when-idle t)
8   (super-save-mode +1))

```

```

1 (setq auto-save-default t) ;; enable built-in `auto-save-mode'

```

Undo Tweak undo-fu and other stuff from Doom's `:emacs undo`.

```

1 ;; Increase undo history limits even more
2 (after! undo-fu
3   (setq undo-limit      100000000 ;; 1MB (default is 160kB, Doom's default is 400kB)
4         undo-strong-limit 100000000 ;; 100MB (default is 240kB, Doom's default is 3MB)
5         undo-outer-limit 1000000000) ;; 1GB (default is 24MB, Doom's default is 48MB)
6
7   (after! evil
8     (setq evil-want-fine-undo t)) ;; By default while in insert all changes are one big blob

```

```

1 (package! vundo
2   :recipe (:host github
3           :repo "casouri/vundo"))

```

Visual Undo (vundo)

```

1 (use-package! vundo
2   :defer t
3   :custom
4   (vundo-glyph-alist vundo-unicode-symbols)
5   (vundo-compact-display t)
6   (vundo-window-max-height 5))

```

4.3.5 Editing

```

1 ;; Stretch cursor to the glyph width
2 (setq-default x-stretch-cursor t)
3
4 ;; Enable relative line numbers
5 (setq display-line-numbers-type 'relative)
6
7 ;; Iterate through CamelCase words
8 (global-subword-mode 1)

```

4.3.6 Emacs sources

```

1 (setq source-directory
2   (expand-file-name "~/Softwares/src/emacs"))

```

4.3.7 Frame

Focus created frame The problem is, every time I launch an Emacs frame (from KDE), Emacs starts with no focus, I need each time to Alt-TAB to get Emacs under focus, and then start typing. I tried changing this behavior from Emacs by hooking `raise-frame` at startup, but it didn't work.

Got from this comment, not working on my Emacs version.

```

1 ;; NOTE: Not tangled, not working
2 (add-hook 'server-switch-hook #'raise-frame)

```

After some investigations, I found that this issue is probably KDE specific, the issue goes away by setting: **Window Management > Window Behavior > Focus > Focus stealing prevention** to *None* in the KDE Settings.

5 Emacs daemon

5.1 Initialization

When the daemon is running, I almost always want to do a few particular things with it, so I may as well eat the load time at startup. We also want to keep `mu4e` running.

Lastly, while I'm not sure quite why it happens, but after a bit it seems that new Emacs client frames start on the `*scratch*` buffer instead of the dashboard. I prefer the dashboard, so let's ensure that's always switched to in new frames.

```

1 (defun +greedily-do-daemon-setup ()
2   ;; mu4e
3   (when (require 'mu4e nil t)
4     ;; Automatically start `mu4e' in background after 30s,
5     ;; Check each 5m, if `mu4e' if closed, start it in background.
6     (run-at-time 30 (* 60 5)
7       (lambda ()
8         (unless (mu4e-running-p)
9           (mu4e--start)
10          (message "Started `mu4e' in background."))))))
11
12   ;; RSS
13   (when (require 'elfeed nil t)
14     (run-at-time nil (* 2 60 60) #'elfeed-update))) ;; Check each 2h
15
16 (when (daemonp)
17   (add-hook 'emacs-startup-hook #' +greedily-do-daemon-setup)

```

```

18 (add-hook! 'server-after-make-frame-hook
19      #'doom/reload-theme
20      (unless (string-match-p "\\*draft\\\\\\\\*stdin\\\\\\\\|emacs-everywhere" (buffer-name))
21        (switch-to-buffer +doom-dashboard-name))))

```

5.2 Tweaks

5.2.1 Save recent files

When editing files with Emacs client, the files does not get stored by `recentf`, making Emacs forgets about recently opened files. A quick fix is to hook the `recentf-save-list` command to the `delete-frame-functions` and `delete-terminal-functions` which gets executed each time a frame/terminal is deleted.

```

1 (when (daemonp)
2   (add-hook! '(delete-frame-functions delete-terminal-functions)
3     (let ((inhibit-message t))
4       (recentf-save-list)
5       (savehist-save))))

```

6 Package configuration

6.1 User interface

6.1.1 Font

Doom exposes five (optional) variables for controlling fonts in Doom. Here are the three important ones: `doom-font`, `doom-unicode-font` and `doom-variable-pitch-font`. The `doom-big-font` is used for `doom-big-font-mode`; use this for presentations or streaming.

They all accept either a `font-spec`, font string ("Input Mono-12"), or xlfed font string. You generally only need these two:

Some good fonts:

- Iosevka Fixed (THE FONT)
- Nerd fonts
 - FantasqueSansMono Nerd Font Mono
 - mononoki Nerd Font Mono
 - CaskaydiaCove Nerd Font Mono
- Cascadia Code
- Fantasque Sans Mono
- JuliaMono (good Unicode support)
- IBM Plex Mono
- JetBrains Mono
- Roboto Mono
- Source Code Pro
- Input Mono Narrow
- Fira Code


```

1 (setq doom-font (font-spec :family "Iosevka Fixed" :size 20) ;; :weight 'light)
2   doom-big-font (font-spec :family "Iosevka Fixed" :size 30 :weight 'light)
3   doom-variable-pitch-font (font-spec :family "Andika") ;; inherits the :size from doom-font
4   doom-unicode-font (font-spec :family "JuliaMono")
5   doom-serif-font (font-spec :family "Input Serif" :weight 'light))

```

6.1.2 Theme

Doom Set Doom's theme, some good choices:

- doom-one
- doom-dark+ (VS Code like)
- doom-xcode
- doom-vibrant
- doom-material
- doom-palenight
- doom-one-light
- doom-ayu-mirage
- doom-monokai-pro
- doom-tomorrow-night

```

1 (setq doom-theme 'doom-one-light)
2 ;; (setq doom-theme 'modus-operandi)
3 (remove-hook 'window-setup-hook #'doom-init-theme-h)
4 (add-hook 'after-init-hook #'doom-init-theme-h 'append)

```

```

1 (package! modus-themes)

```

Modus

```

1 ;; NOTE: not tangled
2 (use-package! modus-themes
3   :init
4   (setq modus-themes-hl-line '(accented intense)
5         modus-themes-subtle-line-numbers nil
6         modus-themes-region '(bg-only no-extend) ;; accented
7         modus-themes-variable-pitch-ui nil
8         modus-themes-diffs nil
9         modus-themes-italic-constructs t
10        modus-themes-bold-constructs t
11        modus-themes-intense-mouseovers t
12        modus-themes-paren-match '(bold intense)
13        modus-themes-syntax '(green-strings)
14        modus-themes-mode-line '(borderless padded)
15        modus-themes-tabs-accented nil ;; default
16        modus-themes-completions
17        '((matches . (extrabold intense accented))
18          (selection . (semibold accented intense))
19          (popup . (accented))))
20        modus-themes-headings '((1 . (rainbow 1.4)))

```

```

21      (2 . (rainbow 1.3))
22      (3 . (rainbow 1.2))
23      (4 . (rainbow bold 1.1))
24      (t . (rainbow bold)))
25  modus-themes-org-blocks 'gray-background
26  modus-themes-org-agenda
27  '(header-block . (semibold 1.4))
28    (header-date . (workaholic bold-today 1.2))
29    (event . (accented italic varied))
30    (scheduled . rainbow)
31    (habit . traffic-light))
32  modus-themes-markup '(intense background)
33  modus-themes-mail-citations 'intense
34  modus-themes-lang-checkers '(background))
35
36  (defun +modus-themes-tweak-packages ()
37    (modus-themes-with-colors
38      (set-face-attribute 'cursor nil :background (modus-themes-color 'blue))
39      (set-face-attribute 'font-lock-type-face nil :foreground (modus-themes-color 'magenta-alt))
40      (custom-set-faces
41        ;; Tweak `evil-mc-mode'
42        `(evil-mc-cursor-default-face ((,class :background ,magenta-intense-bg)))
43        ;; Tweak `git-gutter-mode'
44        `(git-gutter-fr:added ((,class :foreground ,green-fringe-bg)))
45        `(git-gutter-fr:deleted ((,class :foreground ,red-fringe-bg)))
46        `(git-gutter-fr:modified ((,class :foreground ,yellow-fringe-bg)))
47        ;; Tweak `doom-modeline'
48        `(doom-modeline-evil-normal-state ((,class :foreground ,green-alt-other)))
49        `(doom-modeline-evil-insert-state ((,class :foreground ,red-alt-other)))
50        `(doom-modeline-evil-visual-state ((,class :foreground ,magenta-alt)))
51        `(doom-modeline-evil-operator-state ((,class :foreground ,blue-alt)))
52        `(doom-modeline-evil-motion-state ((,class :foreground ,blue-alt-other)))
53        `(doom-modeline-evil-replace-state ((,class :foreground ,yellow-alt)))
54        ;; Tweak `diff-hl-mode'
55        `(diff-hl-insert ((,class :foreground ,green-fringe-bg)))
56        `(diff-hl-delete ((,class :foreground ,red-fringe-bg)))
57        `(diff-hl-change ((,class :foreground ,yellow-fringe-bg)))
58        ;; Tweak `solaire-mode'
59        `(solaire-default-face ((,class :inherit default :background ,bg-alt :foreground ,fg-dim)))
60        `(solaire-line-number-face ((,class :inherit solaire-default-face :foreground ,fg-unfocused)))
61        `(solaire-hl-line-face ((,class :background ,bg-active)))
62        `(solaire-org-hide-face ((,class :background ,bg-alt :foreground ,bg-alt)))
63        ;; Tweak `display-fill-column-indicator-mode'
64        `(fill-column-indicator ((,class :height 0.3 :background ,bg-inactive :foreground ,bg-inactive)))
65        ;; Tweak `mmm-mode'
66        `(mmm-cleanup-submode-face ((,class :background ,yellow-refine-bg)))
67        `(mmm-code-submode-face ((,class :background ,bg-active)))
68        `(mmm-comment-submode-face ((,class :background ,blue-refine-bg)))
69        `(mmm-declaration-submode-face ((,class :background ,cyan-refine-bg)))
70        `(mmm-default-submode-face ((,class :background ,bg-alt)))
71        `(mmm-init-submode-face ((,class :background ,magenta-refine-bg)))
72        `(mmm-output-submode-face ((,class :background ,red-refine-bg)))
73        `(mmm-special-submode-face ((,class :background ,green-refine-bg))))))
74
75  (add-hook 'modus-themes-after-load-theme-hook #' +modus-themes-tweak-packages)
76
77  :config
78  (modus-themes-load-operandi)
79  (map! :leader
80    :prefix "t" ;; toggle
81    :desc "Toggle Modus theme" "m" #'modus-themes-toggle))

```

```

1  (package! lambda-themes
2    :recipe (:host github
3            :repo "Lambda-Emacs/lambda-themes"))

```

Lambda

```

1 (use-package! lambda-themes
2   :custom
3   (lambda-themes-set-italic-comments t)
4   (lambda-themes-set-italic-keywords t)
5   (lambda-themes-set-variable-pitch t)
6   :config
7   ;; load preferred theme
8   (load-theme 'lambda-light))

```

6.1.3 Modeline

Clock Display time and set the format to 24h.

```

1 (after! doom-modeline
2   (setq display-time-string-forms
3     '((propertize (concat " " 24-hours ":" minutes))))
4   (display-time-mode 1)) ; Enable time in the mode-line

```

Battery Show battery level unless battery is not present or battery information is unknown.

```

1 (after! doom-modeline
2   (let ((battery-str (battery)))
3     (unless (or (equal "Battery status not available" battery-str)
4                 (string-match-p (regexp-quote "unknown") battery-str)
5                 (string-match-p (regexp-quote "N/A") battery-str))
6       (display-battery-mode 1)))

```

```

1 (after! doom-modeline
2   (setq doom-modeline-major-mode-icon t
3         doom-modeline-major-mode-color-icon t
4         doom-modeline-buffer-state-icon t))

```

Mode line customization

6.1.4 Set transparency

```

1 ;; NOTE: Not tangled
2 (set-frame-parameter (selected-frame) 'alpha '(85 100))
3 (add-to-list 'default-frame-alist '(alpha 97 100))

```

6.1.5 Dashboard

Custom splash image Change the logo to an image, a set of beautiful images can be found in **assets**.

File
emacs-e.svg
gnu-emacs-white.svg
gnu-emacs-flat.svg
blackhole-lines.svg
doom-emacs-white.svg
doom-emacs-dark.svg

```
1 (setq fancy-splash-image (expand-file-name "assets/emacs-e.png" doom-private-dir))
```

```
1 ;; (remove-hook '+doom-dashboard-functions #'doom-dashboard-widget-shortmenu)
2 ;; (add-hook! '+doom-dashboard-mode-hook (hl-line-mode -1) (hide-mode-line-mode 1))
3 ;; (setq-hook! '+doom-dashboard-mode-hook evil-normal-state-cursor (list nil))
```

Dashboard

6.1.6 Which key

Make `which-key` popup faster.

```
1 (setq which-key-idle-delay 0.5 ;; Default is 1.0
2       which-key-idle-secondary-delay 0.05) ;; Default is nil
```

I’ve stolen this chunk (like many others) from `tecosaur`’s config, it helps to replace the `evil-` prefix with a unicode symbol, making `which-key`’s candidate list less verbose.

```
1 (setq which-key-allow-multiple-replacements t)
2
3 (after! which-key
4   (pushnew! which-key-replacement-alist
5     '("(" . "\\`+?evil[-:]?\\(?:a-\\)?\\(.*\\)") . (nil . "\\1"))
6     '("(" . "\\`+?evilem--?motion-\\(.*\\)") . (nil . "\\1"))))
```

6.1.7 Window title

I’d like to have just the buffer name, then if applicable the project folder.

```
1 (setq frame-title-format
2   '("("
3     (:eval
4       (if (s-contains-p org-roam-directory (or buffer-file-name ""))
5         (replace-regexp-in-string
6           ".*[/[0-9]*-?" " "
7           (subst-char-in-string ?_ ? buffer-file-name))
8         "%b"))
9     (:eval
10      (let ((project-name (projectile-project-name)))
11        (unless (string= "-" project-name)
12          (format (if (buffer-modified-p) " %s" " %s") project-name))))))
```

6.1.8 Company

I do not find `company` useful in Org files.

```
1 (setq company-global-modes
2   '(not erc-mode
3         circe-mode
4         message-mode
5         help-mode
6         gud-mode
7         vterm-mode
8         org-mode))
```

6.1.9 SVG tag

```

1 (package! svg-tag-mode)

1 (use-package! svg-tag-mode
2   :commands svg-tag-mode
3   :config
4   (setq svg-tag-tags
5     '(("^\\.* .* \\(:[A-Za-z0-9]+\\)" .
6       ((lambda (tag) (svg-tag-make)
7         tag
8         :beg 1
9         :font-family "Roboto Mono"
10        :font-size 6
11        :height 0.6
12        :padding 0
13        :margin 0)))
14      ("\\(:[A-Za-z0-9]+:\\)"$) .
15      ((lambda (tag) (svg-tag-make)
16        tag
17        :beg 1
18        :end -1
19        :font-family "Roboto Mono"
20        :font-size 6
21        :height 0.6
22        :padding 0
23        :margin 0))))))

```

6.1.10 Focus

Dim the font color of text in surrounding paragraphs, focus only on the current line.

```

1 (package! focus)

1 (use-package! focus
2   :commands focus-mode)

```

6.1.11 Smooth scrolling

```

1 (unless EMACS29+
2   (package! good-scroll))

1 (if EMACS29+
2   (pixel-scroll-precision-mode 1)
3   (use-package! good-scroll
4     :config (good-scroll-mode 1)))
5
6 (setq scroll-step 1
7       scroll-margin 2
8       hscroll-step 1
9       hscroll-margin 2
10      scroll-conservatively 101
11      scroll-up-aggressively 0.01
12      scroll-down-aggressively 0.01
13      auto-window-vscroll nil
14      fast-but-imprecise-scrolling nil
15      mouse-wheel-scroll-amount '(1 ((shift) . 1)))

```

```

16 mouse-wheel-progressive-speed nil
17 scroll-preserve-screen-position 'always)

```

6.1.12 All the icons

Set some custom icons for some file extensions, basically for .m files.

```

1 (after! all-the-icons
2   (setcdr (assoc "m" all-the-icons-extension-icon-alist)
3     (cdr (assoc "matlab" all-the-icons-extension-icon-alist))))

```

6.2 Editing

6.2.1 Scratch buffer

Tell the scratch buffer to start in emacs-lisp-mode.

```

1 (setq doom-scratch-initial-major-mode 'emacs-lisp-mode)

```

6.2.2 Mouse buttons

Map extra mouse buttons to jump between buffers

```

1 (map! :n [mouse-8] #'better-jumper-jump-backward
2       :n [mouse-9] #'better-jumper-jump-forward)
3
4 ;; Enable horizontal scrolling with the second mouse wheel or the touchpad
5 (setq mouse-wheel-tilt-scroll t)

```

6.2.3 Page break lines

A feature that displays ugly form feed characters as tidy horizontal rules. Inspired by M-EMACS.

```

1 (package! page-break-lines)

```

```

1 (use-package! page-break-lines
2   :diminish
3   :init (global-page-break-lines-mode))

```

6.2.4 Binary files

Taken from this answer.

```

1 (defun +hexl/buffer-binary-p (&optional buffer)
2   "Return whether BUFFER or the current buffer is binary.
3
4   A binary buffer is defined as containing at least one null byte.
5
6   Returns either nil, or the position of the first null byte."
7   (with-current-buffer (or buffer (current-buffer))
8     (save-excursion (goto-char (point-min))
9       (search-forward (string ?\x00) nil t 1))))
10
11 (defun +hexl/hexl-if-binary ()

```

```

12 "If `hexl-mode' is not already active, and the current buffer
13 is binary, activate `hexl-mode'."
14 (interactive)
15 (unless (eq major-mode 'hexl-mode)
16   (when (+hexl/buffer-binary-p)
17     (hexl-mode)))
18
19 (add-to-list 'magic-fallback-mode-alist '(+hexl/buffer-binary-p . hexl-mode) t)

```

6.2.5 Very large files

The *very large files* mode loads large files in chunks, allowing one to open ridiculously large files.

```

1 (package! vlf)

```

To make VLF available without delaying startup, we'll just load it in quiet moments.

```

1 (use-package! vlf-setup
2   :defer-incrementally vlf-tune vlf-base vlf-write vlf-search vlf-occur vlf-follow vlf-ediff vlf)

```

6.2.6 Evil

I'm not using `evil-escape`, lets disable it.

```

1 (package! evil-escape :disable t)

```

```

1 (after! evil
2   (setq evil-kill-on-visual-paste nil)) ; Don't put overwritten text in the kill ring

```

6.2.7 Aggressive indent

```

1 (package! aggressive-indent)

```

```

1 (use-package! aggressive-indent
2   :commands (aggressive-indent-mode))

```

6.2.8 YASnippet

Nested snippets are good, enable that.

```

1 (setq yas-triggers-in-field t)

```

6.3 Literate configuration

6.3.1 Allow babel execution in doom CLI actions

This file generates all my Doom config files, it works nicely, but for it to work with `doom sync` et al. I need to make sure that Org doesn't try to confirm that I want to allow evaluation (I do!).

Thankfully Doom supports `$DOOMDIR/cli.el` file which is sourced every time a CLI command is run, so we can just enable evaluation by setting `org-confirm-babel-evaluate` to `nil` there.

While we're at it, we should silence `org-babel-execute-src-block` to avoid polluting the output.

```

1 ;;; cli.el -*- lexical-binding: t; -*-
2 (setq org-confirm-babel-evaluate nil)
3
4 (defun doom-shut-up-a (orig-fn &rest args)
5   (quiet! (apply orig-fn args)))
6
7 (advice-add 'org-babel-execute-src-block :around #'doom-shut-up-a)

```

6.3.2 Asynchronous tangling

Doom adds an org-mode hook `+literate-enable-recompile-h`. This is a nice idea, but it's too blocking for my taste. Since I trust my tangling to be fairly straightforward, I'll just redefine it to a simpler, async, function.

```

1 (defvar +literate-tangle--proc nil)
2 (defvar +literate-tangle--proc-start-time nil)
3
4 (defadvice! +literate-tangle-async-h ()
5   "A very simplified version of '+literate-tangle-h', but async."
6   :override #' +literate-tangle-h
7   (unless (getenv "_NOTANGLE")
8     (let ((default-directory doom-private-dir))
9       (when +literate-tangle--proc
10         (message "Killing outdated tangle process...")
11         (set-process-sentinel +literate-tangle--proc #'ignore)
12         (kill-process +literate-tangle--proc)
13         (sit-for 0.3)) ; ensure the message is seen for a bit
14       (setq +literate-tangle--proc-start-time (float-time)
15             +literate-tangle--proc
16             (start-process "tangle-config"
17                           (get-buffer-create " *tangle config*"
18                            "emacs" "--batch" "--eval"
19                            (format "(progn \
20 (require 'ox) \
21 (require 'ob-tangle) \
22 (setq org-confirm-babel-evaluate nil \
23       org-inhibit-startup t \
24       org-mode-hook nil \
25       write-file-functions nil \
26       before-save-hook nil \
27       after-save-hook nil \
28       vc-handled-backends nil \
29       org-startup-folded nil \
30       org-startup-indented nil) \
31 (org-babel-tangle-file \"%s\" \"%s\")\"
32               +literate-config-file
33               (expand-file-name (concat doom-module-config-file ".el")))))
34       (set-process-sentinel +literate-tangle--proc #' +literate-tangle--sentinel)
35       (run-at-time nil nil (lambda () (message "Tangling config.org"))) ; ensure shown after a save message
36       "Tangling config.org..."))))
37
38 (defun +literate-tangle--sentinel (process signal)
39   (cond
40     ((and (eq 'exit (process-status process))
41           (= 0 (process-exit-status process)))
42      (message "Tangled config.org successfully (took %.1fs)"
43              (- (float-time) +literate-tangle--proc-start-time))
44      (setq +literate-tangle--proc nil))
45     ((memq (process-status process) (list 'exit 'signal))
46      (pop-to-buffer (get-buffer " *tangle config*"))
47      (message "Failed to tangle config.org (after %.1fs)"
48              (- (float-time) +literate-tangle--proc-start-time))
49      (setq +literate-tangle--proc nil))))
50
51 (defun +literate-tangle-check-finished ()
52   (when (and (process-live-p +literate-tangle--proc)
53             (yes-or-no-p "Config is currently retangling, would you please wait a few seconds?"))
54     (switch-to-buffer " *tangle config*"))

```



```

55 (signal 'quit nil)))
56
57 (add-hook! 'kill-emacs-hook #'literate-tangle-check-finished)

```

6.4 Completion & IDE

6.4.1 Treemacs

```

1 (unpin! treemacs)
2 (unpin! lsp-treemacs)

```

```

1 (after! treemacs
2   (require 'dired)
3
4   ;; My custom stuff (from tecosaur's config)
5   (setq +treemacs-file-ignore-extensions
6     ';; LaTeX
7       "aux" "ptc" "fdb_latexmk" "fls" "synctex.gz" "toc"
8       ;; LaTeX - bibliography
9       "bbl"
10      ;; LaTeX - glossary
11      "glg" "glo" "gls" "glsdefs" "ist" "acn" "acr" "alg"
12      ;; LaTeX - pgfplots
13      "mw"
14      ;; LaTeX - pdfx
15      "pdfa.xmpi"
16      ;; Python
17      "pyc"))
18
19   (setq +treemacs-file-ignore-globs
20     ';; LaTeX
21       "*/_minted-*"
22       ;; AucTeX
23       "*/.auctex-auto"
24       "*/_region_.log"
25       "*/_region_.tex"
26       ;; Python
27       "*/__pycache__")
28
29   ;; Reload treemacs theme
30   (setq doom-themes-treemacs-enable-variable-pitch nil
31         doom-themes-treemacs-theme "doom-colors")
32   (doom-themes-treemacs-config)
33
34   (setq treemacs-show-hidden-files nil
35         treemacs-hide-dot-git-directory t
36         treemacs-width 30)
37
38   (defvar +treemacs-file-ignore-extensions '()
39     "File extension which `treemacs-ignore-filter' will ensure are ignored")
40
41   (defvar +treemacs-file-ignore-globs '()
42     "Globs which will be transformed to `+treemacs-file-ignore-regexps' which `treemacs-ignore-filter' will
43     ↪ ensure are ignored")
44
45   (defvar +treemacs-file-ignore-regexps '()
46     "RegExps to be tested to ignore files, generated from `+treemacs-file-ignore-globs'")
47
48   (defun +treemacs-file-ignore-generate-regexps ()
49     "Generate `+treemacs-file-ignore-regexps' from `+treemacs-file-ignore-globs'"
50     (setq +treemacs-file-ignore-regexps (mapcar 'dired-glob-regexp +treemacs-file-ignore-globs)))
51
52   (unless (equal +treemacs-file-ignore-globs '())
53     (+treemacs-file-ignore-generate-regexps))

```

```

53
54 (defun +treemacs-ignore-filter (file full-path)
55   "Ignore files specified by `+treemacs-file-ignore-extensions', and `+treemacs-file-ignore-regexps'"
56   (or (member (file-name-extension file) +treemacs-file-ignore-extensions)
57       (let ((ignore-file nil))
58         (dolist (regexp +treemacs-file-ignore-regexps ignore-file)
59           (setq ignore-file (or ignore-file (if (string-match-p regexp full-path) t nil))))))
60
61   (add-to-list 'treemacs-ignored-file-predicates #' +treemacs-ignore-filter))

```

6.4.2 Projectile

Doom Emacs defined a function `(doom-project-ignored-p path)` and uses it with `projectile-ignored-project-function`. So we will create a wrapper function which calls Doom's one, with an extra check.

```

1  ;; Run `M-x projectile-discover-projects-in-search-path' to reload paths from this variable
2  (setq projectile-project-search-path
3    '("~/PhD/papers"
4      "~/PhD/workspace"
5      "~/PhD/workspace-no"
6      "~/PhD/workspace-no/ez-wheel/swd-starter-kit-repo"
7      "~/Projects/foss" . 2))) ;; ("dir" . depth)
8
9  (setq projectile-ignored-projects
10    '("/tmp"
11      "~/"
12      "~/.cache"
13      "~/.doom.d"
14      "~/.emacs.d/.local/straight/repos/"))
15
16  (setq +projectile-ignored-roots
17    '("~/cache"
18      ;; No need for this one, as `doom-project-ignored-p' checks for files in `doom-local-dir'
19      "~/.emacs.d/.local/straight/"))
20
21  (defun +projectile-ignored-project-function (filepath)
22    "Return t if FILEPATH is within any of `+projectile-ignored-roots'"
23    (require 'cl-lib)
24    (or (doom-project-ignored-p filepath) ;; Used by default by doom with `projectile-ignored-project-function'
25        (cl-some (lambda (root) (file-in-directory-p (expand-file-name filepath) (expand-file-name root)))
26                  +projectile-ignored-roots)))
27
28  (setq projectile-ignored-project-function #' +projectile-ignored-project-function)

```

6.4.3 Tramp

Let's try to make tramp handle prompts better

```

1  (after! tramp
2    (setenv "SHELL" "/bin/bash")
3    (setq tramp-shell-prompt-pattern "\\(?:~\\|
4    \\)[^$%>\\n]*#[^$%> ]*\\(\\[[0-9;]*[a-zA-Z] *\\))*" ;; default +

```

6.4.4 Eros-eval

This makes the result of evals slightly prettier.

```

1  (setq eros-eval-result-prefix " ")

```

6.4.5 dir-locals.el

Reload dir-locals.el variables after modification. Taken from this answer.

```

1 (defun +dir-locals-reload-for-current-buffer ()
2   "reload dir locals for the current buffer"
3   (interactive)
4   (let ((enable-local-variables :all))
5     (hack-dir-local-variables-non-file-buffer)))
6
7 (defun +dir-locals-reload-for-all-buffers-in-this-directory ()
8   "For every buffer with the same `default-directory` as the
9   current buffer's, reload dir-locals."
10  (interactive)
11  (let ((dir default-directory))
12    (dolist (buffer (buffer-list))
13      (with-current-buffer buffer
14        (when (equal default-directory dir)
15          (+dir-locals-reload-for-current-buffer))))))
16
17 (defun +dir-locals-enable-autoreload ()
18   (when (and (buffer-file-name)
19             (equal dir-locals-file (file-name-nondirectory (buffer-file-name))))
20     (message "Dir-locals will be reloaded after saving.")
21     (add-hook 'after-save-hook '+dir-locals-reload-for-all-buffers-in-this-directory nil t)))
22
23 (add-hook! '(emacs-lisp-mode-hook lisp-data-mode-hook) #' +dir-locals-enable-autoreload)

```

6.4.6 Language Server Protocol

Eglot Eglot uses project.el to detect the project root. This is a workaround to make it work with projectile:

```

1 (after! eglot
2   ;; A hack to make it works with projectile
3   (defun projectile-project-find-function (dir)
4     (let* ((root (projectile-project-root dir))
5            (and root (cons 'transient root))))
6
7   (with-eval-after-load 'project
8     (add-to-list 'project-find-functions 'projectile-project-find-function))
9
10  ;; Use clangd with some options
11  (set-eglot-client! 'c++-mode '("clangd" "-j=3" "--clang-tidy")))

```

LSP mode

Enable some useful UI stuff LSP mode provides a set of configurable UI stuff. By default, Doom Emacs disables some UI components; however, I like to enable some less intrusive, more useful UI stuff.

```

1 (after! lsp-ui
2   (setq lsp-ui-sideline-enable t
3         lsp-ui-sideline-show-code-actions t
4         lsp-ui-sideline-show-diagnostics t
5         lsp-ui-sideline-show-hover nil
6         lsp-log-io nil
7         lsp-lens-enable t ; not working properly with ccls!
8         lsp-diagnostics-provider :auto
9         lsp-enable-symbol-highlighting t
10        lsp-headerline-breadcrumb-enable nil
11        lsp-headerline-breadcrumb-segments '(symbols)))

```

```

1 (after! lsp-clangd
2   (setq lsp-clients-clangd-args
3     '("--j=4"
4       "--background-index"
5       "--clang-tidy"
6       "--completion-style=detailed"
7       "--header-insertion=never"
8       "--header-insertion-decorators=0"))
9   (set-lsp-priority! 'clangd 1))

```

LSP mode with clangd

```

1 ;; NOTE: Not tangled, using the default ccls
2 (after! ccls
3   (setq ccls-initialization-options
4     '(:index (:comments 2
5              :trackDependency 1
6              :threads 4)
7       :completion (:detailedLabel t)))
8   (set-lsp-priority! 'ccls 2)) ; optional as ccls is the default in Doom

```

LSP mode with ccls

Enable lsp over tramp

1. Python

```

1 (after! tramp
2   (require 'lsp-mode)
3   ;; (require 'lsp-pyright)
4
5   (setq lsp-enable-snippet nil
6         lsp-log-io nil
7         ;; To bypass the "lsp--document-highlight fails if
8         ;; textDocument/documentHighlight is not supported" error
9         lsp-enable-symbol-highlighting nil)
10
11   (lsp-register-client
12     (make-lsp-client
13       :new-connection (lsp-tramp-connection "pyls")
14       :major-modes '(python-mode)
15       :remote? t
16       :server-id 'pyls-remote)))

```

2. C/C++ with ccls

```

1 ;; NOTE: WIP: Not tangled
2 (after! tramp
3   (require 'lsp-mode)
4   (require 'ccls)
5
6   (setq lsp-enable-snippet nil
7         lsp-log-io nil
8         lsp-enable-symbol-highlighting t)
9
10   (lsp-register-client
11     (make-lsp-client
12       :new-connection
13       (lsp-tramp-connection

```

```

14 (lambda ()
15   (cons ccls-executable ; executable name on remote machine 'ccls'
16         ccls-args)))
17 :major-modes '(c-mode c++-mode objc-mode cuda-mode)
18 :remote? t
19 :server-id 'ccls-remote))
20
21 (add-to-list 'tramp-remote-path 'tramp-own-remote-path))

```

3. C/C++ with clangd

```

1 (after! tramp
2   (require 'lsp-mode)
3
4   (setq lsp-enable-snippet nil
5         lsp-log-io nil
6         ;; To bypass the "lsp--document-highlight fails if
7         ;; textDocument/documentHighlight is not supported" error
8         lsp-enable-symbol-highlighting nil)
9
10  (lsp-register-client
11    (make-lsp-client
12      :new-connection
13      (lsp-tramp-connection
14        (lambda ()
15          (cons "clangd-12" ; executable name on remote machine 'ccls'
16                lsp-clients-clangd-args)))
17      :major-modes '(c-mode c++-mode objc-mode cuda-mode)
18      :remote? t
19      :server-id 'clangd-remote)))

```

VHDL By default, LSP uses the proprietary VHDL-Tool to provide LSP features; however, there is free and open source alternatives: `ghdl-ls` and `rust_hdl`. I have some issues running `ghdl-ls` installed from `pip` through the `pyghdl` package, so let's use `rust_hdl` instead.

```

1 (use-package! vhd1-mode
2   :hook (vhd1-mode . #'lsp-vhd1-ls-load)
3   :init
4   (defun +lsp-vhd1-ls-load ()
5     (interactive)
6     (lsp t)
7     (flycheck-mode t))
8
9   :config
10  ;; Required unless vhd1_ls is on the $PATH
11  (setq lsp-vhd1-server-path "~/Projects/foss/repos/rust_hdl/target/release/vhd1_ls"
12        lsp-vhd1-server 'vhd1-ls
13        lsp-vhd1-params nil)
14  (require 'lsp-vhd1))

```

```

1 (package! lsp-sonarlint)

```

SonarLint

```

1 ;; TODO: configure it, for the moment, it seems that it doesn't support C/C++

```

6.4.7 Cppcheck

Check for everything!

```

1 (after! flycheck
2   (setq flycheck-cppcheck-checks '("information"
3                                   "missingInclude"
4                                   "performance"
5                                   "portability"
6                                   "style"
7                                   "unusedFunction"
8                                   "warning"))) ;; Actually, we can use "all"

```

6.4.8 Project CMake

A good new package to facilitate using CMake projects with Emacs, it glues together `project`, `eglot`, `cmake` and `clangd`.

```

1 (package! project-cmake
2   :disable (not (featurep! :tools lsp +eglot)) ; Enable only if (lsp +eglot) is used
3   :recipe (:host github
4           :repo "juanjosegarciaripoll/project-cmake"))

```

```

1 (use-package! project-cmake
2   :config
3   (require 'eglot)
4   (project-cmake-scan-kits)
5   (project-cmake-eglot-integration))

```

6.4.9 Clang-format

```

1 (package! clang-format)

```

```

1 (use-package! clang-format
2   :when CLANG-FORMAT-P
3   :commands (clang-format-region))

```

6.4.10 Auto-include C++ headers

```

1 (package! cpp-auto-include
2   :recipe (:host github
3           :repo "emacsorphanage/cpp-auto-include"))

```

```

1 (use-package! cpp-auto-include
2   :commands cpp-auto-include)

```

6.4.11 Emacs Refactor

```
1 (package! erefactor
2   :recipe (:host github
3           :repo "mhayashi1120/Emacs-erefactor"))
```

```
1 (use-package! erefactor
2   :defer t)
```

6.4.12 Lorem ipsum

```
1 (package! emacs-lorem-ipsum
2   :recipe (:host github
3           :repo "jschaf/emacs-lorem-ipsum"))
```

```
1 (use-package! lorem-ipsu
2   :commands (lorem-ipsu
3               lorem-ipsu
4               lorem-ipsu))
```

6.5 Symbols

6.5.1 Emojify

For starters, twitter's emojis look nicer than emoji-one. Other than that, this is pretty great OOTB .

```
1 (setq emojify-emoji-set "twemoji-v2")
```

One minor annoyance is the use of emojis over the default character when the default is actually preferred. This occurs with overlay symbols I use in Org mode, such as checkbox state, and a few other miscellaneous cases.

We can accommodate our preferences by deleting those entries from the emoji hash table

```

1  (defvar emojiify-disabled-emojis
2    '(;; Org
3      " " " " " " " " " " " " " " " " " " " "@ " " " " " " " " " "
4      ;; Terminal powerline
5      " "
6      ;; Box drawing
7      " " " ")
8    "Characters that should never be affected by `emojiify-mode'.")
9
10 (defadvice! emojiify-delete-from-data ()
11   "Ensure `emojiify-disabled-emojis' don't appear in `emojiify-emojis'."
12   :after #'emojiify-set-emoji-data
13   (dolist (emoji emojiify-disabled-emojis)
14     (remhash emoji emojiify-emojis)))
```

Now, it would be good to have a minor mode which allowed you to type ascii/gh emojis and get them converted to unicode. Let's make one.

```
1 (defun emojiify--replace-text-with-emoji (orig-fn emoji text buffer start end &optional target)
2   "Modify `emojiify--propertize-text-for-emoji' to replace ascii/github emoticons with unicode emojis, on the
   ↪ fly."
3   (if (or (not emoticon-to-emoji) (= 1 (length text)))
```

```

4      (funcall orig-fn emoji text buffer start end target)
5      (delete-region start end)
6      (insert (ht-get emoji "unicode")))))
7
8  (define-minor-mode emoticon-to-emoji
9    "Write ascii/gh emojis, and have them converted to unicode live."
10   :global nil
11   :init-value nil
12   (if emoticon-to-emoji
13       (progn
14         (setq-local emojiify-emoji-styles '(ascii github unicode))
15         (advice-add 'emojiify--propertize-text-for-emoji :around #'emojiify--replace-text-with-emoji)
16         (unless emojiify-mode
17           (emojiify-turn-on-emojiify-mode)))
18       (setq-local emojiify-emoji-styles (default-value 'emojiify-emoji-styles))
19       (advice-remove 'emojiify--propertize-text-for-emoji #'emojiify--replace-text-with-emoji)))

```

This new minor mode of ours will be nice for messages, so let's hook it in for Email and IRC.

```

1  (add-hook! '(mu4e-compose-mode org-msg-edit-mode circe-channel-mode) (emoticon-to-emoji 1))

```

6.5.2 Ligatures

Extra ligatures are good, however, I'd like to see my keywords! Let's disable them in C/C++, Rust and Python modes. In addition to that, Lisps do replace lambdas with the greek symbol λ , however, this cause miss formatting and sometimes messes up with the parenthesis, so let's disable ligatures on Lisps.

```

1  (defun +appened-to-negation-list (head tail)
2    (if (sequencep head)
3        (delete-dups
4          (if (eq (car tail) 'not)
5              (append head tail)
6              (append tail head)))
7        tail))
8
9  (setq +ligatures-extras-in-modes
10       (+appened-to-negation-list
11         +ligatures-extras-in-modes
12         '(not c-mode c++-mode emacs-lisp-mode python-mode scheme-mode racket-mode rust-mode)))
13
14  (setq +ligatures-in-modes
15       (+appened-to-negation-list
16         +ligatures-in-modes
17         '(not emacs-lisp-mode scheme-mode racket-mode)))

```

6.6 Checkers (spell & grammar)

6.6.1 Spell-Fu

Install the `aspell` back-end and the dictionaries to use with `spell-fu`

```
sudo pacman -S aspell aspell-en aspell-fr
```

Now, `spell-fu` supports multiple languages! Let's add English, French and Arabic. So I can "mélanger les langues sans avoir de problèmes!".

```

1  (after! spell-fu
2    (defun +spell-fu-register-dictionary (lang)
3      "Add `LANG` to spell-fu multi-dict, with a personal dictionary."
4      ;; Add the dictionary
5      (spell-fu-dictionary-add (spell-fu-get-ispell-dictionary lang))
6      (let ((personal-dict-file (expand-file-name (format "aspell.%.s.pws" lang) doom-private-dir)))

```



```

7      ;; Create an empty personal dictionary if it doesn't exists
8      (unless (file-exists-p personal-dict-file) (write-region "" nil personal-dict-file))
9      ;; Add the personal dictionary
10     (spell-fu-dictionary-add (spell-fu-get-personal-dictionary (format "%s-personal" lang)
11     ↪ personal-dict-file))))
12
13 (add-hook 'spell-fu-mode-hook
14         (lambda ()
15           (+spell-fu-register-dictionary "en")
16           (+spell-fu-register-dictionary "fr"))))

```

6.6.2 Guess language

Can be interesting for automatically switching the language for spell checking, grammar...

```

1 (package! guess-language
2   :recipe (:host github
3           :repo "tmalsburg/guess-language.el"))

```

```

1 (use-package! guess-language
2   :config
3   (setq guess-language-languages '(en fr ar)
4         guess-language-min-paragraph-length 35
5         guess-language-langcodes '((en . ("en_US" "English" " " "English"))
6                                         (fr . ("français" "French" " " "Français"))
7                                         (ar . ("arabic" "Arabic" " " "Arabic"))))
8   ;; :hook (text-mode . guess-language-mode)
9   :commands (guess-language
10             guess-language-mode
11             guess-language-region
12             guess-language-mark-lines))

```

6.6.3 Grammarly

Use either eglot-grammarly or lsp-grammarly.

```

1 (package! grammarly
2   :recipe (:host github
3           :repo "emacs-grammarly/grammarly"))

```

```

1 (use-package! grammarly
2   :config
3   (grammarly-load-from-authinfo))

```

```

1 (package! eglot-grammarly
2   :disable (not (featurep! :tools lsp +eglot))
3   :recipe (:host github
4           :repo "emacs-grammarly/eglot-grammarly"))

```

Eglot

```

1 (use-package! eglot-grammarly
2   :when (featurep! :tools lsp +eglot)
3   :commands (+lsp-grammarly-load)
4   :init
5   (defun +lsp-grammarly-load ()
6     "Load Grammarly LSP server for Eglot."
7     (interactive)
8     (require 'eglot-grammarly)
9     (call-interactively #'eglot)))

```

```

1 (package! lsp-grammarly
2   :disable (or (not (featurep! :tools lsp)) (featurep! :tools lsp +eglot))
3   :recipe (:host github
4           :repo "emacs-grammarly/lsp-grammarly"))

```

LSP Mode

```

1 (use-package! lsp-grammarly
2   :when (and (featurep! :tools lsp) (not (featurep! :tools lsp +eglot)))
3   :commands (+lsp-grammarly-load +lsp-grammarly-toggle)
4   :init
5   (defun +lsp-grammarly-load ()
6     "Load Grammarly LSP server for LSP Mode."
7     (interactive)
8     (require 'lsp-grammarly)
9     (lsp-deferred)) ;; or (lsp)
10
11   (defun +lsp-grammarly-enabled-p ()
12     (not (member 'grammarly-ls lsp-disabled-clients)))
13
14   (defun +lsp-grammarly-enable ()
15     "Enable Grammarly LSP."
16     (interactive)
17     (when (not (+lsp-grammarly-enabled-p))
18       (setq lsp-disabled-clients (remove 'grammarly-ls lsp-disabled-clients))
19       (message "Enabled grammarly-ls")
20       (+lsp-grammarly-load)))
21
22   (defun +lsp-grammarly-disable ()
23     "Disable Grammarly LSP."
24     (interactive)
25     (when (+lsp-grammarly-enabled-p)
26       (add-to-list 'lsp-disabled-clients 'grammarly-ls)
27       (lsp-disconnect)
28       (message "Disabled grammarly-ls")))
29
30   (defun +lsp-grammarly-toggle ()
31     "Enable/disable Grammarly LSP."
32     (interactive)
33     (if (+lsp-grammarly-enabled-p)
34         (+lsp-grammarly-disable)
35         (+lsp-grammarly-enable)))
36
37   (after! lsp-mode
38     ;; Disable by default
39     (add-to-list 'lsp-disabled-clients 'grammarly-ls))
40
41   :config
42   (set-lsp-priority! 'grammarly-ls 1))

```

6.6.4 Grammalecte

```

1 (package! flycheck-grammalecte
2   :recipe (:host github
3           :repo "milouse/flycheck-grammalecte"))

1 (use-package! flycheck-grammalecte
2   :commands (flycheck-grammalecte-correct-error-at-point
3             grammalecte-conjugate-verb
4             grammalecte-define
5             grammalecte-define-at-point
6             grammalecte-find-synonyms
7             grammalecte-find-synonyms-at-point)
8   :init
9   (setq grammalecte-settings-file (expand-file-name "grammalecte/grammalecte-cache.el" doom-etc-dir)
10         grammalecte-python-package-directory (expand-file-name "grammalecte/grammalecte" doom-etc-dir))
11   (setq flycheck-grammalecte-report-spellcheck t
12         flycheck-grammalecte-report-grammar t
13         flycheck-grammalecte-report-apos nil
14         flycheck-grammalecte-report-esp nil
15         flycheck-grammalecte-report-nbsp nil
16         flycheck-grammalecte-filters
17         '("(?m)^# ?-.*+ $"
18           ;; Ignore LaTeX equations (inline and block)
19           "\\$.*?\\$"
20           "(?s)\\\\\\begin{equation}.*?\\\\\\end{equation}"))
21
22   (map! :leader :prefix ("l" . "custom")
23         (:prefix ("g" . "grammalecte")
24           :desc "Correct error at point" "p" #'flycheck-grammalecte-correct-error-at-point
25           :desc "Conjugate a verb" "V" #'grammalecte-conjugate-verb
26           :desc "Define a word" "W" #'grammalecte-define
27           :desc "Conjugate a verb at point" "w" #'grammalecte-define-at-point
28           :desc "Find synonyms" "S" #'grammalecte-find-synonyms
29           :desc "Find synonyms at point" "s" #'grammalecte-find-synonyms-at-point))
30
31   :config
32   (grammalecte-download-grammalecte)
33   (flycheck-grammalecte-setup)
34   (add-to-list 'flycheck-grammalecte-enabled-modes 'fountain-mode))

```

6.6.5 LanguageTool

LanguageTool Server This will launch the LanguageTool Server at startup, this server will be used then by `ltex-ls`.

```

1 (when LANGUAGE TOOL-P
2   (defvar +language tool--process-name "language tool-server")
3
4   (defun +language tool-server-running-p ()
5     (and LANGUAGE TOOL-P
6      (process-live-p (get-process +language tool--process-name))))
7
8   (defun +language tool-server-start (&optional port)
9     "Start LanguageTool server with PORT."
10    (interactive)
11    (if (+language tool-server-running-p)
12      (message "LanguageTool server already running.")
13      (when (start-process
14            +language tool--process-name
15            " *LanguageTool server*"
16            (executable-find "language tool")
17            "--http" "--port" (format "%s" (or port 8081))
18            "--languageModel" "/usr/share/ngrams"))

```

```

19      (message "Started LanguageTool server.")))
20
21  (defun +language-tool-server-stop ()
22    "Stop the LanguageTool server."
23    (interactive)
24    (if (+language-tool-server-running-p)
25        (when (kill-process +language-tool--process-name)
26            (message "Stopped LanguageTool server."))
27        (message "No LanguageTool server running.")))
28
29  (defun +language-tool-server-restart (&optional port)
30    "Restart the LanguageTool server with PORT, start new instance if not running."
31    (interactive)
32    (when (+language-tool-server-running-p)
33        (+language-tool-server-stop))
34    (sit-for 5)
35    (+language-tool-server-start port)))
36
37  (map! :leader :prefix ("l" . "custom")
38        (:when LANGUAGE-TOOL-P
39          :prefix ("l" . "language-tool")
40          (:prefix ("s" . "server")
41              :desc "Start server"      "s" #' +language-tool-server-start
42              :desc "Stop server"       "q" #' +language-tool-server-stop
43              :desc "Restart server"    "r" #' +language-tool-server-restart)))

```

LT_EX Originally, LT_EX LS stands for *LT_EX Language Server*, it acts as a Language Server for LT_EX, but not only. It can check the grammar and the spelling of several markup languages such as Bib_TE_X, Con_TE_Xt, LT_EX, Markdown, Org, re_StructuredText... and others. Alongside, it provides interfacing with LanguageTool to implement natural language checking.

TO BE WATCHED: Other WIP LanguageTool LSP implementations for both LSP Mode and Eglot can be interesting. However, LT_EX seems to be a good solution, as it understands the structure of plain text formats such as Org and Markdown, which reduces the false positives due to the marking and special commands.

```

1  ;; Needed for automatic installation, but not installed automatically
2  (package! github-tags
3    :recipe (:host github
4            :repo "jcs-elpa/github-tags"))
5
6  (package! lsp-ltex
7    :disable (and (not (featurep! :tools lsp)) (featurep! :tools lsp +eglot))
8    :recipe (:host github
9            :repo "emacs-language-tool/lsp-ltex"))
10
11  (package! eglot-ltex
12    :disable (not (featurep! :tools lsp +eglot))
13    :recipe (:host github
14            :repo "emacs-language-tool/eglot-ltex"))

```

```

1  (use-package! lsp-ltex
2    :commands (+lsp-ltex-load +lsp-ltex-enable +lsp-ltex-disable +lsp-ltex-toggle)
3    :init
4    (setq lsp-ltex-additional-rules-language-model "/usr/share/ngrams"
5          lsp-ltex-check-frequency "edit" ;; or "save"
6          lsp-ltex-language "fr"
7          lsp-ltex-mother-tongue "ar"
8          lsp-ltex-log-level "warning"
9          lsp-ltex-trace-server "off"
10         lsp-ltex-user-rules-path (expand-file-name "lsp-ltex" doom-etc-dir))
11

```

```

12 ;; If LanguageTool is installed, use it over the LT bundled with ltex-ls
13 (when (and nil LANGUAGE TOOL-P) ;; FIXME: Disabled
14   (setq lsp-ltex-languagetool-http-server-uri "http://localhost:8081"))
15
16 (after! lsp-mode
17   ;; Disable by default
18   (add-to-list 'lsp-disabled-clients 'ltex-ls))
19
20 (defun +lsp-ltex-load ()
21   "Load LTeX LSP server."
22   (interactive)
23   (require 'lsp-ltex)
24   (lsp))
25
26 (defun +lsp-ltex-enabled-p ()
27   (not (member 'ltex-ls lsp-disabled-clients)))
28
29 (defun +lsp-ltex-enable ()
30   "Enable LTeX LSP."
31   (interactive)
32   (unless (+lsp-ltex-enabled-p)
33     (setq lsp-disabled-clients (remove 'ltex-ls lsp-disabled-clients))
34     (message "Enabled ltex-ls"))
35   (unless (or (not (boundp 'lsp-ltex-languagetool-http-server-uri))
36             (string-empty-p lsp-ltex-languagetool-http-server-uri)
37             (+languagetool-server-running-p))
38     (+languagetool-server-start)
39     (sit-for 5))
40   (+lsp-ltex-load))
41
42 (defun +lsp-ltex-disable ()
43   "Disable LTeX LSP."
44   (interactive)
45   (when (+lsp-ltex-enabled-p)
46     (add-to-list 'lsp-disabled-clients 'ltex-ls)
47     (lsp-disconnect)
48     (message "Disabled ltex-ls")))
49
50 (defun +lsp-ltex-toggle ()
51   "Enable/disable LTeX LSP."
52   (interactive)
53   (if (+lsp-ltex-enabled-p)
54       (+lsp-ltex-disable)
55       (+lsp-ltex-enable)))
56
57 (map! :leader :prefix ("l" . "custom")
58   (:prefix ("l" . "languagetool")
59    :desc "Enable LTeX" "l" #' +lsp-ltex-enable
60    :desc "Disable LTeX" "q" #' +lsp-ltex-disable
61    :desc "Toggle LTeX" "t" #' +lsp-ltex-toggle))
62
63 :config
64 (set-lsp-priority! 'ltex-ls 2)
65 (setq flycheck-checker-error-threshold 1000))

```

```

1 (package! flycheck-languagetool
2   :disable t ;; Disabled, using LTeX LSP
3   :recipe (:host github
4           :repo "emacs-languagetool/flycheck-languagetool"))

```

Flycheck

```

1 (use-package! flycheck-languagetool
2   :when LANGUAGE-TOOL-P
3   :hook (text-mode . flycheck-languagetool-setup)
4   :init
5   (setq flycheck-languagetool-server-command '("languagetool" "--http")
6         flycheck-languagetool-language "auto"
7         ;; See https://languagetool.org/http-api/swagger-ui/#!/default/post_check
8         flycheck-languagetool-check-params
9         '(("disabledRules" . "FRENCH_WHITESPACE,WHITESPACE,DEUX_POINTS_ESPACE")
10           ("motherTongue" . "ar"))))

```

6.6.6 Go Translate (Google, Bing and DeepL)

```

1 (package! go-translate
2   :recipe (:host github
3           :repo "lorniu/go-translate"))

```

```

1 (use-package! go-translate
2   :commands (gts-do-translate
3             +gts-yank-translated-region
4             +gts-translate-with)
5   :init
6   ;; Your languages pairs
7   (setq gts-translate-list '(("en" "fr") ("fr" "en") ("en" "ar") ("fr" "ar")))
8
9   (map! :localleader
10        (org-mode-map markdown-mode-map latex-mode-map text-mode-map)
11        :desc "Yank translated region" "G" #' +gts-yank-translated-region)
12
13   (map! :leader :prefix "l"
14        (:prefix ("G" . "go-translate")
15         :desc "Bing" "b" (lambda () (interactive) (+gts-translate-with 'bing))
16         :desc "DeepL" "d" (lambda () (interactive) (+gts-translate-with 'deepl))
17         :desc "Google" "g" (lambda () (interactive) (+gts-translate-with))
18         :desc "gts-do-translate" "t" #'gts-do-translate))
19
20   :config
21   ;; Config the default translator, which will be used by the command `gts-do-translate'
22   (setq gts-default-translator
23         (gts-translator
24          ;; Used to pick source text, from, to. choose one.
25          :picker (gts-prompt-picker)
26          ;; One or more engines, provide a parser to give different output.
27          :engines (gts-google-engine :parser (gts-google-summary-parser))
28          ;; Render, only one, used to consumer the output result.
29          :render (gts-buffer-render)))
30
31   ;; Custom texter which remove newlines in the same paragraph
32   (defclass +gts-translate-paragraph (gts-texter) ())
33
34   (cl-defmethod gts-text ((_ +gts-translate-paragraph))
35     (when (use-region-p)
36       (let ((text (buffer-substring-no-properties (region-beginning) (region-end))))
37         (with-temp-buffer
38           (insert text)
39           (goto-char (point-min))
40           (let ((case-fold-search nil))
41             (while (re-search-forward "\n[^\n]" nil t)
42               (replace-region-contents
43                (- (point) 2) (- (point) 1)
44                (lambda (&optional a b) " ")))
45             (buffer-string))))))
46
47   ;; Custom picker to use the paragraph texter

```

```

48 (defclass +gts-paragraph-picker (gts-picker)
49   ((textter :initarg :textter :initform (+gts-translate-paragraph))))
50
51 (cl-defmethod gts-pick ((o +gts-paragraph-picker))
52   (let ((text (gts-text (oref o textter))))
53     (when (or (null text) (zerop (length text)))
54       (user-error "Make sure there is any word at point, or selection exists"))
55     (let ((path (gts-path o text)))
56       (setq gts-picker-current-path path)
57       (cl-values text path))))
58
59 (defun +gts-yank-translated-region ()
60   (interactive)
61   (gts-translate
62    (gts-translator
63     :picker (+gts-paragraph-picker)
64     :engines (gts-google-engine)
65     :render (gts-kill-ring-render))))
66
67 (defun +gts-translate-with (&optional engine)
68   (interactive)
69   (gts-translate
70    (gts-translator
71     :picker (+gts-paragraph-picker)
72     :engines
73     (cond ((eq engine 'deepl)
74            (gts-deepl-engine
75             :auth-key ;; Get API key from ~/.authinfo.gpg (machine api-free.deepl.com)
76             (funcall
77              (plist-get (car (auth-source-search :host "api-free.deepl.com" :max 1))
78                        :secret))
79             :pro nil))
80            ((eq engine 'bing) (gts-bing-engine))
81            (t (gts-google-engine))))
82    :render (gts-buffer-render))))

```

6.7 System tools

6.7.1 Disk usage

```
1 (package! disk-usage)
```

```
1 (use-package! disk-usage
2   :commands (disk-usage))
```

6.7.2 Chezmoi

```
1 (package! chezmoi)
```

```

1 (use-package! chezmoi
2   :when CHEZMOI-P
3   :commands (chezmoi-write
4              chezmoi-magit-status
5              chezmoi-diff
6              chezmoi-ediff
7              chezmoi-find
8              chezmoi-write-files
9              chezmoi-open-other
10             chezmoi-template-buffer-display)

```

```

11      chezmoi-mode)
12  :config
13  ;; Company integration
14  (when (featurep! :completion company)
15    (defun +chezmoi--company-backend-h ()
16      (require 'chezmoi-company)
17      (if chezmoi-mode
18          (add-to-list 'company-backends 'chezmoi-company-backend)
19          (delete 'chezmoi-company-backend 'company-backends)))
20
21    (add-hook 'chezmoi-mode-hook #' +chezmoi--company-backend-h))
22
23  ;; Integrate with evil mode by toggling template display when entering insert mode.
24  (when (featurep! :editor evil)
25    (defun +chezmoi--evil-insert-state-enter-h ()
26      "Run after evil-insert-state-entry."
27      (chezmoi-template-buffer-display nil (point))
28      (remove-hook 'after-change-functions #'chezmoi-template--after-change 1))
29
30    (defun +chezmoi--evil-insert-state-exit-h ()
31      "Run after evil-insert-state-exit."
32      (chezmoi-template-buffer-display nil)
33      (chezmoi-template-buffer-display t)
34      (add-hook 'after-change-functions #'chezmoi-template--after-change nil 1))
35
36    (defun +chezmoi--evil-h ()
37      (if chezmoi-mode
38          (progn
39            (add-hook 'evil-insert-state-entry-hook #' +chezmoi--evil-insert-state-enter-h nil 1)
40            (add-hook 'evil-insert-state-exit-hook #' +chezmoi--evil-insert-state-exit-h nil 1))
41          (progn
42            (remove-hook 'evil-insert-state-entry-hook #' +chezmoi--evil-insert-state-enter-h 1)
43            (remove-hook 'evil-insert-state-exit-hook #' +chezmoi--evil-insert-state-exit-h 1))))
44
45    (add-hook 'chezmoi-mode-hook #' +chezmoi--evil-h)))

```

6.7.3 Aweshell

```

1 (package! aweshell
2   :recipe (:host github
3           :repo "manateelazycat/aweshell"))

```

```

1 (use-package! aweshell
2   :commands (aweshell-new aweshell-dedicated-open))

```

6.7.4 Lemon

```

1 (package! lemon
2   :recipe (:host nil
3           :repo "https://codeberg.org/emacs-weirdware/lemon.git"))

```

```

1 (use-package! lemon
2   :commands (lemon-mode lemon-display)
3   :config
4   (require 'lemon-cpu)
5   (require 'lemon-memory)
6   (require 'lemon-network)
7   (setq lemon-delay 5
8         lemon-refresh-rate 2)

```



```

9      lemon-monitors
10      (list '((lemon-cpufreq-linux :display-opts '(:sparkline (:type gridded)))
11              (lemon-cpu-linux)
12              (lemon-memory-linux)
13              (lemon-linux-network-tx)
14              (lemon-linux-network-rx))))))

```

6.7.5 eCryptfs

```

1  (when ECRYPTFS-P
2    (defvar +ecryptfs-private-dir "Private")
3    (defvar +ecryptfs-buffer-name "*emacs-ecryptfs*")
4    (defvar +ecryptfs-config-dir (expand-file-name "~/.ecryptfs"))
5    (defvar +ecryptfs-passphrase-gpg (expand-file-name "~/ecryptfs/my-pass.gpg"))
6    (defvar +ecryptfs--wrapping-independent-p (not (null (expand-file-name "wrapping-independent"
↪ +ecryptfs-config-dir))))
7    (defvar +ecryptfs--wrapped-passphrase-file (expand-file-name "wrapped-passphrase" +ecryptfs-config-dir))
8    (defvar +ecryptfs--mount-passphrase-sig-file (concat (expand-file-name +ecryptfs-private-dir
↪ +ecryptfs-config-dir) ".sig"))
9    (defvar +ecryptfs--mount-private-cmd "/sbin/mount.ecryptfs_private")
10   (defvar +ecryptfs--umount-private-cmd "/sbin/umount.ecryptfs_private")
11   (defvar +ecryptfs--passphrase
12     (lambda ()
13       (s-trim-right ;; To remove the new line
14         (epg-decrypt-file (epg-make-context
15                             +ecryptfs-passphrase-gpg
16                             nil))))
17   (defvar +ecryptfs--encrypt-filenames-p
18     (not (eq 1
19             (with-temp-buffer
20               (insert-file-contents +ecryptfs--mount-passphrase-sig-file)
21               (count-lines (point-min) (point-max))))))
22   (defvar +ecryptfs--command-format
23     (if +ecryptfs--encrypt-filenames-p
24         "ecryptfs-insert-wrapped-passphrase-into-keyring %s '%s'"
25         "ecryptfs-unwrap-passphrase %s '%s' | ecryptfs-add-passphrase -"))
26
27   (defun +ecryptfs-mount-private ()
28     (interactive)
29     (unless (and (file-exists-p +ecryptfs--wrapped-passphrase-file)
30                 (file-exists-p +ecryptfs--mount-passphrase-sig-file))
31       (error "Encrypted private directory \"%s\" is not setup properly."
32              +ecryptfs-private-dir)
33       (return))
34
35     (let ((try-again t))
36       (while (and
37               ;; In the first iteration, we try to silently mount the ecryptfs private directory,
38               ;; this would succeed if the key is available in the keyring.
39               (shell-command +ecryptfs--mount-private-cmd
40                               +ecryptfs-buffer-name)
41               try-again)
42         (setq try-again nil)
43         (message "Encrypted filenames mode [%s]." (if +ecryptfs--encrypt-filenames-p "ENABLED" "DISABLED"))
44         (shell-command
45          (format +ecryptfs--command-format
46                  +ecryptfs--wrapped-passphrase-file
47                  (funcall +ecryptfs--passphrase))
48          +ecryptfs-buffer-name)
49         (message "Ecryptfs mount private.")))
50
51   (defun +ecryptfs-umount-private ()
52     (interactive)
53     (while (string-match-p "Sessions still open, not unmounting"
54                             (shell-command-to-string +ecryptfs--umount-private-cmd))
55       (message "Unmounted private directory."))
56

```

```

57 (map! :leader :prefix ("l" . "custom")
58     (:prefix ("t" . "tools")
59         :desc "eCryptfs mount private" "e" #'ecryptfs-mount-private
60         :desc "eCryptfs un-mount private" "E" #'ecryptfs-umount-private)))

```

6.8 Features

6.8.1 Weather

```

1 ;; lisp/wttrin/wttrin.el taken from:
2 ;; https://raw.githubusercontent.com/tecosaur/emacs-config/master/lisp/wttrin/wttrin.el
3 (package! wttrin
4   :recipe (:local-repo "lisp/wttrin"))

```

```

1 (use-package! wttrin
2   :commands wttrin)

```

6.8.2 OpenStreetMap

```

1 (package! osm)

```

```

1 (use-package! osm
2   :commands (osm-home
3             osm-search
4             osm-server
5             osm-goto
6             osm-gpx-show
7             osm-bookmark-jump)
8
9   :custom
10  ;; Take a look at the customization group `osm' for more options.
11  (osm-server 'default) ;; Configure the tile server
12  (osm-copyright t)    ;; Display the copyright information
13
14  :init
15  (setq osm-tile-directory (expand-file-name "osm" doom-etc-dir))
16  ;; Load Org link support
17  (with-eval-after-load 'org
18    (require 'osm-ol)))

```

6.8.3 Islamic prayer times

```

1 (package! awqat
2   :recipe (:host github
3           :repo "zkry/awqat"))

```

```

1 (use-package! awqat
2   :commands (awqat-display-prayer-time-mode awqat-times-for-day)
3   :config
4   ;; Make sure `calendar-latitude' and `calendar-longitude' are set,
5   ;; otherwise, set them here.
6   (setq awqat-asr-hanafi nil
7         awqat-mode-line-format " ${prayer} (${hours}h${minutes}m) ")
8   (awqat-set-preset-french-muslims))

```

6.8.4 Info colors

Better colors for manual pages.

```
1 (package! info-colors)

1 (use-package! info-colors
2   :commands (info-colors-fontify-node))
3
4 (add-hook 'Info-selection-hook 'info-colors-fontify-node)
```

6.8.5 Zotero Zotxt

```
1 (package! zotxt)

1 (use-package! zotxt
2   :when ZOTERO-P
3   :commands org-zotxt-mode)
```

6.8.6 CRDT

Collaborative editing for geeks! `crdt.el` adds support for *Conflict-free Replicated Data Type*.

```
1 (package! crdt)

1 (use-package! crdt
2   :commands (crdt-share-buffer
3             crdt-connect
4             crdt-visualize-author-mode
5             crdt-org-sync-overlay-mode))
```

6.8.7 The Silver Searcher

An Emacs front-end to *The Silver Searcher*, first we need to install `ag` using `sudo pacman -S the_silver_searcher`.

```
1 (package! ag)

1 (use-package! ag
2   :when AG-P
3   :commands (ag
4             ag-files
5             ag-regexp
6             ag-project
7             ag-project-files
8             ag-project-regexp))
```

6.8.8 Emacs Application Framework

EAF is presented as: *A free/libre and open-source extensible framework that revolutionizes the graphical capabilities of Emacs.* Or the key to ultimately *Live in Emacs.*

First, install EAF as specified in the project's readme. To update EAF, we need to run `git pull ; ./install-eaf.py` in `lisp/emacs-application-framework` and `(M-x eaf-install-and-update)` in Emacs. This updates EAF, applications and their dependencies.

```

1 (use-package! eaf
2   :when EAF-P
3   :load-path EAF-DIR
4   :commands (eaf-open eaf-open-browser eaf-open-jupyter eaf-open-mail-as-html)
5   :init
6   (defvar +eaf-enabled-apps
7     '(org mail browser mindmap jupyter org-previewer markdown-previewer))
8   ;; file-manager file-browser
9   ;; file-sender music-player video-player
10  ;; git image-viewer
11
12  (defun +eaf-enabled-p (app-symbol)
13    (member app-symbol +eaf-enabled-apps))
14
15  :config
16  ;; Generic
17  (setq eaf-start-python-process-when-require t
18        eaf-kill-process-after-last-buffer-closed t
19        eaf-fullscreen-p nil)
20
21  ;; Debug
22  (setq eaf-enable-debug nil)
23
24  ;; Web engine
25  (setq eaf-webengine-font-family "FantasqueSansMono Nerd Font Mono"
26        eaf-webengine-fixed-font-family "FantasqueSansMono Nerd Font Mono"
27        eaf-webengine-serif-font-family "FantasqueSansMono Nerd Font Mono"
28        eaf-webengine-font-size 14
29        eaf-webengine-fixed-font-size 14
30        eaf-webengine-download-path "~/Downloads"
31        eaf-webengine-enable-plugin t
32        eaf-webengine-enable-javascript t
33        eaf-webengine-enable-javascript-access-clipboard t
34        eaf-webengine-enable-scrollbar t
35        eaf-webengine-default-zoom 1.25
36        eaf-webengine-scroll-step 200)
37
38  (when (display-graphic-p)
39    (require 'eaf-all-the-icons))
40
41  ;; Browser settings
42  (when (+eaf-enabled-p 'browser)
43    (setq eaf-browser-continue-where-left-off t
44          eaf-browser-dark-mode "follow"
45          eaf-browser-enable-adblocker t
46          eaf-browser-enable-autofill nil
47          eaf-browser-remember-history t
48          eaf-browser-ignore-history-list '("google.com/search" "file:///")
49          eaf-browser-text-selection-color "auto"
50          eaf-browser-translate-language "fr"
51          eaf-browser-blank-page-url "https://www.duckduckgo.com"
52          eaf-browser-chrome-history-file "~/.config/google-chrome/Default/History"
53          eaf-browser-default-search-engine "duckduckgo"
54          eaf-browser-continue-where-left-off nil)
55
56    (require 'eaf-browser)
57
58    ;; Make EAF Browser my default browser
59    (setq browse-url-browser-function #'eaf-open-browser)
60    (defalias 'browse-web #'eaf-open-browser))
61

```

```

62 ;; File manager settings
63 (when (+eaf-enabled-p 'file-manager)
64   (setq eaf-file-manager-show-preview nil
65         eaf-find-alternate-file-in-dired t
66         eaf-file-manager-show-hidden-file t
67         eaf-file-manager-show-icon t)
68   (require 'eaf-file-manager))
69
70 ;; File Browser
71 (when (+eaf-enabled-p 'file-browser)
72   (require 'eaf-file-browser))
73
74 ;; PDF Viewer settings
75 (when (+eaf-enabled-p 'pdf-viewer)
76   (setq eaf-pdf-dark-mode "follow"
77         eaf-pdf-show-progress-on-page nil
78         eaf-pdf-dark-exclude-image t
79         eaf-pdf-notify-file-changed t)
80   (require 'eaf-pdf-viewer))
81
82 (after! org
83   ;; Use EAF PDF Viewer in Org
84   (defun +eaf-org-open-file-fn (file &optional link)
85     "An wrapper function on `eaf-open'."
86     (eaf-open file))
87
88   ;; use `emacs-application-framework' to open PDF file: link
89   (add-to-list 'org-file-apps '("\\.pdf\\\"" . +eaf-org-open-file-fn)))
90
91 (after! latex
92   ;; Link EAF with the LaTeX compiler in emacs. When a .tex file is open,
93   ;; the Command>Compile and view (C-c C-a) option will compile the .tex
94   ;; file into a .pdf file and display it using EAF. Double clicking on the
95   ;; PDF side jumps to editing the clicked section.
96   (add-to-list 'TeX-command-list '("XeLaTeX" "%\`xelatex --synctex=1(mode)%" %t" TeX-run-TeX nil t))
97   (add-to-list 'TeX-view-program-list '("eaf" eaf-pdf-synctex-forward-view))
98   (add-to-list 'TeX-view-program-selection '(output-pdf "eaf"))))
99
100 ;; Org
101 (when (+eaf-enabled-p 'rss-reader)
102   (setq eaf-rss-reader-split-horizontally nil
103         eaf-rss-reader-web-page-other-window t)
104   (require 'eaf-org))
105
106 ;; Org
107 (when (+eaf-enabled-p 'org)
108   (require 'eaf-org))
109
110 ;; Mail
111 (when (+eaf-enabled-p 'mail)
112   (require 'eaf-mail))
113
114 ;; Org Previewer
115 (when (+eaf-enabled-p 'org-previewer)
116   (setq eaf-org-dark-mode "follow")
117   (require 'eaf-org-previewer))
118
119 ;; Markdown Previewer
120 (when (+eaf-enabled-p 'markdown-previewer)
121   (setq eaf-markdown-dark-mode "follow")
122   (require 'eaf-markdown-previewer))
123
124 ;; Jupyter
125 (when (+eaf-enabled-p 'jupyter)
126   (setq eaf-jupyter-dark-mode "follow"
127         eaf-jupyter-font-family "JuliaMono"
128         eaf-jupyter-font-size 13)
129   (require 'eaf-jupyter))
130
131 ;; Mindmap

```

```

132 (when (+eaf-enabled-p 'mindmap)
133   (setq eaf-mindmap-dark-mode "follow"
134     eaf-mindmap-save-path "~/Dropbox/Mindmap")
135   (require 'eaf-mindmap))
136
137 ;; File Sender
138 (when (+eaf-enabled-p 'file-sender)
139   (require 'eaf-file-sender))
140
141 ;; Music Player
142 (when (+eaf-enabled-p 'music-player)
143   (require 'eaf-music-player))
144
145 ;; Video Player
146 (when (+eaf-enabled-p 'video-player)
147   (require 'eaf-video-player))
148
149 ;; Image Viewer
150 (when (+eaf-enabled-p 'image-viewer)
151   (require 'eaf-image-viewer))
152
153 ;; Git
154 (when (+eaf-enabled-p 'git)
155   (require 'eaf-git))
156
157 ;; EVIL keybindings for Doom
158 (after! evil
159   (require 'eaf-evil)
160   (define-key key-translation-map (kbd "SPC")
161     (lambda (prompt)
162       (if (derived-mode-p 'eaf-mode)
163         (pcase eaf--buffer-app-name
164           ("browser" (if (eaf-call-sync "execute_function" eaf--buffer-id "is_focus")
165                         (kbd "SPC")
166                         (kbd eaf-evil-leader-key)))
167           ("pdf-viewer" (kbd eaf-evil-leader-key))
168           ("image-viewer" (kbd eaf-evil-leader-key))
169           ("music-player" (kbd eaf-evil-leader-key))
170           ("video-player" (kbd eaf-evil-leader-key))
171           ("mindmap" (kbd eaf-evil-leader-key))
172           (_ (kbd "SPC"))))
173         (kbd "SPC")))))

```

6.8.9 Bitwarden

```

1 (package! bitwarden
2   :recipe (:host github
3     :repo "seanfarley/emacs-bitwarden"))

```

```

1 (use-package! bitwarden
2   ;;:config
3   ;;(bitwarden-auth-source-enable)
4   :when BITWARDEN-P
5   :init
6   (setq bitwarden-automatic-unlock
7     (lambda ()
8       (require 'auth-source)
9       (if-let* ((matches (auth-source-search :host "bitwarden.com" :max 1))
10         (entry (nth 0 matches))
11         (email (plist-get entry :user))
12         (pass (plist-get entry :secret)))
13         (progn
14           (setq bitwarden-user email)
15           (if (functionp pass) (funcall pass) pass))
16         ""))))

```

6.8.10 PDF tools

Dark mode The `pdf-tools` package supports dark mode (midnight), I use Emacs often to write and read PDF documents, so let's make it dark by default, this can be toggled using the `m z`.

```

1 (after! pdf-tools
2   (add-hook! 'pdf-view-mode-hook
3     (when (member doom-theme '(modus-vivandi doom-one doom-dark+ doom-vibrant))
4       ;; TODO: find a more generic way to detect if we are in a dark theme
5       (pdf-view-midnight-minor-mode 1)))
6
7   ;; Color the background, so we can see the PDF page borders
8   ;; https://protesilaos.com/emacs/modus-themes#h:ff69dfe1-29c0-447a-915c-b5ff7c5509cd
9   (defun +pdf-tools-backdrop ()
10     (face-remap-add-relative
11       'default
12       `(:background ,(modus-themes-color 'bg-alt))))
13
14   (add-hook 'pdf-tools-enabled-hook #' +pdf-tools-backdrop))
15
16 (after! pdf-links
17   ;; Tweak for Modus and `pdf-links`
18   (when (string-match-p "modus-" (symbol-name doom-theme))
19     ;; https://protesilaos.com/emacs/modus-themes#h:2659d13e-b1a5-416c-9a89-7c3ce3a76574
20     (let ((spec (apply #'append
21                       (mapcar
22                        (lambda (name)
23                          (list name
24                                (face-attribute 'pdf-links-read-link
25                                                  name nil 'default)))
26                          '(:family :width :weight :slant))))))
27       (setq pdf-links-read-link-convert-commands
28         `("-density"      "96"
29           "-family"      ,(plist-get spec :family)
30           "-stretch"     ,(let* ((width (plist-get spec :width))
31                                (name (symbol-name width)))
32                             (replace-regexp-in-string "-" " "
33                                                         (capitalize name)))
34           "-weight"      ,(pcase (plist-get spec :weight)
35                               ('ultra-light "Thin")
36                               ('extra-light "ExtraLight")
37                               ('light       "Light")
38                               ('semi-bold   "SemiBold")
39                               ('bold        "Bold")
40                               ('extra-bold   "ExtraBold")
41                               ('ultra-bold   "Black")
42                               (_weight      "Normal"))
43           "-style"       ,(pcase (plist-get spec :slant)
44                               ('italic      "Italic")
45                               ('oblique     "Oblique")
46                               (_slant       "Normal"))
47           "-pointsize"   "%P"
48           "-undercolor"  "%f"
49           "-fill"        "%b"
50           "-draw"        "text %X,%Y '%c'")))))

```

6.8.11 LTDR

Add the `tldr.el` client for TLDR pages.

```

1 (package! tldr)

```

```

1 (use-package! tldr
2   :commands (tldr-update-docs tldr)
3   :init
4   (setq tldr-enabled-categories '("common" "linux" "osx" "sunos")))

```

6.8.12 FZF

```

1 (package! fzf)

1 (after! evil
2   (evil-define-key 'insert fzf-mode-map (kbd "ESC") #'term-kill-subjob))
3
4 (define-minor-mode fzf-mode
5   "Minor mode for the FZF buffer"
6   :init-value nil
7   :lighter " FZF"
8   :keymap '("("C-c" . term-kill-subjob)))
9
10 (defadvice! doom-fzf--override-start-args-a (original-fn &rest args)
11   "Set the FZF minor mode with the fzf buffer."
12   :around #'fzf/start
13   (message "called with args %S" args)
14   (apply original-fn args)
15
16   ;; set the FZF buffer to fzf-mode so we can hook ctrl+c
17   (set-buffer "*fzf*")
18   (fzf-mode))
19
20 (defvar fzf/args
21   "-x --print-query -m --tiebreak=index --expect=ctrl-v,ctrl-x,ctrl-t")
22
23 (use-package! fzf
24   :commands (fzf fzf-projectile fzf-hg fzf-git fzf-git-files fzf-directory fzf-git-grep))

```

6.9 Fun

6.9.1 Speed Type

A game to practice speed typing in Emacs.

```

1 (package! speed-type)

```

```

1 (use-package! speed-type
2   :commands (speed-type-text))

```

6.9.2 2048 Game

```

1 (package! 2048-game)

```

```

1 (use-package! 2048-game
2   :commands (2048-game))

```


6.9.3 Snow

Let it snow in Emacs!

```
1 (package! snow)
```

```
1 (use-package! snow
2   :commands (snow))
```

6.9.4 xkcd

```
1 (package! xkcd
2   :recipe (:host github
3           :repo "vibhavg/emacs-xkcd"))
```

```
1 (use-package! xkcd
2   :commands (xkcd-get xkcd)
3   :config
4   (setq xkcd-cache-dir (expand-file-name "xkcd/" doom-cache-dir)
5         xkcd-cache-latest (expand-file-name "xkcd/latest" doom-cache-dir)))
```

7 Applications

7.1 Calendar

```
1 (setq calendar-latitude 48.7
2       calendar-longitude 2.17
3       calendar-location-name "Orsay, FR"
4       calendar-time-display-form
5       '(24-hours ":" minutes
6         (if time-zone " (" time-zone (if time-zone "))))
```

7.2 e-Books (nov)

```
1 (package! nov)
```

Use nov to read EPUB e-books.

```
1 (use-package! nov
2   :mode ("\\.epub\\'" . nov-mode)
3   :config
4   (map! :map nov-mode-map
5         :n "RET" #'nov-scroll-up)
6
7   (defun doom-modeline-segment--nov-info ()
8     (concat " "
9             (propertize (cdr (assoc 'creator nov-metadata))
10                          'face 'doom-modeline-project-parent-dir)
11             " "
12             (cdr (assoc 'title nov-metadata))
13             " "
14             (propertize (format "%d/%d" (1+ nov-documents-index) (length nov-documents))
15                          'face 'doom-modeline-info)))
```

```

16
17 (advice-add 'nov-render-title :override #'ignore)
18
19 (defun +nov-mode-setup ()
20   (face-remap-add-relative 'variable-pitch
21     :family "Merriweather"
22     :height 1.4
23     :width 'semi-expanded)
24   (face-remap-add-relative 'default :height 1.3)
25   (setq-local line-spacing 0.2
26     next-screen-context-lines 4
27     shr-use-colors nil)
28   (require 'visual-fill-column nil t)
29   (setq-local visual-fill-column-center-text t
30     visual-fill-column-width 80
31     nov-text-width 80)
32   (visual-fill-column-mode 1)
33   (hl-line-mode -1)
34
35   (add-to-list '+lookup-definition-functions
36     #'lookup/dictionary-definition)
37
38   (setq-local mode-line-format
39     `(:eval
40       (doom-modeline-segment--workspace-name))
41     (:eval
42       (doom-modeline-segment--window-number))
43     (:eval
44       (doom-modeline-segment--nov-info))
45     , (propertize
46       " %P "
47       'face 'doom-modeline-buffer-minor-mode)
48     , (propertize
49       " "
50       'face (if (doom-modeline--active) 'mode-line 'mode-line-inactive)
51       'display `((space
52         :align-to
53         (- (+ right right-fringe right-margin)
54           ,(* (let ((width (doom-modeline--font-width)))
55             (or (and (= width 1) 1)
56               (/ width (frame-char-width) 1.0)))
57             (string-width
58               (format-mode-line (cons "" '(:eval
59 ↪ (doom-modeline-segment--major-mode))))))))))
59       (:eval (doom-modeline-segment--major-mode))))))
60
61   (add-hook 'nov-mode-hook #' +nov-mode-setup))

```

7.3 News feed (elfeed)

Set RSS news feeds

```

1 (setq elfeed-feeds
2   '("https://this-week-in-rust.org/rss.xml"
3     "https://www.omgubuntu.co.uk/feed"
4     "https://itsfoss.com/feed"
5     "https://linuxhandbook.com/feed"
6     "https://spectrum.ieee.org/rss/robotics/fulltext"
7     "https://spectrum.ieee.org/rss/aerospace/fulltext"
8     "https://spectrum.ieee.org/rss/computing/fulltext"
9     "https://spectrum.ieee.org/rss/blog/automaton/fulltext"
10    "https://developers.redhat.com/blog/feed"
11    "https://lwn.net/headlines/rss"))

```

7.4 VPN configuration

7.4.1 NetExtender wrapper

I store my NetExtender VPN parameters in a GPG encrypted file. The credentials file contains a line of private parameters to pass to `netExtender`, like this:

```
1 echo "-u <USERNAME> -d <DOMAINE> -p <PASSWORD> -s <SERVER_IP>" \
2 | gpg -c > sslvpn.gpg
```

Then I like to have a simple script which decrypt the credentials and launch a session via the `netExtender` command.

```
1 #!/bin/bash
2
3 if ! command -v netExtender &> /dev/null
4 then
5     echo "netExtender not found, installing from AUR using 'yay'"
6     yay -S netextender
7 fi
8
9 MY_LOGIN_PARAMS_FILE="$HOME/.ssh/sslvpn.gpg"
10
11 echo "Y\n" | netExtender --auto-reconnect \
12 $(gpg -q --for-your-eyes-only --no-tty -d "${MY_LOGIN_PARAMS_FILE}")
```

7.4.2 Emacs + NetExtender

```
1 (when NETEXTENDER-P
2   (defvar +netextender-process-name "netextender")
3   (defvar +netextender-buffer-name " *NetExtender*")
4   (defvar +netextender-command '("~/local/bin/netextender"))
5
6   (defun +netextender-start ()
7     "Launch a NetExtender VPN session"
8     (interactive)
9     (unless (get-process +netextender-process-name)
10      (if (make-process :name +netextender-process-name
11                       :buffer +netextender-buffer-name
12                       :command +netextender-command)
13          (message "Started NetExtender VPN session")
14          (message "Cannot start NetExtender"))))
15
16   (defun +netextender-kill ()
17     "Kill the created NetExtender VPN session"
18     (interactive)
19     (when (get-process +netextender-process-name)
20      (if (kill-buffer +netextender-buffer-name)
21          (message "Killed NetExtender VPN session")
22          (message "Cannot kill NetExtender")))))
```

7.5 Email (mu4e)

Configuring `mu4e` as email client needs three parts:

- Incoming mail configuration IMAP (using `mbsync`)
- Outgoing mail configuration SMTP (using `smtpmail` or `msmtp`)
- Email indexer and viewer (via `mu` and `mu4e`)

7.5.1 IMAP (mbsync)

You will need to:

- Install mu and isync (`sudo pacman -S mu isync`)
- Set up a proper configuration file for your accounts at `~/.mbsyncrc`
- Run `mu init --maildir=~/.Maildir --my-address=user@host1 --my-address=user@host2`
- Run `mbsync -c ~/.mbsyncrc -a`
- For sending mails from mu4e, add a `~/.authinfo` file, file contains a line in this format `machine MAIL.DOMAIN.TLD login USER port 587 password PASSWD`
- Encrypt the `~/.authinfo` file using GPG `gpg -c ~/.authinfo` and delete the original unencrypted file.

I use a `mbsyncrc` file for multi-accounts, with some hacks for Gmail accounts (to rename the [Gmail]/... folders). Here is an explained configuration example.

In the configuration file, there is an parameter named `Pass` which should be set to the password in plain text. Most of the examples you can find online uses this parameter, but in real life, nobody uses it, it is extremely unsafe to put the password in plain text configuration file. Instead, `mbsync` configuration file provides the alternative `PassCmd` parameter, which can be set to an arbitrary shell command which gets the password for you. You can set it for example to call the `pass` password manager to output the account password, or to `bw` command (for Bitwarden users). For me, I'm using it with Emacs' `~/.authinfo.gpg`, the `PassCmd` in my configuration uses GPG and `awk` to decrypt and filter the file content to find the required account's password. I set `PassCmd` to something like this:

```
1 gpg -q --for-your-eyes-only --no-tty --logger-file /dev/null --batch -d ~/.authinfo.gpg | awk '/machine
↪ smtp.googlemail.com login username@gmail.com/ {print $NF}'
```

Remember the line format in the `~/.authinfo.gpg` file:

```
1 machine smtp.googlemail.com login username@gmail.com port 587 password PASSWD
```

This `PassCmd` command above, decrypts the `~/.authinfo.gpg`, passes it to `awk` to search the line containing "machine smtp.googlemail.com login username@gmail.com" and prints the last field (the last field `$NF` in the `awk` command corresponds to the password, as you can see in the line format).

The whole `~/.mbsync` file should look like this:

```
1 # mbsync config file
2 # GLOBAL OPTIONS
3 BufferLimit 50mb           # Global option: Default buffer size is 10M, too small for modern machines.
4 Sync All                  # Channels global: Sync everything "Pull Push New ReNew Delete Flags" (default
↪ option)
5 Create Both               # Channels global: Automatically create missing mailboxes on both sides
6 Expunge Both              # Channels global: Delete messages marked for deletion on both sides
7 CopyArrivalDate yes      # Channels global: Propagate arrival time with the messages
8
9 # SECTION (IMAP4 Accounts)
10 IMAPAccount work          # IMAP Account name
11 Host mail.host.ccc        # The host to connect to
12 User user@host.ccc        # Login user name
13 SSLVersions TLSv1.2 TLSv1.1 # Supported SSL versions
14 # Extract password from encrypted ~/.authinfo.gpg
15 # File format: "machine <SERVER> login <LOGIN> port <PORT> password <PASSWORD>"
16 # This uses sed to extract <PASSWORD> from line matching the account's <SERVER>
17 PassCmd "gpg2 -q --for-your-eyes-only --no-tty --logger-file /dev/null --batch -d ~/.authinfo.gpg | awk
↪ '/machine smtp.domain.tld/ {print $NF}'"
18 AuthMechs *               # Authentication mechanisms
19 SSLType IMAPS              # Protocol (STARTTLS/IMAPS)
20 CertificateFile /etc/ssl/certs/ca-certificates.crt
21 # END OF SECTION
```

```

22 # IMPORTANT NOTE: you need to keep the blank line after each section
23
24 # SECTION (IMAP Stores)
25 IMAPStore work-remote      # Remote storage name
26 Account work              # Associated account
27 # END OF SECTION
28
29 # SECTION (Maildir Stores)
30 MaildirStore work-local    # Local storage (create directories with mkdir -p ~/Maildir/<ACCOUNT-NAME>)
31 Path ~/Maildir/work/      # The local store path
32 Inbox ~/Maildir/work/Inbox # Location of the INBOX
33 SubFolders Verbatim       # Download all sub-folders
34 # END OF SECTION
35
36 # Connections specify links between remote and local folders
37 # they are specified using patterns, which match remote mail
38 # folders. Some commonly used patterns include:
39 #
40 # - "*" to match everything
41 # - "!DIR" to exclude "DIR"
42 # - "DIR" to match DIR
43 #
44 # SECTION (Channels)
45 Channel work              # Channel name
46 Far :work-remote:         # Connect remote store
47 Near :work-local:         # to the local one
48 Patterns "INBOX" "Drafts" "Sent" "Archives/*" "Spam" "Trash"
49 SyncState *              # Save state in near side mailbox file ".mbsyncstate"
50 # END OF SECTION
51
52 # =====
53
54 IMAPAccount gmail
55 Host imap.gmail.com
56 User user@gmail.com
57 PassCmd "gpg2 -q --for-your-eyes-only --no-tty --logger-file /dev/null --batch -d ~/.authinfo.gpg | awk
58 ↪ '/machine smtp.domain.tld/ {print $NF}'"
59 AuthMechs LOGIN
60 SSLType IMAPS
61 CertificateFile /etc/ssl/certs/ca-certificates.crt
62
63 IMAPStore gmail-remote
64 Account gmail
65
66 MaildirStore gmail-local
67 Path ~/Maildir/gmail/
68 Inbox ~/Maildir/gmail/Inbox
69
70 # For Gmail, I like to make multiple channels, one for each remote directory
71 # this is a trick to rename remote "[Gmail]/mailbox" to "mailbox"
72 Channel gmail-inbox
73 Far :gmail-remote:
74 Near :gmail-local:
75 Patterns "INBOX"
76 SyncState *
77
78 Channel gmail-trash
79 Far :gmail-remote:"[Gmail]/Trash"
80 Near :gmail-local:"Trash"
81 SyncState *
82
83 Channel gmail-drafts
84 Far :gmail-remote:"[Gmail]/Drafts"
85 Near :gmail-local:"Drafts"
86 SyncState *
87
88 Channel gmail-sent
89 Far :gmail-remote:"[Gmail]/Sent Mail"
90 Near :gmail-local:"Sent Mail"
91 SyncState *

```

```

91 Channel gmail-all
92 Far :gmail-remote: "[Gmail]/All Mail"
93 Near :gmail-local: "All Mail"
94 SyncState *
95
96 Channel gmail-starred
97 Far :gmail-remote: "[Gmail]/Starred"
98 Near :gmail-local: "Starred"
99 SyncState *
100
101 Channel gmail-spam
102 Far :gmail-remote: "[Gmail]/Spam"
103 Near :gmail-local: "Spam"
104 SyncState *
105
106
107 # GROUPS PUT TOGETHER CHANNELS, SO THAT WE CAN INVOKE
108 # MBSYNC ON A GROUP TO SYNC ALL CHANNELS
109 #
110 # FOR INSTANCE: "mbsync gmail" GETS MAIL FROM
111 # "gmail-inbox", "gmail-sent", and "gmail-trash"
112 #
113 # SECTION (Groups)
114 Group gmail
115 Channel gmail-inbox
116 Channel gmail-sent
117 Channel gmail-trash
118 Channel gmail-drafts
119 Channel gmail-all
120 Channel gmail-starred
121 Channel gmail-spam
122 # END OF SECTION

```

7.5.2 SMTP (msmtp)

I was using the standard `smtpmail` to send mails; but recently, I'm getting problems when sending mails. I passed a whole day trying to fix mail sending for one of my accounts, at the end of the day, I got a working setup; BUT, sending the first mail always ask me about password! I need to enter the password to be able to send the mail, Emacs asks me then if I want to save it to `~/.authinfo.gpg`, when I confirm saving it, it got duplicated in the `.authinfo.gpg` file.

This seems to be a bug; I also found somewhere that `smtpmail` is buggy, and that `msmtp` seems to be a good alternative, so now I'm using a `msmtp`-based setup, and it works like a charm!

For this, we will need an additional configuration file, `~/.msmtp.rc`, I configure it the same way as `mbsync`, specifying this time SMTP servers instead of IMAP ones. I extract the passwords from `~/.authinfo.gpg` using GPG and `awk`, the same way we did in `mbsync`'s configuration.

The following is a sample file `~/.msmtp.rc`.

```

1 # Set default values for all following accounts.
2 defaults
3 auth on
4 tls on
5 tls_starttls on
6 tls_trust_file /etc/ssl/certs/ca-certificates.crt
7 logfile ~/.msmtp.log
8
9 # Gmail
10 account gmail
11 auth plain
12 host smtp.googlemail.com
13 port 587
14 from username@gmail.com
15 user username
16 passwordeval "gpg -q --for-your-eyes-only --no-tty --logger-file /dev/null --batch -d
17 ↪ ~/.authinfo.gpg | awk '/machine smtp.googlemail.com login .*/@gmail.com/ {print $NF}'"
add_missing_date_header on

```

```

18
19 ## Gmail - aliases
20 account          alias-account : gmail
21 from             alias@mail.com
22
23 account          other-alias : gmail
24 from             other.alias@address.org
25
26 # Work
27 account          work
28 auth             on
29 host             smtp.domaine.tld
30 port             587
31 from             username@domaine.tld
32 user             username
33 password          "gpg -q --for-your-eyes-only --no-tty --logger-file /dev/null --batch -d
↪ ~/.authinfo.gpg | awk '/machine smtp.domaine.tld/ {print $NF}'"
34 tls_nocertcheck # ignore TLS certificate errors

```

7.5.3 Mail client and indexer (mu and mu4e)

Add mu4e to path if it exists on the file system.

```

1 (add-to-list 'load-path "/usr/local/share/emacs/site-lisp/mu4e")

```

I configure my email accounts in a private file in `lisp/private/+mu4e-accounts.el`, which will be loaded after this common part:

```

1 (after! mu4e
2   (require 'org-msg)
3   (require 'mu4e-contrib)
4   (require 'mu4e-icalendar)
5   (require 'org-agenda)
6
7   ;; Common parameters
8   (setq mu4e-update-interval (* 3 60) ;; Every 3 min
9         mu4e-index-update-error-warning nil ;; Do not show warning after update
10        mu4e-get-mail-command "mbsync -a" ;; Not needed, as +mu4e-backend is 'mbsync by default
11        mu4e-main-hide-personal-addresses t ;; No need to display a long list of my own addresses!
12        mu4e-attachment-dir (expand-file-name "~/Downloads/mu4e-attachements")
13        mu4e-sent-messages-behavior 'sent ;; Save sent messages
14        mu4e-context-policy 'pick-first ;; Start with the first context
15        mu4e-compose-context-policy 'ask) ;; Always ask which context to use when composing a new mail
16
17   ;; Use msmtp instead of smtpmail
18   (setq sendmail-program "/usr/bin/msmtp"
19         message-sendmail-f-is-evil t
20         message-sendmail-envelope-from 'header
21         message-sendmail-extra-arguments '("--read-envelope-from") ;; "--read-recipients"
22         message-send-mail-function #'message-send-mail-with-sendmail
23         mail-specify-envelope-from t
24         mail-envelope-from 'header)
25
26   (setq mu4e-headers-fields '(:flags . 6) ;; 3 flags
27         (:account-stripe . 2)
28         (:from-or-to . 25)
29         (:folder . 10)
30         (:recipnum . 2)
31         (:subject . 80)
32         (:human-date . 8))
33
34   +mu4e-min-header-frame-width 142
35   mu4e-headers-date-format "%d/%m/%y"
36   mu4e-headers-time-format "%H:%M"
37   mu4e-search-results-limit 1000
38   mu4e-index-cleanup t)

```

```

39 (defvar +mu4e-header--folder-colors nil)
40 (appendq! mu4e-header-info-custom
41   '(:folder .
42     (:name "Folder" :shortname "Folder" :help "Lowest level folder" :function
43       (lambda (msg)
44         (+mu4e-colorize-str
45          (replace-regexp-in-string "\\`.*/" "" (mu4e-message-field msg :maildir))
46          '+mu4e-header--folder-colors))))))
47
48 ;; Add a unified inbox shortcut
49 (add-to-list
50   'mu4e-bookmarks
51   '(:name "Unified inbox" :query "maildir:/*inbox/" :key ?i) t)
52
53 ;; Add shortcut to view yesterday's messages
54 (add-to-list
55   'mu4e-bookmarks
56   '(:name "Yesterday's messages" :query "date:1d..today" :key ?y) t)
57
58 ;; Load a list of my email addresses '+my-addresses', defined as:
59 ;; (setq +my-addresses '("user@gmail.com" "user@hotmail.com"))
60 (load! "lisp/private/+my-addresses.el")
61
62 (when (bound-and-true-p +my-addresses)
63   ;; I like always to add myself in BCC, Lets add a bookmark to show all my BCC mails
64   (defun +mu-long-query (query oper arg-list)
65     (concat "(" (+str-join (concat " " oper " ") (mapcar (lambda (addr) (format "%s:%s" query addr))
66   ↪   arg-list)) ")"))
67
68   ;; Build a query to match mails send from "me" with "me" in BCC
69   (let ((bcc-query (+mu-long-query "bcc" "or" +my-addresses))
70         (from-query (+mu-long-query "from" "or" +my-addresses)))
71     (add-to-list
72       'mu4e-bookmarks
73       (list :name "My black copies" :query (format "%s and %s" from-query bcc-query) :key ?k) t)))
74
75 ;; `mu4e-alert' configuration
76 ;; Use a nicer icon in alerts
77 (setq mu4e-alert-icon "/usr/share/icons/Papirus/64x64/apps/mail-client.svg")
78
79 (defun +mu4e-alert-helper-name-or-email (msg)
80   (let* ((from (car (plist-get msg :from)))
81          (name (plist-get from :name)))
82     (if (or (null name) (eq name ""))
83         (plist-get from :email)
84         name)))
85
86 (defun +mu4e-alert-grouped-mail-notif-formatter (mail-group _all-mails)
87   (when +mu4e-alert-bell-cmd
88     (start-process "mu4e-alert-bell" nil (car +mu4e-alert-bell-cmd) (cdr +mu4e-alert-bell-cmd)))
89   (let* ((filtered-mails (+filter
90     (lambda (msg)
91       (not (string-match-p "\\(junk\\|spam\\|trash\\|deleted\\)"
92         (downcase (plist-get msg :maildir)))))
93     mail-group))
94     (mail-count (length filtered-mails)))
95     (list
96       :title (format "You have %d unread email%s"
97         mail-count (if (> mail-count 1) "s" ""))
98       :body (concat
99         "• "
100         (+str-join
101          "\n• "
102          (mapcar
103            (lambda (msg)
104              (format "<b>%s</b>: %s"
105                (+mu4e-alert-helper-name-or-email msg)
106                (plist-get msg :subject)))
107            filtered-mails))))))

```



```

108 ;; I use auto-hiding task manager, setting window
109 ;; urgency shows the entier task bar (in KDE), which I find annoying.
110 (setq mu4e-alert-set-window-urgency nil
111       mu4e-alert-grouped-mail-notification-formatter #'mu4e-alert-grouped-mail-notif-formatter)
112
113 ;; Org-Msg stuff
114 ;; org-msg-[signature/greeting-fmt] are separately set for each account
115 (map! :map org-msg-edit-mode-map
116       :after org-msg
117       :n "G" #'org-msg-goto-body)
118
119 ;; I like to always BCC myself
120 (defun +bbc-me ()
121   "Add my email to BCC."
122   (save-excursion (message-add-header (format "Bcc: %s\n" user-mail-address))))
123
124 (add-hook 'mu4e-compose-mode-hook '+bbc-me)
125
126 ;; Load my accounts
127 (load! "lisp/private/+mu4e-accounts.el")
128
129 ;; iCalendar / Org
130 (mu4e-icalendar-setup)
131 (setq mu4e-icalendar-trash-after-reply nil
132       mu4e-icalendar-diary-file "~/Dropbox/Org/diary-invitations.org"
133       gnus-icalendar-org-capture-file "~/Dropbox/Org/notes.org"
134       gnus-icalendar-org-capture-headline '("Calendar"))
135
136 ;; To enable optional iCalendar->Org sync functionality
137 ;; NOTE: both the capture file and the headline(s) inside must already exist
138 (gnus-icalendar-org-setup))

```

The `lisp/private/+mu4e-accounts.el` file includes Doom's mu4e multi-account configuration as follows:

```

1 (set-email-account!
2   "Work" ;; Account label
3
4   ;; Mu4e folders
5   '( (mu4e-sent-folder           . "/work-dir/Sent")
6       (mu4e-drafts-folder        . "/work-dir/Drafts")
7       (mu4e-trash-folder         . "/work-dir/Trash")
8       (mu4e-refile-folder        . "/work-dir/Archive")
9
10      ;; Org-msg template (signature and greeting)
11      (org-msg-greeting-fmt       . "Hello%s,")
12      (org-msg-signature          . "
13
14      Regards,
15
16      #+begin_signature
17      -----
18      *Abdelhak BOUGOUFFA* \\\
19      /PhD. Candidate in Robotics | R&D Engineer/ \\\
20      /Paris-Saclay University - SATIE/MOSS | ez-Wheel/ \\\
21      #+end_signature")
22
23      ;; 'smtpmail' options, no need for these when using 'msmtp'
24      (smtpmail-smtp-user          . "username@server.com")
25      (smtpmail-smtp-server        . "smtps.server.com")
26      (smtpmail-stream-type        . ssl)
27      (smtpmail-smtp-service       . 465)
28
29      ;; By default, `smtpmail' will try to send mails without authentication, and if rejected,
30      ;; it tries to send credentials. This behavior broke my configuration. So I set this
31      ;; variable to tell 'smtpmail' to require authentication for our server (using a regex).
32      (smtpmail-servers-requiring-authorization . "smtps\\.server\\.com"))
33
34   t) ;; Use as default/fallback account
35

```

```

36 ;; Set another account
37 (set-email-account!
38   "Gmail"
39   '( (mu4e-sent-folder      . "/gmail-dir/Sent")
40     (mu4e-drafts-folder    . "/gmail-dir/Drafts")
41     (mu4e-trash-folder     . "/gmail-dir/Trash")
42     (mu4e-refile-folder    . "/gmail-dir/Archive")
43     (org-msg-greeting-fmt  . "Hello%s,")
44     (org-msg-signature     . "-- SIGNATURE")
45
46     ;; No need for these when using 'msmtp'
47     (smtpmail-smtp-user    . "username@gmail.com")
48     (smtpmail-smtp-server  . "smtp.googlemail.com")
49     (smtpmail-stream-type  . starttls)
50     (smtpmail-smtp-service . 587)
51     ...))
52
53 ;; Tell Doom's mu4e module to override some commands to fix issues on Gmail accounts
54 (setq +mu4e-gmail-accounts '(("username@gmail.com" . "/gmail-dir")))

```

7.6 IRC

```

1  ;; TODO: Not tangled
2  (defun +fetch-my-password (&rest params)
3    (require 'auth-source)
4    (let ((match (car (apply #'auth-source-search params))))
5      (if match
6          (let ((secret (plist-get match :secret)))
7            (if (functionp secret)
8                (funcall secret)
9                secret))
10         (error "Password not found for %S" params))))
11
12 (defun +my-nickserver-password (server)
13   (+fetch-my-password :user "abougouffa" :host "irc.libera.chat"))
14
15 (set-irc-server! "irc.libera.chat"
16   '(:tls t
17     :port 6697
18     :nick "abougouffa"
19     :sasl-password +my-nickserver-password
20     :channels ("#emacs")))

```

7.7 Multimedia

I like to use an MPD powered EMMS, so when I restart Emacs I do not lose my music.

7.7.1 MPD, MPC, and MPV

```

1  ;; Not sure if it is required!
2  (after! mpc
3    (setq mpc-host "localhost:6600"))

```

I like to launch the music daemon mpd using Systemd, let's define some commands in Emacs to start/kill the server:

```

1  (defun +mpd-daemon-start ()
2    "Start MPD, connects to it and syncs the metadata cache."
3    (interactive)
4    (let ((mpd-daemon-running-p (+mpd-daemon-running-p)))

```

```

5  (unless mpd-daemon-running-p
6    ;; Start the daemon if it is not already running.
7    (setq mpd-daemon-running-p (zerop (call-process "systemctl" nil nil nil "--user" "start" "mpd.service"))))
8  (cond ((+mpd-daemon-running-p)
9        (+mpd-mpc-update)
10       (emms-player-mpd-connect)
11       (emms-cache-set-from-mpd-all)
12       (message "Connected to MPD!"))
13       (t
14        (warn "An error occurred when trying to start Systemd mpd.service."))))
15
16 (defun +mpd-daemon-stop ()
17   "Stops playback and kill the MPD daemon."
18   (interactive)
19   (emms-stop)
20   (call-process "systemctl" nil nil nil "--user" "stop" "mpd.service")
21   (message "MPD stopped!"))
22
23 (defun +mpd-daemon-running-p ()
24   "Check if the MPD service is running."
25   (zerop (call-process "systemctl" nil nil nil "--user" "is-active" "--quiet" "mpd.service")))
26
27 (defun +mpd-mpc-update ()
28   "Updates the MPD database synchronously."
29   (interactive)
30   (if (zerop (call-process "mpc" nil nil nil "update"))
31       (message "MPD database updated!")
32       (warn "An error occurred when trying to update MPD database.")))

```

7.7.2 EMMS

Now, we configure EMMS to use MPD if it is present; otherwise, it uses whatever default backend EMMS is using.

```

1  (after! emms
2    ;; EMMS basic configuration
3    (require 'emms-setup)
4
5    (when MPD-P
6      (require 'emms-player-mpd))
7
8    (emms-all)
9    (emms-default-players)
10
11    (setq emms-source-file-default-directory "~/Music/"
12          ;; Load cover images
13          emms-browser-covers 'emms-browser-cache-thumbnail-async
14          emms-seek-seconds 5)
15
16    (if MPD-P
17        ;; If using MPD as backend
18        (setq emms-player-list '(emms-player-mpd)
19              emms-info-functions '(emms-info-mpd)
20              emms-player-mpd-server-name "localhost"
21              emms-player-mpd-server-port "6600"
22              emms-player-mpd-music-directory (expand-file-name "~/Music"))
23        ;; Use whatever backend EMMS is using by default (VLC in my machine)
24        (setq emms-info-functions '(emms-info-tinytag))) ;; use Tinytag, or '(emms-info-exiftool) for Exiftool
25
26    ;; Keyboard shortcuts
27    (global-set-key (kbd "<XF86AudioPrev>") 'emms-previous)
28    (global-set-key (kbd "<XF86AudioNext>") 'emms-next)
29    (global-set-key (kbd "<XF86AudioPlay>") 'emms-pause)
30    (global-set-key (kbd "<XF86AudioPause>") 'emms-pause)
31    (global-set-key (kbd "<XF86AudioStop>") 'emms-stop)
32
33    ;; Try to start MPD or connect to it if it is already started.

```

```

34 (when MPD-P
35   (emms-player-set emms-player-mpd 'regex
36     (emms-player-simple-regex
37       "m3u" "ogg" "flac" "mp3" "wav" "mod" "au" "aiff"))
38   (add-hook 'emms-playlist-cleared-hook 'emms-player-mpd-clear)
39   (+mpd-daemon-start))
40
41 ;; Activate EMMS in mode line
42 (emms-mode-line 1)
43
44 ;; More descriptive track lines in playlists
45 ;; From: https://www.emacswiki.org/emacs/EMMS#h5o-15
46 (defun +better-emms-track-description (track)
47   "Return a somewhat nice track description."
48   (let ((artist (emms-track-get track 'info-artist))
49         (album (emms-track-get track 'info-album))
50         (tracknumber (emms-track-get track 'info-tracknumber))
51         (title (emms-track-get track 'info-title)))
52     (cond
53       ((or artist title)
54        (concat
55         (if (> (length artist) 0) artist "Unknown artist") ": "
56         (if (> (length album) 0) album "Unknown album") " - "
57         (if (> (length tracknumber) 0) (format "%02d. " (string-to-number tracknumber)) "")
58         (if (> (length title) 0) title "Unknown title"))))
59     (t
60      (emms-track-simple-description track))))
61
62 (setq emms-track-description-function '+better-emms-track-description)
63
64 ;; Manage notifications, inspired by:
65 ;; https://www.emacswiki.org/emacs/EMMS#h5o-9
66 ;; https://www.emacswiki.org/emacs/EMMS#h5o-11
67 (cond
68   ;; Choose D-Bus to disseminate messages, if available.
69   ((and (require 'dbus nil t) (dbus-ping :session "org.freedesktop.Notifications"))
70    (setq +emms-notifier-function '+notify-via-freedesktop-notifications)
71    (require 'notifications))
72   ;; Try to make use of KNotify if D-Bus isn't present.
73   ((and window-system (executable-find "kdialog"))
74    (setq +emms-notifier-function '+notify-via-kdialog))
75   ;; Use the message system otherwise
76   (t
77    (setq +emms-notifier-function '+notify-via-messages)))
78
79 (setq +emms-notification-icon "/usr/share/icons/Papirus/64x64/apps/enjoy-music-player.svg")
80
81 (defun +notify-via-kdialog (title msg icon)
82   "Send notification with TITLE, MSG, and ICON via `KDialog'."
83   (call-process "kdialog"
84     nil nil nil
85     "--title" title
86     "--passivepopup" msg "5"
87     "--icon" icon))
88
89 (defun +notify-via-freedesktop-notifications (title msg icon)
90   "Send notification with TITLE, MSG, and ICON via `D-Bus'."
91   (notifications-notify
92    :title title
93    :body msg
94    :app-icon icon
95    :urgency 'low))
96
97 (defun +notify-via-messages (title msg icon)
98   "Send notification with TITLE, MSG to message. ICON is ignored."
99   (message "%s %s" title msg))
100
101 (add-hook 'emms-player-started-hook
102   (lambda () (funcall +emms-notifier-function
103     "EMMS is now playing:"

```

```

104         (emms-track-description (emms-playlist-current-selected-track))
105         +emms-notification-icon)))
106
107 ;; MPV and Youtube integration
108 (when MPV-P
109   (add-to-list 'emms-player-list 'emms-player-mpv t)
110   (emms-player-set
111     emms-player-mpv
112     'regex
113     (rx (or ([ "https://" (* nonl) "youtube.com" (* nonl))
114              (+ (? (or "https://" "http://")
115                    (* nonl)
116                      (regexp (eval (emms-player-simple-regexp
117                                    "mp4" "mov" "wmv" "webm" "flv" "avi" "mkv"))))))))
118
119   (setq +youtube-dl-quality-list
120         '("bestvideo[height<=720]+bestaudio/best[height<=720]"
121           "bestvideo[height<=480]+bestaudio/best[height<=480]"
122           "bestvideo[height<=1080]+bestaudio/best[height<=1080]"))
123
124   (setq +default-emms-player-mpv-parameters
125         '("--quiet" "--really-quiet" "--no-audio-display"))
126
127   (defun +set-emms-mpd-youtube-quality (quality)
128     (interactive "p")
129     (unless quality
130       (setq quality (completing-read "Quality: " +youtube-dl-quality-list nil t)))
131     (setq emms-player-mpv-parameters
132           `(@+default-emms-player-mpv-parameters ,(format "--ytdl-format=%s" quality))))
133
134   (+set-emms-mpd-youtube-quality (car +youtube-dl-quality-list))
135
136   (defun +get-youtube-url (link)
137     (let ((watch-id (cadr
138                     (assoc "watch?v"
139                           (url-parse-query-string
140                             (substring
141                               (url-filename
142                                (url-generic-parse-url link))
143                              1))))))
144       (concat "https://www.youtube.com/watch?v=" watch-id))))
145
146 ;; Example, to be used in an EMMS Playlist
147 ;; (let ((track (emms-track 'url (+get-youtube-url
148 ↪ "https://www.youtube.com/watch?v=Wh~7Kg-jVLg&list=PLBsIgVvbrncChqmejIOyA-Xp_dcywQQln"))))
149 ;;   (emms-track-set track 'info-title "Vid")
150 ;;   (emms-playlist-insert-track track))

```

7.7.3 Elfeed :heart: MPV

<https://sqrtminusone.xyz/posts/2021-09-07-emms/>
 Install yt-rss from Git:

```

1 YT_RSS_DIR=~/.local/share/yt-rss
2 git clone https://github.com/SqrtMinusOne/yt-rss.git "$YT_RSS_DIR"
3 cd "$YT_RSS_DIR"
4 pip install -r requirements.txt
5 gunicorn main:app

```

```

1 (after! (elfeed emms)
2   (when MPV-P
3     ;; Integration with Elfeed
4     (define-emms-source elfeed (entry)
5       (let ((track (emms-track
6                     'url (+get-youtube-url (elfeed-entry-link entry)))))

```

```

7      (emms-track-set track 'info-title (elfeed-entry-title entry))
8      (emms-playlist-insert-track track)))
9
10     (defun +elfeed-add-emms-youtube ()
11       (interactive)
12       (emms-add-elfeed elfeed-show-entry)
13       (elfeed-tag elfeed-show-entry 'watched)
14       (elfeed-show-refresh))
15
16     (defun +elfeed-search-filter-source (entry)
17       "Filter elfeed search buffer by the feed under cursor."
18       (interactive (list (elfeed-search-selected :ignore-region)))
19       (when (elfeed-entry-p entry)
20         (elfeed-search-set-filter
21          (concat
22           "@6-months-ago "
23           "+unread "
24           "="
25           (replace-regexp-in-string
26            (rx "?" (* not-newline) eos)
27            ""
28            (elfeed-feed-url (elfeed-entry-feed entry))))))))))

```

7.7.4 Keybindings

Lastly, let's define the keybindings for these commands, under <leader> l m.

```

1  (map! :leader :prefix ("l" . "custom")
2    (:when (featurep! :app emms)
3      :prefix ("m" . "media")
4      :desc "Playlist go"           "g" #'emms-playlist-mode-go
5      :desc "Add playlist"          "D" #'emms-add-playlist
6      :desc "Toggle random playlist" "r" #'emms-toggle-random-playlist
7      :desc "Add directory"         "d" #'emms-add-directory
8      :desc "Add file"              "f" #'emms-add-file
9      :desc "Smart browse"          "b" #'emms-smart-browse
10     :desc "Play/Pause"             "p" #'emms-pause
11     :desc "Start"                  "S" #'emms-start
12     :desc "Start"                  "S" #'emms-start
13     :desc "Stop"                   "s" #'emms-stop))

```

Then we add MPD related keybindings if MPD is used.

```

1  (map! :leader
2    :prefix ("l m")
3    (:when (and (featurep! :app emms) MPD-P)
4      :prefix ("m" . "mpd/mpc")
5      :desc "Start daemon"          "s" #'emms-mpd-daemon-start
6      :desc "Stop daemon"           "k" #'emms-mpd-daemon-stop
7      :desc "EMMS player (MPD update)" "R" #'emms-mpd-player-mpd-update-all-reset-cache
8      :desc "Update database"        "u" #'emms-mpd-mpc-update))

```

7.7.5 Cycle song information in mode line

I found a useful package named `emms-mode-line-cycle` which permits to do this; however, it has not been updated since a while, it uses some obsolete functions to draw icon in mode line, so I forked it, got rid of the problematic parts, and added some minor stuff.

```

1  (package! emms-mode-line-cycle
2    :recipe (:host github
3      :repo "abougouffa/emms-mode-line-cycle"))

```

```

1 (use-package! emms-mode-line-cycle
2   :after emms
3   :config
4   (setq emms-mode-line-cycle-max-width 15
5         emms-mode-line-cycle-additional-space-num 4
6         emms-mode-line-cycle-any-width-p nil
7         emms-mode-line-cycle-velocity 4)
8
9   ;; Some music files do not have metadata, by default, the track title
10  ;; will be the full file path, so, if I detect what seems to be an absolute
11  ;; path, I trim the directory part and get only the file name.
12  (setq emms-mode-line-cycle-current-title-function
13        (lambda ()
14          (let ((name (emms-track-description (emms-playlist-current-selected-track))))
15            (if (file-name-absolute-p name) (file-name-base name) name))))
16
17  ;; Mode line formatting settings
18  ;; This format complements the 'emms-mode-line-format' one.
19  (setq emms-mode-line-format " %s " ;;
20        ;; To hide the playing time without stopping the cycling.
21        emms-playing-time-display-format "")
22
23  (defun +emms-mode-line-toggle-format-hook ()
24    "Toggle the 'emms-mode-line-format' string, when playing or paused."
25    (setq emms-mode-line-format (concat " " (if emms-player-paused-p " " " ") " %s "))
26    ;; Force a sync to get the right song name over MPD in mode line
27    (when MPD-P (emms-player-mpd-sync-from-mpd))
28    ;; Trigger a forced update of mode line (useful when pausing)
29    (emms-mode-line-alter-mode-line))
30
31  ;; Hook the function to the 'emms-player-paused-hook'
32  (add-hook 'emms-player-paused-hook '+emms-mode-line-toggle-format-hook)
33
34  (emms-mode-line-cycle 1))

```

7.8 Maxima

The Maxima CAS comes bundled with three Emacs modes: `maxima`, `imaxima` and `emaxima`; installed by default in `"/usr/share/emacs/site-lisp/maxima"`.

7.8.1 Maxima

The `emacs-mirror/maxima` seems more up-to-date, and supports completion via `Company`, so let's install it from GitHub. Note that, normally, we don't need to specify a recipe; however, installing it directly seems to not install `company-maxima.el` and `poly-maxima.el`.

```

1 (package! maxima
2   :recipe (:host github
3           :repo "emacs-mirror/maxima"
4           :files (:defaults
5                  "keywords"
6                  "company-maxima.el"
7                  "poly-maxima.el")))

```

```

1 (use-package! maxima
2   :when MAXIMA-P
3   :commands (maxima-mode maxima-inferior-mode maxima)
4   :init
5   (require 'straight) ;; to use `straight-build-dir' and `straight-base-dir'
6   (setq maxima-font-lock-keywords-directory ;; a workaround to undo the straight workaround!
7         (expand-file-name (format "straight/%s/maxima/keywords" straight-build-dir) straight-base-dir))
8
9   ;; The `maxima-hook-function' setup `company-maxima'.

```

```

10 (add-hook 'maxima-mode-hook #'maxima-hook-function)
11 (add-hook 'maxima-inferior-mode-hook #'maxima-hook-function)
12 (add-to-list 'auto-mode-alist '("\\.ma[cs]\\." . maxima-mode)))

```

7.8.2 IMaxima

For the `imaxima` (Maxima with image support), the `emacsattic/imaxima` seems outdated compared to the `imaxima` package of the official Maxima distribution, so let's install `imaxima` from the source code of Maxima, hosted on Sourceforge git.code.sf.net/p/maxima/code. The package files are stored in the repository's subdirectory `interfaces/emacs/imaxima`.

```

1 ;; Use the `imaxima' package bundled with the official Maxima distribution.
2 (package! imaxima
3   :recipe (:host nil ;; Unsupported host, we will specify the complete repo link
4           :repo "https://git.code.sf.net/p/maxima/code"
5           :files ("interfaces/emacs/imaxima/*")))

```

```

1 (use-package! imaxima
2   :when MAXIMA-P
3   :commands (imaxima imath-mode)
4   :init
5   (setq imaxima-use-maxima-mode-flag nil ;; otherwise, it don't render equations with LaTeX.
6         imaxima-scale-factor 2.0)
7
8   ;; Hook the `maxima-inferior-mode' to get Company completion.
9   (add-hook 'imaxima-startup-hook #'maxima-inferior-mode))

```

7.9 FriCAS

The FriCAS comes bundled with an Emacs mode, let's load it.

```

1 (use-package! fricas
2   :when FRICAS-P
3   :load-path "/usr/lib/fricas/emacs"
4   :commands (fricas-mode fricas-eval fricas))

```

8 Programming

8.1 File templates

For some file types, we can overwrite the defaults in the snippets' directory.

```

1 (set-file-template! "\\..tex$" :trigger "__" :mode 'latex-mode)
2 (set-file-template! "\\..org$" :trigger "__" :mode 'org-mode)
3 (set-file-template! "/LICEN[CS]E$" :trigger '+file-templates/insert-license)

```

8.2 CSV rainbow

Stolen from here.

```

1 (after! csv-mode
2   ;; TODO: Need to fix the case of two commas, example "a,b,,c,d"
3   (require 'cl-lib)
4   (require 'color)
5

```



```

6  (map! :localleader
7      :map csv-mode-map
8      "R" #' +csv-rainbow)
9
10 (defun +csv-rainbow (&optional separator)
11   (interactive (list (when current-prefix-arg (read-char "Separator: "))))
12   (font-lock-mode 1)
13   (let* ((separator (or separator ?\,))
14          (n (count-matches (string separator) (point-at-bol) (point-at-eol)))
15          (colors (cl-loop for i from 0 to 1.0 by (/ 2.0 n)
16                           collect (apply #'color-rgb-to-hex
17                                           (color-hsl-to-rgb i 0.3 0.5)))))
18     (cl-loop for i from 2 to n by 2
19              for c in colors
20              for r = (format "~\\([~%c\\n]+%c\\)\\{d\\}" separator separator i)
21              do (font-lock-add-keywords nil `((,r (1 '(face (:foreground ,c))))))))
22
23 ;; provide CSV mode setup
24 ;; (add-hook 'csv-mode-hook (lambda () (+csv-rainbow)))

```

8.3 Vim

```

1  (package! vimrc-mode
2      :recipe (:host github
3              :repo "mcandre/vimrc-mode"))

```

```

1  (use-package! vimrc-mode
2      :mode "\\\\.vim\\(rc\\)?\\'")

```

8.4 ESS

View data frames better with

```

1  (package! ess-view)

```

8.5 Python IDE

```

1  (package! elpy)

```

```

1  (use-package! elpy
2      :hook ((elpy-mode . flycheck-mode)
3             (elpy-mode . (lambda ()
4                             (set (make-local-variable 'company-backends)
5                                 '((elpy-company-backend :with company-yasnippet))))))
6      :config
7      ;;:init
8      (elpy-enable))

```

8.6 GNU Octave

Files with the .m extension gets recognized automatically as Objective-C files. I've never used Objective-C before, so let's change it to be recognized as Octave/Matlab files.

```
1 (add-to-list 'auto-mode-alist '("\\.m\\'" . octave-mode))
```

8.7 ROS

8.7.1 Extensions

Add ROS specific file formats:

```
1 (add-to-list 'auto-mode-alist '("\\.rviz\\'" . conf-unix-mode))
2 (add-to-list 'auto-mode-alist '("\\.urdf\\'" . xml-mode))
3 (add-to-list 'auto-mode-alist '("\\.xacro\\'" . xml-mode))
4 (add-to-list 'auto-mode-alist '("\\.launch\\'" . xml-mode))
5
6 ;; Use gdb-script-mode for msg and srv files
7 (add-to-list 'auto-mode-alist '("\\.msg\\'" . gdb-script-mode))
8 (add-to-list 'auto-mode-alist '("\\.srv\\'" . gdb-script-mode))
9 (add-to-list 'auto-mode-alist '("\\.action\\'" . gdb-script-mode))
```

8.7.2 ROS bags

Mode to view ROS .bag files. Taken from code-iai/ros_emacs_utils.

```
1 (when ROSBAG-P
2   (define-derived-mode rosbag-view-mode
3     fundamental-mode "Rosbag view mode"
4     "Major mode for viewing ROS bag files."
5     (let ((f (buffer-file-name)))
6       (let ((buffer-read-only nil))
7         (erase-buffer)
8         (message "Calling rosbag info")
9         (call-process "rosbag" nil (current-buffer) nil
10                      "info" f)
11         (set-buffer-modified-p nil))
12     (view-mode)
13     (set-visited-file-name nil t)))
14
15 ;; rosbag view mode
16 (add-to-list 'auto-mode-alist '("\\.bag$" . rosbag-view-mode)))
```

8.7.3 ros.el

I found this awesome `ros.el` package made by Max Beutelspacher, which facilitate working with ROS machines, supports ROS1 and ROS2, with local workspaces or remote ones (over Trump!).

```
1 ;; `ros.el' depends on `with-shell-interpreter' among other packages
2 ;; See: https://github.com/DerBeutlin/ros.el/blob/master/Cask
3 (package! with-shell-interpreter)
4 (package! ros
5   :recipe (:host github
6           :repo "DerBeutlin/ros.el"))
```

Now, we configure the ROS1/ROS2 workspaces to work on. But before that, we need to install some tools on the ROS machine, and build the workspace for the first time using `colcon build`, the repository contains example Docker files for Noetic and Foxy.

```
1 (use-package! ros
2   :init
3   (map! :leader
4         :prefix ("l" . "custom"))
```

```

5      :desc "Hydra ROS" "r" #'hydra-ros-main/body)
6      :commands (hydra-ros-main/body ros-set-workspace)
7      :config
8      (setq ros-workspaces
9        (list (ros-dump-workspace
10              :tramp-prefix (format "/docker:%s@%s:" "ros" "ros-machine")
11              :workspace "~/ros_ws"
12              :extends '("/opt/ros/noetic/"))
13              (ros-dump-workspace
14                :tramp-prefix (format "/ssh:%s@%s:" "swd_sk" "172.16.96.42")
15                :workspace "~/ros_ws"
16                :extends '("/opt/ros/noetic/"))
17              (ros-dump-workspace
18                :tramp-prefix (format "/ssh:%s@%s:" "swd_sk" "172.16.96.42")
19                :workspace "~/ros2_ws"
20                :extends '("/opt/ros/foxy/"))))))

```

8.8 Scheme

```

1 (after! geiser
2   (setq geiser-default-implementation 'guile
3         geiser-chez-binary "chez-scheme")) ;; default is "scheme"

```

8.9 Embedded systems

8.9.1 Embed.el

Some embedded systems development tools.

TODO: Try to integrate embedded debuggers adapters with `dap-mode`:

- probe-rs-debugger
- stm32-emacs
- cortex-debug with potential integration with DAP
- esp-debug-adapter

```

1 (package! embed
2   :recipe (:host github
3           :repo "sjsch/embed-el"))

```

```

1 (use-package! embed
2   :commands (embed-openocd-start
3             embed-openocd-stop
4             embed-openocd-gdb
5             embed-openocd-flash)
6
7   :init
8   (map! :leader :prefix ("l" . "custom")
9         (:when (featurep! :tools debugger +lsp)
10              :prefix ("e" . "embedded")
11              :desc "Start OpenOCD" "o" #'embed-openocd-start
12              :desc "Stop OpenOCD" "0" #'embed-openocd-stop
13              :desc "OpenOCD GDB" "g" #'embed-openocd-gdb
14              :desc "OpenOCD flash" "f" #'embed-openocd-flash)))

```

8.9.2 Arduino

```

1 (package! arduino-mode
2   :recipe (:host github
3           :repo "bookest/arduino-mode"))

```

8.9.3 Bitbake (Yocto)

Add support for Yocto Project files.

```

1 (package! bitbake-modes
2   :recipe (:host bitbucket
3           :repo "olamilsson/bitbake-modes"))

```

```

1 (use-package! bitbake-modes
2   :commands (wks-mode
3             mmm-mode
4             bb-sh-mode
5             bb-scc-mode
6             bitbake-mode
7             conf-bitbake-mode
8             bitbake-task-log-mode))

```

8.10 Debugging

8.10.1 DAP

I like to use `cpptools` over `webfreak.debug`. So I enable it after loading `dap-mode`. I like also to have a mode minimal UI. And I like to trigger `dap-hydra` when the program hits a break point, and automatically delete the session and close Hydra when DAP is terminated.

```

1 (unpin! dap-mode)

```

```

1 (after! dap-mode
2   (require 'dap-cpptools)
3
4   ;; More minimal UI
5   (setq dap-auto-configure-features '(locals tooltip)
6         dap-auto-show-output nil ;; Hide the annoying server output
7         lsp-enable-dap-auto-configure t)
8
9   ;; Automatically trigger dap-hydra when a program hits a breakpoint.
10  (add-hook 'dap-stopped-hook (lambda (arg) (call-interactively #'dap-hydra)))
11
12  ;; Automatically delete session and close dap-hydra when DAP is terminated.
13  (add-hook 'dap-terminated-hook
14            (lambda (arg)
15              (call-interactively #'dap-delete-session)
16              (dap-hydra/nil)))
17
18  ;; A workaround to correctly show breakpoints
19  ;; from: https://github.com/emacs-lsp/dap-mode/issues/374#issuecomment-1140399819
20  (add-hook! +dap-running-session-mode
21            (set-window-buffer nil (current-buffer))))

```

Doom store Doom Emacs stores session information persistently using the core `store` mechanism. However, relaunching a new session doesn't overwrite the last stored session, to do so, I define a helper function to clear data stored in the `" +debugger"` location. (see `+debugger--get-last-config` function.)

```

1 (defun +debugger/clear-last-session ()
2   "Clear the last stored session"
3   (interactive)
4   (doom-store-clear "+debugger"))
5
6 (map! :leader :prefix ("l" . "custom")
7   (:when (featurep! :tools debugger +lsp)
8     :prefix ("d" . "debugger")
9     :desc "Clear last DAP session" "c" #' +debugger/clear-last-session))

```

8.10.2 The Grand “Cathedral” Debugger

For C/C++, DAP mode is missing so much features. In my experience, both `cpptools` and `gdb` DAP interfaces aren't mature, it stops and disconnect while debugging, making it a double pain.

Additional commands There is no better than using pure GDB, it makes debugging extremely flexible. Let's define some missing GDB commands, add them to Hydra keys, and define some reverse debugging commands for usage with `rr` (which we can use by substituting `gdb` by `rr replay` when starting a debug session).

```

1 (after! realgud
2   (require 'hydra)
3
4   ;; Add some missing gdb/rr commands
5   (defun +realgud:cmd-start (arg)
6     "start = break main + run"
7     (interactive "p")
8     (realgud-command "start"))
9
10  (defun +realgud:cmd-reverse-next (arg)
11    "Reverse next"
12    (interactive "p")
13    (realgud-command "reverse-next"))
14
15  (defun +realgud:cmd-reverse-step (arg)
16    "Reverse step"
17    (interactive "p")
18    (realgud-command "reverse-step"))
19
20  (defun +realgud:cmd-reverse-continue (arg)
21    "Reverse continue"
22    (interactive "p")
23    (realgud-command "reverse-continue"))
24
25  (defun +realgud:cmd-reverse-finish (arg)
26    "Reverse finish"
27    (interactive "p")
28    (realgud-command "reverse-finish"))
29
30  ;; Define a hydra binding
31  (defhydra realgud-hydra (:color pink :hint nil :foreign-keys run)
32    "
33    Stepping | _n_: next      | _i_: step    | _o_: finish  | _c_: continue | _R_: restart | _u_:
34    ↪ until-here
35    Reverse  | _rn_: next      | _ri_: step    | _ro_: finish  | _rc_: continue |
36    Breakpts | _ba_: break     | _bD_: delete  | _bt_: tbreak  | _bd_: disable  | _be_: enable  | _tr_:
37    ↪ backtrace
38    Eval      | _ee_: at-point  | _er_: region  | _eE_: eval    |
39    | _!_: shell    | _Qk_: kill    | _Qq_: quit    | _Sg_: gdb      | _Ss_: start
40    "
41    ("n" realgud:cmd-next)
42    ("i" realgud:cmd-step)

```

```

41 ("o" realgud:cmd-finish)
42 ("c" realgud:cmd-continue)
43 ("R" realgud:cmd-restart)
44 ("u" realgud:cmd-until-here)
45 ("rn" +realgud:cmd-reverse-next)
46 ("ri" +realgud:cmd-reverse-step)
47 ("ro" +realgud:cmd-reverse-finish)
48 ("rc" +realgud:cmd-reverse-continue)
49 ("ba" realgud:cmd-break)
50 ("bt" realgud:cmd-tbreak)
51 ("bD" realgud:cmd-delete)
52 ("be" realgud:cmd-enable)
53 ("bd" realgud:cmd-disable)
54 ("ee" realgud:cmd-eval-at-point)
55 ("er" realgud:cmd-eval-region)
56 ("tr" realgud:cmd-backtrace)
57 ("eE" realgud:cmd-eval)
58 ("!" realgud:cmd-shell)
59 ("Qk" realgud:cmd-kill)
60 ("Sg" realgud:gdb)
61 ("Ss" +realgud:cmd-start)
62 ("q" nil "quit" :color blue) ;; :exit
63 ("Qq" realgud:cmd-quit :color blue)) ;; :exit
64
65 (defun +debugger/realgud:gdb-hydra ()
66   "Run `realgud-hydra'."
67   (interactive)
68   (realgud-hydra/body))
69
70 (map! :leader :prefix ("l" . "custom")
71      (:when (featurep! :tools debugger)
72            :prefix ("d" . "debugger")
73            :desc "RealGUD hydra" "h" #' +debugger/realgud:gdb-hydra)))

```

RealGUD .dir-locals.el support I do a lot of development on C/C++ apps that gets data from command line arguments, which means I have to type my arguments manually after calling `realgud:gdb`, which is very annoying.

For DAP mode, there is a support for either `dap-debug-edit-template`, or `launch.json`. For RealGUD though, I didn't find any ready-to-use feature like this. So I define a parameter list named `+realgud:launch-plist`, which supports `:program` and `:args`. The first is a string of the program path, and the second is a list of string arguments to pass to the program.

```

1 ;; A variable which to be used in .dir-locals.el, formatted as a property list;
2 ;; '(:program "... " :args ("arg1" "arg2" ...))
3 ;; "${workspaceFolder}" => gets replaced with project workspace (from projectile)
4 ;; "${workspaceFolderBasename}" => gets replaced with project workspace's basename
5 (defvar +realgud:launch-plist nil)

```

This variable is set in a per-project basis thanks to `.dir-locals.el`, something like this:

```

1 ;; Example entry in .dir-locals.el
2 ((nil . ((+realgud:launch-plist . '(:program "${workspaceFolder}/build/bin/my_prog"
3                                     :args ("--in_file=${workspaceFolder}/some/file.csv"
4                                               "--out_file=/tmp/some_random_file"
5                                               "-a")))))

```

The special variables `${workspaceFolder}` and `${workspaceFolderBasename}` are defined as in VS Code, the actual values are filled from `projectile-project-root`.

```

1 (defun +realgud:get-launch-debugger-args (&key program args)
2   (let ((debugger--args ""))
3     (when program
4       (setq debugger--args program)

```

```

5      (when args
6        (setq debugger--args (concat debugger--args " " (s-join " " args))))
7      ;; Replace special variables
8      (let* ((ws--root (expand-file-name (or (projectile-project-root) ".")))
9             (ws--basename (file-name-nondirectory
10                           (if (s-ends-with-p "/" ws--root)
11                               (substring ws--root 0 -1)
12                               ws--root))))
13        (s-replace-all
14          (list (cons "${workspaceFolder}" ws--root)
15                (cons "${workspaceFolderBasename}" ws--basename))
16          debugger--args)))
17
18 (defun +debugger/realgud:gdb-launch ()
19   "Launch RealGUD with parameters from `+realgud:launch-plist'"
20   (interactive)
21   (require 'realgud)
22   (if +realgud:launch-plist
23       (realgud:gdb
24         (concat realgud:gdb-command-name
25                 " --args "
26                 (apply '+realgud:get-launch-debugger-args +realgud:launch-plist)))
27       (progn
28         (message "Variable `+realgud:launch-plist' is `nil'")
29         (realgud:gdb))))
30
31 (map! :leader :prefix ("l" . "custom")
32      (:when (featurep! :tools debugger)
33            :prefix ("d" . "debugger")
34            :desc "RealGUD launch" "d" #' +debugger/realgud:gdb-launch))

```

Record and replay rr We then add some shortcuts to run **rr** from Emacs, the **rr record** takes the program name and arguments from my local **+realgud:launch-plist**, when **rr replay** respects the arguments configured in RealGUD's GDB command name. Some useful hints could be found [here](#), [here](#), [here](#) and [here](#).

```

1 (after! realgud
2   (require 's)
3
4   (defun +debugger/rr-replay ()
5     "Launch `rr replay'"
6     (interactive)
7     (realgud:gdb (s-replace "gdb" "rr replay" realgud:gdb-command-name)))
8
9   (defun +debugger/rr-record ()
10    "Launch `rr record' with parameters from `+realgud:launch-plist'"
11    (interactive)
12    (let ((debugger--args (apply '+realgud:get-launch-debugger-args +realgud:launch-plist)))
13      (unless (make-process :name "*rr record*"
14                           :buffer "*rr record*"
15                           :command (append '("rr" "record") (s-split " " debugger--args)))
16        (message "Cannot make process 'rr record'"))))
17
18   (map! :leader :prefix ("l" . "custom")
19        (:when (featurep! :tools debugger)
20              :prefix ("d" . "debugger")
21              :desc "rr record" "r" #' +debugger/rr-record
22              :desc "rr replay" "R" #' +debugger/rr-replay)))

```

8.10.3 GDB

Emacs GDB *a.k.a.* gdb-mi DAP mode is great, however, it is not mature for C/C++ debugging, it does not support some basic features like *Run until cursor*, *Show disassembled code*, etc. Emacs have builtin **gdb** support through **gdb-mi** and **gud**.

The `emacs-gdb` package overwrites the builtin `gdb-mi`, it is much faster (thanks to its C module), and it defines some easy to use UI, with Visual Studio like keybindings.

```

1 (package! gdb-mi
2   :recipe (:host github
3           :repo "weirdNox/emacs-gdb"
4           :files ("*.el" "*.c" "*.h" "Makefile")))

1 (use-package! gdb-mi
2   :init
3   (fmakeunbound 'gdb)
4   (fmakeunbound 'gdb-enable-debug)
5
6   :config
7   (setq gdb-window-setup-function #'gdb--setup-windows ;; TODO: Customize this
8       gdb-ignore-gdbinit nil) ;; I use gdbinit to define some useful stuff
9   ;; History
10  (defvar +gdb-history-file "~/gdb_history")
11  (defun +gud-gdb-mode-hook-setup ()
12    "GDB setup."
13
14    ;; Suposes "~/gdbinit" contains:
15    ;; set history save on
16    ;; set history filename ~/gdb_history
17    ;; set history remove-duplicates 2048
18    (when (and (ring-empty-p comint-input-ring)
19              (file-exists-p +gdb-history-file))
20      (setq comint-input-ring-file-name +gdb-history-file)
21      (comint-read-input-ring t)))
22
23  (add-hook 'gud-gdb-mode-hook '+gud-gdb-mode-hook-setup))

```

Custom layout for gdb-many-windows Stolen from <https://stackoverflow.com/a/41326527/3058915>. I used it to change the builtin `gdb-many-windows` layout.

```

1 (setq gdb-many-windows nil)
2
3 (defun set-gdb-layout(&optional c-buffer)
4   (if (not c-buffer)
5       (setq c-buffer (window-buffer (selected-window)))) ;; save current buffer
6
7   ;; from http://stackoverflow.com/q/39762833/846686
8   (set-window-dedicated-p (selected-window) nil) ;; unset dedicate state if needed
9   (switch-to-buffer gud-comint-buffer)
10  (delete-other-windows) ;; clean all
11
12  (let* ((w-source (selected-window)) ;; left top
13        (w-gdb (split-window w-source nil 'right)) ;; right bottom
14        (w-locals (split-window w-gdb nil 'above)) ;; right middle bottom
15        (w-stack (split-window w-locals nil 'above)) ;; right middle top
16        (w-breakpoints (split-window w-stack nil 'above)) ;; right top
17        (w-io (split-window w-source (floor(* 0.9 (window-body-height))) 'below))) ;; left bottom
18    (set-window-buffer w-io (gdb-get-buffer-create 'gdb-inferior-io))
19    (set-window-dedicated-p w-io t)
20    (set-window-buffer w-breakpoints (gdb-get-buffer-create 'gdb-breakpoints-buffer))
21    (set-window-dedicated-p w-breakpoints t)
22    (set-window-buffer w-locals (gdb-get-buffer-create 'gdb-locals-buffer))
23    (set-window-dedicated-p w-locals t)
24    (set-window-buffer w-stack (gdb-get-buffer-create 'gdb-stack-buffer))
25    (set-window-dedicated-p w-stack t)
26
27    (set-window-buffer w-gdb gud-comint-buffer)
28
29    (select-window w-source)
30    (set-window-buffer w-source c-buffer)))

```



```

31 (defadvice gdb (around args activate)
32   "Change the way to gdb works."
33   (setq global-config-editing (current-window-configuration)) ;; to restore: (set-window-configuration c-editin
34   g)
35   (let ((c-buffer (window-buffer (selected-window)))) ;; save current buffer
36     ad-do-it
37     (set-gdb-layout c-buffer)))
38
39 (defadvice gdb-reset (around args activate)
40   "Change the way to gdb exit."
41   ad-do-it
42   (set-window-configuration global-config-editing))

```

```

1 (defvar gud-overlay
2   (let* ((ov (make-overlay (point-min) (point-min))))
3     (overlay-put ov 'face 'secondary-selection)
4     ov)
5   "Overlay variable for GUD highlighting.")
6
7 (defadvice gud-display-line (after my-gud-highlight act)
8   "Highlight current line."
9   (let* ((ov gud-overlay)
10         (bf (gud-find-file true-file)))
11     (with-current-buffer bf
12       (move-overlay ov (line-beginning-position) (line-beginning-position 2)
13                     ;; (move-overlay ov (line-beginning-position) (line-end-position)
14                     (current-buffer)))))
15
16 (defun gud-kill-buffer ()
17   (if (derived-mode-p 'gud-mode)
18       (delete-overlay gud-overlay)))
19
20 (add-hook 'kill-buffer-hook 'gud-kill-buffer)

```

Highlight current line

8.10.4 Valgrind

```

1 (package! valgrind
2   :recipe (:local-repo "lisp/valgrind"))

```

```

1 (use-package! valgrind
2   :commands valgrind)

```

8.11 Git & VC

8.11.1 Magit

```

1 (after! code-review
2   (setq code-review-auth-login-marker 'forge))

```

```

1 (after! magit
2   ;; Disable if it causes performance issues
3   (setq magit-diff-refine-hunk 'all))

```

Granular diff-highlights for *all* hunks

```

1 (after! magit
2   ;; Show gravatars
3   (setq magit-revision-show-gravatars '("^Author:      " . "^Commit:      ")))

```

Gravatars

```

1 (package! company-gitcommit
2   :disable t
3   :recipe (:local-repo "lisp/company-gitcommit"))

```

WIP Company for commit messages

```

1 (use-package! company-gitcommit
2   :init
3   (add-hook
4     'git-commit-setup-hook
5     (lambda ()
6       (let ((backends (car company-backends)))
7         (setq company-backend
8               (if (listp backends)
9                   (cons (append backends 'company-gitcommit) (car company-backends))
10                  (append company-backends (list 'company-gitcommit)))))))

```

```

1 (package! magit-pretty-graph
2   :recipe (:host github
3           :repo "georgek/magit-pretty-graph"))

```

Pretty graph

```

1 (use-package! magit-pretty-graph
2   :after magit)

```

8.11.2 Repo

This adds Emacs integration of `repo`, The Multiple Git Repository Tool. Make sure the `repo` tool is installed, if not, `pacman -S repo` on Arch-based distributions, or directly with:

```

REPO_PATH="$HOME/.local/bin/repo"
curl "https://storage.googleapis.com/git-repo-downloads/repo" > "${REPO_PATH}"
chmod a+x "${REPO_PATH}"

```

```
1 (package! repo)
```

```
1 (use-package! repo
2   :when REPO-P
3   :commands repo-status)
```

8.11.3 Blamer

Display Git information (author, date, message...) for current line

```
1 (package! blamer
2   :recipe (:host github
3           :repo "artawower/blamer.el"))
```

```

1 (use-package! blamer
2   :custom
3   (blamer-idle-time 0.3)
4   (blamer-min-offset 60)
5   (blamer-prettify-time-p t)
6   (blamer-entire-formatter " %s")
7   (blamer-author-formatter " %s ")
8   (blamer-datetime-formatter "[%s], ")
9   (blamer-commit-formatter "%s")
10  :custom-face
11  (blamer-face ((t :foreground "#7a88cf"
12                  :background nil
13                  :height 125
14                  :italic t)))
15  :hook ((prog-mode . blamer-mode))
16  :config
17  (when (featurep! :ui zen) ;; Disable in zen (writeroom) mode
18    (add-hook 'writeroom-mode-enable-hook
19              (when (bound-and-true-p blamer-mode)
20                (setq +blamer-mode--was-active-p t)
21                (blamer-mode -1))))
22    (add-hook 'writeroom-mode-disable-hook
23              (when (bound-and-true-p +blamer-mode--was-active-p)
24                (blamer-mode 1))))

```

8.12 Assembly

Add some packages for better assembly coding.

```
1 (package! nasm-mode)
2 (package! haxor-mode)
3 (package! mips-mode)
4 (package! riscv-mode)
5 (package! x86-lookup)
```

```
1 (use-package! nasm-mode
2   :mode "\\. [n]*\\(asm\\|s\\|\\'")
3
4 ;; Get Haxor VM from https://github.com/krzysztof-magosa/haxor
5 (use-package! haxor-mode
6   :mode "\\.hax\\'")
7
8 (use-package! mips-mode
9   :mode "\\.mips\\'")
```

```

10
11 (use-package! riscv-mode
12   :mode "\\..riscv\\'")
13
14 (use-package! x86-lookup
15   :commands (x86-lookup)
16   :config
17   (when (featurep! :tools pdf)
18     (setq x86-lookup-browse-pdf-function 'x86-lookup-browse-pdf-pdf-tools))
19   ;; Get manual from https://www.intel.com/content/www/us/en/developer/articles/technical/intel-sdm.html
20   (setq x86-lookup-pdf (expand-file-name "x86-lookup/325383-sdm-vol-2abcd.pdf" doom-etc-dir)))

```

8.13 Disaster

```

1 (package! disaster)

```

```

1 (use-package! disaster
2   :commands (disaster)
3   :init
4   (setq disaster-assembly-mode 'nasm-mode)
5
6   (map! :localleader
7         :map (c++-mode-map c-mode-map fortran-mode)
8         :desc "Disaster" "d" #'disaster))

```

8.14 Devdocs

```

1 (package! devdocs
2   :recipe (:host github
3           :repo "astoff/devdocs.el"
4           :files ("*.el")))

```

```

1 (use-package! devdocs
2   :commands (devdocs-lookup devdocs-install)
3   :config
4   (setq devdocs-data-dir (expand-file-name "devdocs" doom-etc-dir)))

```

8.15 Systemd

For editing systemd unit files.

```

1 (package! systemd)
2
3 (package! journalctl-mode)

```

```

1 (use-package! journalctl-mode
2   :commands (journalctl
3             journalctl-boot
4             journalctl-unit
5             journalctl-user-unit)
6   :init
7   (map! :map journalctl-mode-map
8         :nv "J" #'journalctl-next-chunk
9         :nv "K" #'journalctl-previous-chunk))

```

8.16 PKGBUILD

```
1 (package! pkgbuild-mode)
```

```
1 (use-package! pkgbuild-mode
2   :commands (pkgbuild-mode)
3   :mode     "/PKGBUILD$")
```

8.17 Franca IDL

Add support for *Franca Interface Definition Language*.

```
1 (package! franca-idl
2   :recipe (:host github
3           :repo "zeph1e/franca-idl.el"))
```

```
1 (use-package! franca-idl
2   :commands franca-idl-mode)
```

8.18 L^AT_EX

```
1 (package! aas
2   :recipe (:host github
3           :repo "ymarco/auto-activating-snippets"))
```

```
1 (use-package! aas
2   :commands aas-mode)
```

8.19 Flycheck + Projectile

WIP: Not working atm!

```
1 (package! flycheck-projectile
2   :recipe (:host github
3           :repo "nbfalcon/flycheck-projectile"))
```

```
1 (use-package! flycheck-projectile
2   :commands flycheck-projectile-list-errors)
```

8.20 Graphviz

Graphviz is a nice method of visualizing simple graphs, based on the DOT graph description language (*.dot / *.gv files).

```
1 (package! graphviz-dot-mode)
```

```

1 (use-package! graphviz-dot-mode
2   :commands graphviz-dot-mode
3   :mode ("\\.dot\\'" "\\.gv\\'")
4   :init
5   (after! org
6     (setcdr (assoc "dot" org-src-lang-modes) 'graphviz-dot)))
7
8 (use-package! company-graphviz-dot
9   :after graphviz-dot-mode)

```

8.21 Modula-II

Gaius Mulley is doing a great job, bringing Modula-II support to GCC, he also created a new mode for Modula-II with extended features. The mode is included with the GNU Modula 2 source code, and can be downloaded separately from the Git repository, from here [gm2-mode.el](#).

```

1 (package! gm2-mode
2   :recipe (:local-repo "lisp/gm2-mode"))

```

8.22 Mermaid

```

1 (package! mermaid-mode)
2
3 (package! ob-mermaid
4   :recipe (:host github
5           :repo "arnm/ob-mermaid"))

```

```

1 (use-package! mermaid-mode
2   :commands mermaid-mode
3   :mode "\\.mmd\\'")
4
5 (use-package! ob-mermaid
6   :after org
7   :init
8   (after! org
9     (add-to-list 'org-babel-load-languages '(mermaid . t))))

```

8.23 Inspector

```

1 (package! inspector
2   :recipe (:host github
3           :repo "mmontone/emacs-inspector"))

```

```

1 (use-package! inspector
2   :commands (inspect-expression inspect-last-sexp))

```

9 Office

9.1 Org mode additional packages

To avoid problems in the `(after! org)` section.

```

1 (unpin! org-roam) ;; To avoid problems with org-roam-ui
2 (package! websocket)
3 (package! org-roam-ui)
4 (package! org-wild-notifier)
5 (package! org-fragtog)
6 (package! org-ref)
7 (package! org-appear)
8 (package! org-super-agenda)
9 (package! doct)
10
11 (package! org-mode
12   ;; https://github.com/doomemacs/doomemacs/issues/6478#issuecomment-1160699339
13   :pin "971eb6885ec996c923e955730df3bafbdcd244e54")
14
15 (package! caldav
16   :recipe (:host github
17            :repo "dengste/org-caldav"))
18
19 (package! org-ol-tree
20   :recipe (:host github :repo "Townk/org-ol-tree")
21   :pin "207c748aa5fea8626be619e8c55bdb1c16118c25")
22
23 (package! org-modern
24   :recipe (:host github
25            :repo "minad/org-modern"))
26
27 (package! org-bib
28   :recipe (:host github
29            :repo "rougier/org-bib-mode"))
30
31 (package! academic-phrases
32   :recipe (:host github
33            :repo "nashamri/academic-phrases"))
34
35 (package! phscroll
36   :recipe (:host github
37            :repo "misohena/phscroll"))

```

9.2 Org mode

9.2.1 Intro

Because this section is fairly expensive to initialize, we'll wrap it in a `(after! ...)` block.

```

1 (after! org
2   <<org-conf>>
3 )

```

9.2.2 Behavior

Tweaking defaults

```

1 (setq org-directory "~/Dropbox/Org/"           ; let's put files here
2   org-use-property-inheritance t               ; it's convenient to have properties inherited
3   org-log-done 'time                           ; having the time an item is done sounds convenient
4   org-list-allow-alphabetical t                 ; have a. A. a) A) list bullets
5   ;; org-export-in-background t                 ; run export processes in external emacs process
6   ;; org-export-column 0
7   org-tags-column 0
8   org-catch-invisible-edits 'smart              ; try not to accidentally do weird stuff in invisible regions
9   org-export-with-sub-superscripts '{}          ; don't treat lone _ / ^ as sub/superscripts, require _{} / ^{}

```

```

10   org-auto-align-tags nil
11   org-special-ctrl-a/e t
12   org-startup-indented t ;; Enable 'org-indent-mode' by default, override with '+#startup: noindent' for big
↪   files
13   org-insert-heading-respect-content t)

```

Org basics

Babel I also like the `:comments` header-argument, so let's make that a default.

```

1 (setq org-babel-default-header-args
2   '(:session . "none")
3     (:results . "replace")
4     (:exports . "code")
5     (:cache . "no")
6     (:noweb . "no")
7     (:hlines . "no")
8     (:tangle . "no")
9     (:comments . "link")))

```

Babel is really annoying when it comes to working with Scheme (via Geiser), it keeps asking about which Scheme implementation to use, I tried to set this as a local variable (using `)` and `.dir-locals.el`, but it didn't work. This hack should solve the problem now!

```

1 ;; stolen from https://github.com/yohan-pereira/.emacs#babel-config
2 (defun +org-confirm-babel-evaluate (lang body)
3   (not (string= lang "scheme"))) ;; Don't ask for scheme
4
5 (setq org-confirm-babel-evaluate #' +org-confirm-babel-evaluate)

```

Visual line & autofill By default, `visual-line-mode` is turned on, and `auto-fill-mode` off by a hook. However, this messes with tables in Org-mode, and other plain text files (e.g. markdown, L^AT_EX) so I'll turn it off for this, and manually enable it for more specific modes as desired.

```

1 (remove-hook 'text-mode-hook #'visual-line-mode)
2 (add-hook 'text-mode-hook #'auto-fill-mode)

```

EVIL There also seem to be a few keybindings which use `hjkl`, but miss arrow key equivalents.

```

1 (map! :map evil-org-mode-map
2       :after evil-org
3       :n "g <up>" #'org-backward-heading-same-level
4       :n "g <down>" #'org-forward-heading-same-level
5       :n "g <left>" #'org-up-element
6       :n "g <right>" #'org-down-element)

```

```

1 (setq org-todo-keywords
2   '((sequence "IDEA(i)" "TODO(t)" "NEXT(n)" "PROJ(p)" "STRT(s)" "WAIT(w)" "HOLD(h)" "|" "DONE(d)" "KILL(k)")
3     (sequence "[ ](T)" "[-](S)" "|" "[X](D)")
4     (sequence "|" "OKAY(o)" "YES(y)" "NO(n)")))
5
6 (setq org-todo-keyword-faces
7   '(("IDEA" . (:foreground "goldenrod" :weight bold))
8     ("NEXT" . (:foreground "IndianRed1" :weight bold))
9     ("STRT" . (:foreground "OrangeRed" :weight bold)))

```



```

10      ("WAIT" . (:foreground "coral" :weight bold))
11      ("KILL" . (:foreground "DarkGreen" :weight bold))
12      ("PROJ" . (:foreground "LimeGreen" :weight bold))
13      ("HOLD" . (:foreground "orange" :weight bold)))
14
15  (setq org-tag-persistent-alist
16    '(:startgroup . nil)
17      ("home" . ?h)
18      ("research" . ?r)
19      ("work" . ?w)
20      (:endgroup . nil)
21      (:startgroup . nil)
22      ("tool" . ?o)
23      ("dev" . ?d)
24      ("report" . ?p)
25      (:endgroup . nil)
26      (:startgroup . nil)
27      ("easy" . ?e)
28      ("medium" . ?m)
29      ("hard" . ?a)
30      (:endgroup . nil)
31      ("urgent" . ?u)
32      ("key" . ?k)
33      ("bonus" . ?b)
34      ("noexport" . ?x)))
35
36  (setq org-tag-faces
37    '(("home" . (:foreground "goldenrod" :weight bold))
38      ("research" . (:foreground "goldenrod" :weight bold))
39      ("work" . (:foreground "goldenrod" :weight bold))
40      ("tool" . (:foreground "IndianRed1" :weight bold))
41      ("dev" . (:foreground "IndianRed1" :weight bold))
42      ("report" . (:foreground "IndianRed1" :weight bold))
43      ("urgent" . (:foreground "red" :weight bold))
44      ("key" . (:foreground "red" :weight bold))
45      ("easy" . (:foreground "green4" :weight bold))
46      ("medium" . (:foreground "orange" :weight bold))
47      ("hard" . (:foreground "red" :weight bold))
48      ("bonus" . (:foreground "goldenrod" :weight bold))
49      ("noexport" . (:foreground "LimeGreen" :weight bold))))
50
51  ;; (defun log-todo-next-creation-date (&rest ignore)
52  ;;   "Log NEXT creation time in the property drawer under the key 'ACTIVATED'"
53  ;;   (when (and (string= (org-get-todo-state) "NEXT")
54  ;;              (not (org-entry-get nil "ACTIVATED"))))
55  ;;     (org-entry-put nil "ACTIVATED" (format-time-string "[%Y-%m-%d]")))
56
57  ;; (add-hook 'org-after-todo-state-change-hook #'log-todo-next-creation-date)

```

TODOs

Agenda Set files for org-agenda

```

1  (setq org-agenda-files
2    (list (expand-file-name "inbox.org" org-directory)
3          (expand-file-name "agenda.org" org-directory)
4          (expand-file-name "gcal-agenda.org" org-directory)
5          (expand-file-name "notes.org" org-directory)
6          (expand-file-name "projects.org" org-directory)
7          (expand-file-name "archive.org" org-directory)))

```

Apply some styling on the standard agenda:

```

1  ;; Agenda styling
2  (setq org-agenda-block-separator ?|
3        org-agenda-time-grid
4        '((daily today require-timed)

```

```

5      (800 1000 1200 1400 1600 1800 2000)
6      " " " " " ")
7      org-agenda-current-time-string
8      " now " )

```

Super agenda Configure org-super-agenda

```

1  (use-package! org-super-agenda
2    :defer t
3    :config
4    (org-super-agenda-mode)
5    :init
6    (setq org-agenda-skip-scheduled-if-done t
7          org-agenda-skip-deadline-if-done t
8          org-agenda-include-deadlines t
9          org-agenda-block-separator nil
10         org-agenda-tags-column 100 ;; from testing this seems to be a good value
11         org-agenda-compact-blocks t)
12
13  (setq org-agenda-custom-commands
14        '(("o" "Overview"
15          ((agenda "" ((org-agenda-span 'day)
16                      (org-super-agenda-groups
17                        '(:name "Today"
18                          :time-grid t
19                          :date today
20                          :todo "TODAY"
21                          :scheduled today
22                          :order 1))))))
23          (alltodo "" ((org-agenda-overriding-header "")
24                      (org-super-agenda-groups
25                        '(:name "Next to do" :todo "NEXT" :order 1)
26                          (:name "Important" :tag "Important" :priority "A" :order 6)
27                          (:name "Due Today" :deadline today :order 2)
28                          (:name "Due Soon" :deadline future :order 8)
29                          (:name "Overdue" :deadline past :face error :order 7)
30                          (:name "Assignments" :tag "Assignment" :order 10)
31                          (:name "Issues" :tag "Issue" :order 12)
32                          (:name "Emacs" :tag "Emacs" :order 13)
33                          (:name "Projects" :tag "Project" :order 14)
34                          (:name "Research" :tag "Research" :order 15)
35                          (:name "To read" :tag "Read" :order 30)
36                          (:name "Waiting" :todo "WAIT" :order 20)
37                          (:name "University" :tag "Univ" :order 32)
38                          (:name "Trivial" :priority<= "E" :tag ("Trivial" "Unimportant") :todo ("SOMEDAY"))
39                          (:discard (:tag ("Chore" "Routine" "Daily"))))))))))

```

Calendar

Google calendar (org-gcal) I store my org-gcal configuration privately, it contains something like this:

```

(setq org-gcal-client-id "<SOME_ID>.apps.googleusercontent.com"
      org-gcal-client-secret "<SOME_SECRET>"
      org-gcal-fetch-file-alist '(("<USERNAME>@gmail.com" . "~/Dropbox/Org/gcal-agenda.org")))

```

```

1  (after! org-gcal
2    (load! "lisp/private/+org-gcal.el"))

```

TODO CalDAV Need to be configured, see the GitHub repo.

```
1 (use-package! caldav
2   :commands (org-caldav-sync))
```

Capture Set capture files

```
1 (setq +org-capture-emails-file (expand-file-name "inbox.org" org-directory)
2   +org-capture-todo-file (expand-file-name "inbox.org" org-directory)
3   +org-capture-projects-file (expand-file-name "projects.org" org-directory))
```

Let's set up some **org-capture** templates, and make them visually nice to access.

```
1 (use-package! doct
2   :commands (doct))
```

```
1 (after! org-capture
2   <<prettify-capture>>
3
4   (defun +doct-icon-declaration-to-icon (declaration)
5     "Convert :icon declaration to icon"
6     (let ((name (pop declaration))
7           (set (intern (concat "all-the-icons-" (plist-get declaration :set))))
8           (face (intern (concat "all-the-icons-" (plist-get declaration :color))))
9           (v-adjust (or (plist-get declaration :v-adjust) 0.01)))
10      (apply set `((name :face ,face :v-adjust ,v-adjust))))
11
12   (defun +doct-iconify-capture-templates (groups)
13     "Add declaration's :icon to each template group in GROUPS."
14     (let ((templates (doct-flatten-lists-in groups)))
15       (setq doct-templates (mapcar (lambda (template)
16                                     (when-let* ((props (nthcdr (if (= (length template) 4) 2 5) template))
17                                                  (spec (plist-get props :doct) :icon)))
18                                       (setf (nth 1 template) (concat (+doct-icon-declaration-to-icon spec)
19                                                                    "\t"
20                                                                    (nth 1 template))))
21                                     template)
22       templates))))
23
24   (setq doct-after-conversion-functions '(+doct-iconify-capture-templates))
25
26   (defun set-org-capture-templates ()
27     (setq org-capture-templates
28       (doct `(("Personal todo" :keys "t"
29               :icon ("checklist" :set "octicon" :color "green")
30               :file +org-capture-todo-file
31               :prepend t
32               :headline "Inbox"
33               :type entry
34               :template ("* TODO %?"
35                          "%i %a"))
36               ("Personal note" :keys "n"
37               :icon ("sticky-note-o" :set "faicon" :color "green")
38               :file +org-capture-todo-file
39               :prepend t
40               :headline "Inbox"
41               :type entry
42               :template ("* %?"
43                          "%i %a"))
44               ("Email" :keys "e"
45               :icon ("envelope" :set "faicon" :color "blue")
46               :file +org-capture-todo-file
47               :prepend t
48               :headline "Inbox"))
```

```

49      :type entry
50      :template ("* TODO %~{type|reply to|contact} %\\3 %? :email:"
51                "Send an email %~{urgancy|soon|ASAP|anon|at some point|eventually} to
↪ %~{recipient}"
52                "about %~{topic}"
53                "%U %i %a"))
54      ("Interesting" :keys "i"
55       :icon ("eye" :set "faicon" :color "lcyan")
56       :file +org-capture-todo-file
57       :prepend t
58       :headline "Interesting"
59       :type entry
60       :template ("* [ ] %~{desc}%? :%~{i-type}:"
61                 "%i %a")
62       :children ((("Webpage" :keys "w"
63                    :icon ("globe" :set "faicon" :color "green")
64                    :desc "%(org-cliplink-capture) "
65                    :i-type "read:web")
66                   ("Article" :keys "a"
67                    :icon ("file-text" :set "octicon" :color "yellow")
68                    :desc ""
69                    :i-type "read:reaserch")
70                   ("Information" :keys "i"
71                    :icon ("info-circle" :set "faicon" :color "blue")
72                    :desc ""
73                    :i-type "read:info")
74                   ("Idea" :keys "I"
75                    :icon ("bubble_chart" :set "material" :color "silver")
76                    :desc ""
77                    :i-type "idea"))))
78      ("Tasks" :keys "k"
79       :icon ("inbox" :set "octicon" :color "yellow")
80       :file +org-capture-todo-file
81       :prepend t
82       :headline "Tasks"
83       :type entry
84       :template ("* TODO %? %~G%{extra}"
85                 "%i %a")
86       :children ((("General Task" :keys "k"
87                    :icon ("inbox" :set "octicon" :color "yellow")
88                    :extra ""
89                    )
90                   ("Task with deadline" :keys "d"
91                    :icon ("timer" :set "material" :color "orange" :v-adjust -0.1)
92                    :extra "\nDEADLINE: %~{Deadline:}t"
93                    )
94                   ("Scheduled Task" :keys "s"
95                    :icon ("calendar" :set "octicon" :color "orange")
96                    :extra "\nSCHEDULED: %~{Start time:}t"))))
97      ("Project" :keys "p"
98       :icon ("repo" :set "octicon" :color "silver")
99       :prepend t
100      :type entry
101      :headline "Inbox"
102      :template ("* %~{time-or-todo} %?"
103                "%i"
104                "%a")
105      :file ""
106      :custom (:time-or-todo "")
107      :children ((("Project-local todo" :keys "t"
108                  :icon ("checkboxlist" :set "octicon" :color "green")
109                  :time-or-todo "TODO"
110                  :file +org-capture-project-todo-file)
111                 ("Project-local note" :keys "n"
112                  :icon ("sticky-note" :set "faicon" :color "yellow")
113                  :time-or-todo "%U"
114                  :file +org-capture-project-notes-file)
115                 ("Project-local changelog" :keys "c"
116                  :icon ("list" :set "faicon" :color "blue")
117                  :time-or-todo "%U")

```

```

118         :heading "Unreleased"
119         :file +org-capture-project-changelog-file)))
120     ("Centralised project templates"
121      :keys "o"
122      :type entry
123      :prepend t
124      :template ("* %{{time-or-todo}} %"
125                "%i"
126                "%a")
127      :children (("Project todo"
128                  :keys "t"
129                  :prepend nil
130                  :time-or-todo "TODO"
131                  :heading "Tasks"
132                  :file +org-capture-central-project-todo-file)
133                ("Project note"
134                  :keys "n"
135                  :time-or-todo "%U"
136                  :heading "Notes"
137                  :file +org-capture-central-project-notes-file)
138                ("Project changelog"
139                  :keys "c"
140                  :time-or-todo "%U"
141                  :heading "Unreleased"
142                  :file +org-capture-central-project-changelog-file))))))
143
144 (set-org-capture-templates)
145 (unless (display-graphic-p)
146   (add-hook 'server-after-make-frame-hook
147             (defun org-capture-reinitialise-hook ()
148               (when (display-graphic-p)
149                 (set-org-capture-templates)
150                 (remove-hook 'server-after-make-frame-hook
151                               #'org-capture-reinitialise-hook))))))

```

It would also be nice to improve how the capture dialogue looks

```

1 (defun org-capture-select-template-prettier (&optional keys)
2   "Select a capture template, in a prettier way than default
3   Lisp programs can force the template by setting KEYS to a string."
4   (let ((org-capture-templates
5         (or (org-contextualize-keys
6              (org-capture-upgrade-templates org-capture-templates)
7              org-capture-templates-contexts)
8             '(("t" "Task" entry (file+headline "" "Tasks")
9               "* TODO %?\n %u\n %a")))))
10     (if keys
11         (or (assoc keys org-capture-templates)
12             (error "No capture template referred to by \"%s\" keys" keys))
13         (org-mks org-capture-templates
14                  "Select a capture template\n"
15                  "Template key: "
16                  `(("q" ,(concat (all-the-icons-octicon "stop" :face 'all-the-icons-red :v-adjust 0.01)
17                                "\tAbort"))))))))
17 (advice-add 'org-capture-select-template :override #'org-capture-select-template-prettier)
18
19 (defun org-mks-pretty (table title &optional prompt specials)
20   "Select a member of an alist with multiple keys. Prettified.
21
22   TABLE is the alist which should contain entries where the car is a string.
23   There should be two types of entries.
24
25   1. prefix descriptions like (\"a\" \"Description\")
26      This indicates that `a' is a prefix key for multi-letter selection, and
27      that there are entries following with keys like \"ab\", \"ax\"...
28
29   2. Select-able members must have more than two elements, with the first
30      being the string of keys that lead to selecting it, and the second a
31      short description string of the item."

```

The command will then make a temporary buffer listing all entries that can be selected with a single key, and all the single key prefixes. When you press the key for a single-letter entry, it is selected. When you press a prefix key, the commands (and maybe further prefixes) under this key will be shown and offered for selection.

TITLE will be placed over the selection in the temporary buffer, PROMPT will be used when prompting for a key. SPECIALS is an alist with ("key" "description") entries. When one of these is selected, only the bare key is returned.

```
(save-window-excursion
  (let ((inhibit-quit t)
        (buffer (org-switch-to-buffer-other-window "*Org Select*"))
        (prompt (or prompt "Select: "))
        (case-fold-search current)
        (unwind-protect
          (catch 'exit
            (while t
              (setq-local evil-normal-state-cursor (list nil))
              (erase-buffer)
              (insert title "\n\n")
              (let ((des-keys nil)
                    (allowed-keys '("\C-g"))
                    (tab-alternatives '("\s" "\t" "\r"))
                    (cursor-type nil))
                ;; Populate allowed keys and descriptions keys
                ;; available with CURRENT selector.
                (let ((re (format "\\`%s\\((.\\|)\\|'"))
                      (if current (regexp-quote current) "")))
                  (prefix (if current (concat current " ") "")))
                (dolist (entry table)
                  (pcase entry
                    ;; Description.
                    `((, (and key (pred (string-match re))) ,desc)
                     (let ((k (match-string 1 key)))
                       (push k des-keys)
                       ;; Keys ending in tab, space or RET are equivalent.
                       (if (member k tab-alternatives)
                           (push "\t" allowed-keys)
                           (push k allowed-keys))
                       (insert (propertize prefix 'face 'font-lock-comment-face) (propertize k 'face 'bold)
                               " " (propertize ">" 'face 'font-lock-comment-face) " " desc "..." "\n"))
                     ;; Usable entry.
                     `((, (and key (pred (string-match re))) ,desc . ,_)
                      (let ((k (match-string 1 key)))
                        (insert (propertize prefix 'face 'font-lock-comment-face) (propertize k 'face 'bold)
                                " " desc "\n")
                        (push k allowed-keys))
                      (_ nil))))
                    ;; Insert special entries, if any.
                    (when specials
                     (insert " " "\n")
                     (pcase-dolist `((,key ,description) specials)
                      (insert (format "%s %s\n" (propertize key 'face '(bold all-the-icons-red)) description))
                      (push key allowed-keys)))
                    ;; Display UI and let user select an entry or
                    ;; a sublevel prefix.
                    (goto-char (point-min))
                    (unless (pos-visible-in-window-p (point-max))
                     (org-fit-window-to-buffer))
                    (let ((pressed (org--mks-read-key allowed-keys
                                                       prompt
                                                       (not (pos-visible-in-window-p (1- (point-max)))))))
                      (setq current (concat current pressed))
                      (cond
                       ((equal pressed "\C-g") (user-error "Abort"))
                       ;; Selection is a prefix: open a new menu.
                       ((member pressed des-keys))
```

```

100      ;; Selection matches an association: return it.
101      ((let ((entry (assoc current table)))
102        (and entry (throw 'exit entry))))
103      ;; Selection matches a special entry: return the
104      ;; selection prefix.
105      ((assoc current specials) (throw 'exit current))
106      (t (error "No entry available"))))))))
107  (when buffer (kill-buffer buffer))))))
108  (advice-add 'org-mks :override #'org-mks-pretty)

```

The org-capture bin is rather nice, but I'd be nicer with a smaller frame, and no modeline.

```

1  (setf (alist-get 'height +org-capture-frame-parameters) 15)
2  ;; (alist-get 'name +org-capture-frame-parameters) " Capture" ;; ATM hardcoded in other places, so changing
   ↪ breaks stuff
3  (setq +org-capture-fn
4        (lambda ()
5          (interactive)
6          (set-window-parameter nil 'mode-line-format 'none)
7          (org-capture)))

```

Roam Org-roam is nice by itself, but there are so *extra* nice packages which integrate with it.

```

1  (use-package! websocket
2    :after org-roam-ui)
3
4  (use-package! org-roam-ui
5    :commands org-roam-ui-open
6    :config (setq org-roam-ui-sync-theme t
7                  org-roam-ui-follow t
8                  org-roam-ui-update-on-save t
9                  org-roam-ui-open-on-start t))

```

```

1  (setq org-roam-directory "~/Dropbox/Org/slip-box")
2  (setq org-roam-db-location (expand-file-name "org-roam.db" org-roam-directory))

```

Basic settings

That said, if the directory doesn't exist we likely don't want to be using roam. Since we don't want to trigger errors (which will happen as soon as roam tries to initialize), let's not load roam.

```

1  (package! org-roam
2    :disable t)

```

Mode line file name All those numbers! It's messy. Let's adjust this similarly that I have in the window title

```

1  (defadvice! doom-modeline--buffer-file-name-roam-aware-a (orig-fun)
2    :around #'doom-modeline-buffer-file-name ; takes no args
3    (if (s-contains-p org-roam-directory (or buffer-file-name ""))
4        (replace-regexp-in-string
5          "\\(?:~|\\.|*|/|\\\\|\\\\[0-9]\\\\{4}\\\\|\\\\[0-9]\\\\{2}\\\\|\\\\[0-9]\\\\{2}\\\\)\\\\[0-9]*-"
6          "(\\\\1-\\\\2-\\\\3) "
7          (subst-char-in-string ?_ ? buffer-file-name))
8        (funcall orig-fun)))

```

```

1 (after! org-roam
2   (setq org-roam-capture-ref-templates
3     '(("r" "ref" plain "%?"
4       :if-new (file+head "web/%<%Y%m%d%H%M%S>-${slug}.org" "#+title: ${title}\n#+created: %U\n\n${body}\n")
5       :unnarrowed t))))

```

Org Roam Capture template

Snippet Helpers I often want to set `src-block` headers, and it's a pain to:

- type them out
- remember what the accepted values are
- oh, and specifying the same language again and again

We can solve this in three steps:

- having one-letter snippets, conditioned on (`point`) being within a `src` header
- creating a nice prompt showing accepted values and the current default
- pre-filling the `src-block` language with the last language used

For header args, the keys I'll use are:

- `r` for `:results`
- `e` for `:exports`
- `v` for `:eval`
- `s` for `:session`
- `d` for `:dir`

```

1 (defun +yas/org-src-header-p ()
2   "Determine whether `point' is within a src-block header or header-args."
3   (pcase (org-element-type (org-element-context))
4     ('src-block (< (point) ; before code part of the src-block
5                  (save-excursion (goto-char (org-element-property :begin (org-element-context)))
6                                (forward-line 1)
7                                (point))))
8     ('inline-src-block (< (point) ; before code part of the inline-src-block
9                          (save-excursion (goto-char (org-element-property :begin (org-element-context)))
10                                           (search-forward "]{" )
11                                           (point))))
12    ('keyword (string-match-p "^header-args" (org-element-property :value (org-element-context))))))

```

Now let's write a function we can reference in YASnippets to produce a nice interactive way to specify header arguments.

```

1 (defun +yas/org-prompt-header-arg (arg question values)
2   "Prompt the user to set ARG header property to one of VALUES with QUESTION.
3   The default value is identified and indicated. If either default is selected,
4   or no selection is made: nil is returned."
5   (let* ((src-block-p (not (looking-back "^#\\+property: [ \\t]+header-args:.*" (line-beginning-position))))
6         (default
7          (or
8           (cdr (assoc arg
9                     (if src-block-p
7                     (nth 2 (org-babel-get-src-block-info t))
8                     (org-babel-merge-params

```



```

12         org-babel-default-header-args
13         (let ((lang-headers
14               (intern (concat "org-babel-default-header-args:"
15                             (+yas/org-src-lang))))))
16             (when (boundp lang-headers) (eval lang-headers t))))))
17     "")
18     default-value)
19   (setq values (mapcar
20               (lambda (value)
21                 (if (string-match-p (regexp-quote value) default)
22                     (setq default-value
23                           (concat value " "
24                                   (propertize "(default)" 'face 'font-lock-doc-face)))
25                 value))
26               values))
27   (let ((selection (consult--read question values :default default-value)))
28     (unless (or (string-match-p "(default)$" selection)
29                (string= "" selection))
30       selection))))

```

Finally, we fetch the language information for new source blocks.

Since we're getting this info, we might as well go a step further and also provide the ability to determine the most popular language in the buffer that doesn't have any `header-args` set for it (with `#+properties`).

```

1 (defun +yas/org-src-lang ()
2   "Try to find the current language of the src/header at `point'."
3   "Return nil otherwise."
4   (let ((context (org-element-context)))
5     (pcase (org-element-type context)
6       ('src-block (org-element-property :language context))
7       ('inline-src-block (org-element-property :language context))
8       ('keyword (when (string-match "^header-args:\\\\([ ]+\\\\)" (org-element-property :value context))
9                     (match-string 1 (org-element-property :value context))))))
10
11 (defun +yas/org-last-src-lang ()
12   "Return the language of the last src-block, if it exists."
13   (save-excursion
14     (beginning-of-line)
15     (when (re-search-backward "[ \t]*#\\+begin_src" nil t)
16       (org-element-property :language (org-element-context))))
17
18 (defun +yas/org-most-common-no-property-lang ()
19   "Find the lang with the most source blocks that has no global header-args, else nil."
20   (let (src-langs header-langs)
21     (save-excursion
22       (goto-char (point-min))
23       (while (re-search-forward "[ \t]*#\\+begin_src" nil t)
24         (push (+yas/org-src-lang) src-langs))
25       (goto-char (point-min))
26       (while (re-search-forward "[ \t]*#\\+property: +header-args" nil t)
27         (push (+yas/org-src-lang) header-langs)))
28
29     (setq src-langs
30           (mapcar #'car
31                   ;; sort alist by frequency (desc.)
32                   (sort
33                    ;; generate alist with form (value . frequency)
34                    (cl-loop for (n . m) in (seq-group-by #'identity src-langs)
35                          collect (cons n (length m)))
36                    (lambda (a b) (> (cdr a) (cdr b))))))
37
38     (car (cl-set-difference src-langs header-langs :test #'string=)))

```

Translate capital keywords to lower case Everyone used to use `#+CAPITAL` keywords. Then people realised that `#+lowercase` is actually both marginally easier and visually nicer, so now the capital version is just used in the manual.

Org is standardized on lower case. Uppercase is used in the manual as a poor man's bold, and supported for historical reasons. — Nicolas Goaziou

```

1 (defun +org-syntax-convert-keyword-case-to-lower ()
2   "Convert all #+KEYWORDS to #+keywords."
3   (interactive)
4   (save-excursion
5     (goto-char (point-min))
6     (let ((count 0)
7           (case-fold-search nil))
8       (while (re-search-forward "[ \t]*#[A-Z_]+" nil t)
9         (unless (s-matches-p "RESULTS" (match-string 0))
10          (replace-match (downcase (match-string 0)) t)
11          (setq count (1+ count))))
12     (message "Replaced %d occurrences" count))))

```

Org notifier Add support for org-wild-notifier.

```

1 (use-package! org-wild-notifier
2   :hook (org-load . org-wild-notifier-mode)
3   :config
4   (setq org-wild-notifier-alert-time '(60 30)))

```

9.2.3 Custom links

Sub-figures This defines a new link type `subfig` to enable exporting sub-figures to L^AT_EX, taken from “Export subfigures to L^AT_EX (and HTML)”.

```

1 (org-link-set-parameters
2   "subfig"
3   :follow (lambda (file) (find-file file))
4   :face '(:foreground "chocolate" :weight bold :underline t)
5   :display 'full
6   :export
7   (lambda (file desc backend)
8     (when (eq backend 'latex)
9       (if (string-match ">\\(\\.|+\\)" desc)
10         (concat "\\begin{subfigure}[b]"
11                 "\\caption{" (replace-regexp-in-string "\\s+>(.+)" "" desc) "}"
12                 "\\includegraphics" "[" (match-string 1 desc) "]" "{" file "}" "\\end{subfigure}")
13         (format "\\begin{subfigure}\\includegraphics{%s}\\end{subfigure}" desc file))))

```

Example of usage:

```

#+caption: Lorem ipsum dolor
#+attr_latex: :options \centering
#+begin_figure
[[subfig:img1.jpg][Caption of img1 >(width=.3\textwidth)]]

[[subfig:img2.jpg][Caption of img2 >(width=.3\textwidth)]]

[[subfig:img3.jpg][Caption of img3 >(width=.6\textwidth)]]
#+end_figure

```

L^AT_EX inline markup Needs to make a `?`, with this hack you can write `[[latex:textsc][Some text]]`.

```

1 (org-add-link-type
2   "latex" nil
3   (lambda (path desc format)
4     (cond
5       ((eq format 'html)
6        (format "<span class=\"%s\">%s</span>" path desc))
7       ((eq format 'latex)
8        (format "\\%s{%s}" path desc))))))

```

9.2.4 Visuals

Here I try to do two things: improve the styling of the various documents, via font changes etc., and also propagate colours from the current theme.

Font display

Headings Let's make the title and the headings a bit bigger:

```

1 (custom-set-faces!
2   '(org-document-title :height 1.2))
3
4 (custom-set-faces!
5   '(outline-1 :weight extra-bold :height 1.25)
6   '(outline-2 :weight bold :height 1.15)
7   '(outline-3 :weight bold :height 1.12)
8   '(outline-4 :weight semi-bold :height 1.09)
9   '(outline-5 :weight semi-bold :height 1.06)
10  '(outline-6 :weight semi-bold :height 1.03)
11  '(outline-8 :weight semi-bold)
12  '(outline-9 :weight semi-bold))

```

Deadlines It seems reasonable to have deadlines in the error face when they're passed.

```

1 (setq org-agenda-deadline-faces
2   '((1.001 . error)
3     (1.000 . org-warning)
4     (0.500 . org-upcoming-deadline)
5     (0.000 . org-upcoming-distant-deadline)))

```

Font styling We can then have quote blocks stand out a bit more by making them *italic*.

```

1 (setq org-fontify-quote-and-verse-blocks t)

```

While `org-hide-emphasis-markers` is very nice, it can sometimes make edits which occur at the border a bit more fiddley. We can improve this situation without sacrificing visual amenities with the `org-appear` package.

```

1 (use-package! org-appear
2   :hook (org-mode . org-appear-mode)
3   :config
4   (setq org-appear-autoemphasis t
5         org-appear-autosubmarkers t
6         org-appear-autolinks nil)
7   ;; for proper first-time setup, `org-appear--set-elements'
8   ;; needs to be run after other hooks have acted.
9   (run-at-time nil nil #'org-appear--set-elements))

```

Inline blocks

Abdelhak Bougouffa © 2022

```

60      ("RESULTS" . " ")
61      ("language" . " ")
62      ("hugo_base_dir" . " ")
63      ("latex_compiler" . " ")
64      ("results" . " ")
65      ("filetags" . "#")
66      ("created" . " ")
67      ("export_select_tags" . " ")
68      ("export_exclude_tags" . " ")))
69
70    ;; Workaround to disable drawing on fringes
71    (advice-add 'org-modern--block-fringe :override (lambda ()))
72
73    ;; Change faces
74    (custom-set-faces! '(org-modern-tag :inherit (region org-modern-label)))
75    (custom-set-faces! '(org-modern-statistics :inherit org-checkbox-statistics-todo)))

```

Org Modern

Not let's remove the overlap between the substitutions we set here and those that Doom applies via `:ui ligatures` and `:lang org`.

```

1 (defadvice! +org-init-appearance-h--no-ligatures-a ()
2   :after #' +org-init-appearance-h
3   (set-ligatures! 'org-mode
4     :name nil
5     :src_block nil
6     :src_block_end nil
7     :quote nil
8     :quote_end nil))

```

We'll bind this to 0 on the `org-mode` localleader, and manually apply a PR recognising the pgtk window system.

```

1 (use-package! org-ol-tree
2   :commands org-ol-tree
3   :config
4   (setq org-ol-tree-ui-icon-set
5     (if (and (display-graphic-p)
6               (fboundp 'all-the-icons-material))
7         'all-the-icons
8         'unicode))
9   (org-ol-tree-ui--update-icon-set))
10
11 (map! :map org-mode-map
12   :after org
13   :localleader
14   :desc "Outline" "0" #'org-ol-tree)

```

```

1 ;; From https://www.reddit.com/r/orgmode/comments/i6hl8b/comment/g1usef2/
2 ;; Scale image previews to 60% of the window width.
3 (setq org-image-actual-width (truncate (* (window-pixel-width) 0.6)))

```

Image previews

List bullet sequence I think it makes sense to have list bullets change with depth

```

1 (setq org-list-demote-modify-bullet
2   '(("+" . "-")
3     ("- " . "+"))

```

```
4      ("*" . "+")
5      ("1." . "a.")))
```

```
1  ;; Org styling, hide markup etc.
2  (setq org-hide-emphasis-markers t
3        org-pretty-entities t
4        org-ellipsis " "
5        org-hide-leading-stars t)
6  ;; org-priority-highest ?A
7  ;; org-priority-lowest ?E
8  ;; org-priority-faces
9  ;; ' (?A . 'all-the-icons-red)
10 ;;   (?B . 'all-the-icons-orange)
11 ;;   (?C . 'all-the-icons-yellow)
12 ;;   (?D . 'all-the-icons-green)
13 ;;   (?E . 'all-the-icons-blue)))
```

Symbols

L^AT_EX fragments

Prettier highlighting First off, we want those fragments to look good.

```
1 (setq org-highlight-latex-and-related '(native script entities))
```

However, by using `native` highlighting the `org-block` face is added, and that doesn't look too great — particularly when the fragments are previewed.

Ideally `org-src-font-lock-fontify-block` wouldn't add the `org-block` face, but we can avoid advising that entire function by just adding another face with `:inherit default` which will override the background color.

Inspecting `org-do-latex-and-related` shows that `"latex"` is the language argument passed, and so we can override the background as discussed above.

```
1 (require 'org-src)
2 (add-to-list 'org-src-block-faces '("latex" (:inherit default :extend t)))
```

Prettier rendering It's nice to customize the look of L^AT_EX fragments.

```
1 ;; (setq org-format-latex-header "\\documentclass{article}
2 ;;   \\usepackage[svgnames]{xcolor}
3 ;;   \\usepackage[T1]{fontenc}
4 ;;   \\usepackage{booktabs}
5
6 ;; \\pagestyle{empty} % do not remove
7
8 ;; \\setlength{\\textwidth}{\\paperwidth}
9 ;; \\addtolength{\\textwidth}{-3cm}
10 ;; \\setlength{\\oddsidemargin}{1.5cm}
11 ;; \\addtolength{\\oddsidemargin}{-2.54cm}
12 ;; \\setlength{\\evensidemargin}{\\oddsidemargin}
13 ;; \\setlength{\\textheight}{\\paperheight}
14 ;; \\addtolength{\\textheight}{-\\headheight}
15 ;; \\addtolength{\\textheight}{-\\headsep}
16 ;; \\addtolength{\\textheight}{-\\footskip}
17 ;; \\addtolength{\\textheight}{-3cm}
18 ;; \\setlength{\\topmargin}{1.5cm}
```

```

19 ;; \\addtolength{\\topmargin}{-2.54cm}
20 ;; \\usepackage{arev}
21 ;; ")

```

Since we can, instead of making the background color match the `default` face, let's make it transparent.

```

1 (setq org-format-latex-options
2   (plist-put org-format-latex-options :background "Transparent"))
3
4 ;; Can be dvipng, dvisvgm, imagemagick
5 (setq org-preview-latex-default-process 'dvisvgm)
6
7 ;; Define a function to set the format latex scale (to be reused in hooks)
8 (defun +org-format-latex-set-scale (scale)
9   (setq org-format-latex-options (plist-put org-format-latex-options :scale scale)))
10
11 ;; Set the default scale
12 (+org-format-latex-set-scale 1.4)
13
14 ;; Increase scale in Zen mode
15 (when (featurep! :ui zen)
16   (add-hook! 'writeroom-mode-enable-hook (+org-format-latex-set-scale 2.0))
17   (add-hook! 'writeroom-mode-disable-hook (+org-format-latex-set-scale 1.4)))

```

Better equation numbering Numbered equations all have (1) as the number for fragments with vanilla `org-mode`. This code (from `scimax`) injects the correct numbers into the previews, so they look good.

This hack is not properly working right now!, it seems to work only with `align` blocks. **NEEDS INVESTIGATION.**

```

1 (defun +scimax-org-renumber-environment (orig-func &rest args)
2   "A function to inject numbers in LaTeX fragment previews."
3   (let ((results '())
4         (counter -1)
5         (numberp))
6     (setq results
7       (cl-loop for (begin . env) in
8                 (org-element-map (org-element-parse-buffer) 'latex-environment
9                               (lambda (env)
10                                (cons
11                                  (org-element-property :begin env)
12                                  (org-element-property :value env))))
13       collect
14       (cond
15         ((and (string-match "\\begin{equation}" env)
16              (not (string-match "\\tag{" env)))
17          (cl-incf counter)
18          (cons begin counter)
19          (message "Entered equation env, counter=%d" counter))
20         ((string-match "\\begin{align}" env)
21          (prog2
22            (cl-incf counter)
23            (cons begin counter)
24            (with-temp-buffer
25              (insert env)
26              (goto-char (point-min))
27              ;; \\ is used for a new line. Each one leads to a number
28              (cl-incf counter (count-matches "\\$"))
29              ;; unless there are nonumbers.
30              (goto-char (point-min))
31              (cl-decf counter (count-matches "\\nonumber")))))
32         (t
33          (cons begin nil))))))
34

```

```

35 (when (setq numberp (cdr (assoc (point) results)))
36   (setf (car args)
37     (concat
38       (format "\\setcounter{equation}{%s}\\n" numberp)
39       (car args))))))
40
41 (apply orig-func args))
42
43
44 (defun +scimax-toggle-latex-equation-numbering ()
45   "Toggle whether LaTeX fragments are numbered."
46   (interactive)
47   (if (not (get '+scimax-org-renumber-environment 'enabled))
48     (progn
49       (advice-add 'org-create-formula-image :around #' +scimax-org-renumber-environment)
50       (put '+scimax-org-renumber-environment 'enabled t)
51       (message "LaTeX numbering enabled."))
52     (advice-remove 'org-create-formula-image #' +scimax-org-renumber-environment)
53     (put '+scimax-org-renumber-environment 'enabled nil)
54     (message "LaTeX numbering disabled.")))
55
56
57 (defun +scimax-org-inject-latex-fragment (orig-func &rest args)
58   "Advice function to inject latex code before and/or after the equation in a latex fragment.
59   You can use this to set \\mathversion{bold} for example to make
60   it bolder. The way it works is by defining
61   :latex-fragment-pre-body and/or :latex-fragment-post-body in the
62   variable `org-format-latex-options'. These strings will then be
63   injected before and after the code for the fragment before it is
64   made into an image."
65   (setf (car args)
66     (concat
67       (or (plist-get org-format-latex-options :latex-fragment-pre-body) "")
68       (car args)
69       (or (plist-get org-format-latex-options :latex-fragment-post-body) "")))
70   (apply orig-func args))
71
72
73 (defun +scimax-toggle-inject-latex ()
74   "Toggle whether you can insert latex in fragments."
75   (interactive)
76   (if (not (get '+scimax-org-inject-latex-fragment 'enabled))
77     (progn
78       (advice-add 'org-create-formula-image :around #' +scimax-org-inject-latex-fragment)
79       (put '+scimax-org-inject-latex-fragment 'enabled t)
80       (message "Inject latex enabled"))
81     (advice-remove 'org-create-formula-image #' +scimax-org-inject-latex-fragment)
82     (put '+scimax-org-inject-latex-fragment 'enabled nil)
83     (message "Inject latex disabled")))

```

Fragtog Hook org-fragtog-mode to org-mode.

```

1 (use-package! org-fragtog
2   :hook (org-mode . org-fragtog-mode))

```

Org plot We can use some variables in org-plot to use the current doom theme colors.

```

1 (after! org-plot
2   (defun org-plot/generate-theme (_type)
3     "Use the current Doom theme colours to generate a GnuPlot preamble."
4     (format "
5 fgt = \"textcolor rgb '%s'\" # foreground text
6 fgat = \"textcolor rgb '%s'\" # foreground alt text
7 fgl = \"linecolor rgb '%s'\" # foreground line

```



```

8 fgal = \"linecolor rgb '%s'\" # foreground alt line
9
10 # foreground colors
11 set border lc rgb '%s'
12 # change text colors of tics
13 set xtics @fgt
14 set ytics @fgt
15 # change text colors of labels
16 set title @fgt
17 set xlabel @fgt
18 set ylabel @fgt
19 # change a text color of key
20 set key @fgt
21
22 # line styles
23 set linetype 1 lw 2 lc rgb '%s' # red
24 set linetype 2 lw 2 lc rgb '%s' # blue
25 set linetype 3 lw 2 lc rgb '%s' # green
26 set linetype 4 lw 2 lc rgb '%s' # magenta
27 set linetype 5 lw 2 lc rgb '%s' # orange
28 set linetype 6 lw 2 lc rgb '%s' # yellow
29 set linetype 7 lw 2 lc rgb '%s' # teal
30 set linetype 8 lw 2 lc rgb '%s' # violet
31
32 # palette
33 set palette maxcolors 8
34 set palette defined ( 0 '%s',\
35 1 '%s',\
36 2 '%s',\
37 3 '%s',\
38 4 '%s',\
39 5 '%s',\
40 6 '%s',\
41 7 '%s' )
42 "
43     (doom-color 'fg)
44     (doom-color 'fg-alt)
45     (doom-color 'fg)
46     (doom-color 'fg-alt)
47     (doom-color 'fg)
48     ;; colours
49     (doom-color 'red)
50     (doom-color 'blue)
51     (doom-color 'green)
52     (doom-color 'magenta)
53     (doom-color 'orange)
54     (doom-color 'yellow)
55     (doom-color 'teal)
56     (doom-color 'violet)
57     ;; duplicated
58     (doom-color 'red)
59     (doom-color 'blue)
60     (doom-color 'green)
61     (doom-color 'magenta)
62     (doom-color 'orange)
63     (doom-color 'yellow)
64     (doom-color 'teal)
65     (doom-color 'violet)
66     ))
67 (defun org-plot/gnuplot-term-properties (_type)
68   (format "background rgb '%s' size 1050,650"
69     (doom-color 'bg)))
70 (setq org-plot/gnuplot-script-preamble #'org-plot/generate-theme)
71 (setq org-plot/gnuplot-term-extra #'org-plot/gnuplot-term-properties))

```

Large tables Use *Partial Horizontal Scroll*.

```

1 (use-package! org-phscroll
2   :commands org-phscroll-activate)

```

9.2.5 Bibliography

```

1 (setq bibtex-completion-bibliography '("~/Zotero/library.bib")
2       bibtex-completion-library-path '("~/Zotero/storage/")
3       bibtex-completion-notes-path "~/PhD/bibliography/notes/"
4       bibtex-completion-notes-template-multiple-files "* ${author-or-editor}, ${title}, ${journal}, (${year})
↪ :${=type=}: \n\nSee [[cite:&${=key=}]]\n"
5       bibtex-completion-additional-search-fields '(keywords)
6       bibtex-completion-display-formats
7       '( (article . "${=has-pdf=:1}${=has-note=:1} ${year:4} ${author:36} ${title:*} ${journal:40}")
8         (inbook . "${=has-pdf=:1}${=has-note=:1} ${year:4} ${author:36} ${title:*} Chapter
↪ ${chapter:32}")
9         (incollection . "${=has-pdf=:1}${=has-note=:1} ${year:4} ${author:36} ${title:*} ${booktitle:40}")
10        (inproceedings . "${=has-pdf=:1}${=has-note=:1} ${year:4} ${author:36} ${title:*} ${booktitle:40}")
11        (t . "${=has-pdf=:1}${=has-note=:1} ${year:4} ${author:36} ${title:*}"))
12       bibtex-completion-pdf-open-function
13       (lambda (fpath)
14         (call-process "open" nil 0 nil fpath)))

```

BibTeX

Org-bib A mode to work with annotated bibliography in Org-Mode. See the repo for an example.

```

1 (use-package! org-bib
2   :commands (org-bib-mode))

```

```

1 (after! oc
2   (setq org-cite-csl-styles-dir "~/Zotero/styles")
3
4   (defun org-ref-to-org-cite ()
5     "Attempt to convert org-ref citations to org-cite syntax."
6     (interactive)
7     (let* ((cite-conversions '(("cite" . "//b") ("Cite" . "//bc")
8                                  ("nocite" . "/n")
9                                  ("citep" . "") ("citep*" . "//f")
10                                  ("parencite" . "") ("Parencite" . "//c")
11                                  ("citeauthor" . "/a/f") ("citeauthor*" . "/a")
12                                  ("citeyear" . "/na/b")
13                                  ("Citep" . "//c") ("Citealp" . "//bc")
14                                  ("Citeauthor" . "/a/cf") ("Citeauthor*" . "/a/c")
15                                  ("autocite" . "") ("Autocite" . "//c")
16                                  ("notecite" . "/l/b") ("Notecite" . "/l/bc")
17                                  ("pnotecite" . "/l") ("Pnotecite" . "/l/bc"))))
18       (cite-regexp (rx (regexp (regexp-opt (mapcar #'car cite-conversions) t))
19                            ":" (group (+ (not (any "\n" ,.)))]))))))
20   (save-excursion
21     (goto-char (point-min))
22     (while (re-search-forward cite-regexp nil t)
23       (message (format "[cite%s:%s]"
24                         (cdr (assoc (match-string 1) cite-conversions))
25                         (match-string 2)))
26       (replace-match (format "[cite%s:%s]"
27                             (cdr (assoc (match-string 1) cite-conversions))
28                             (match-string 2))))))

```

Org-cite

Org-ref Use Org as L^AT_EX!

```

1 (use-package! org-ref
2   :after org
3   :config
4   (defadvice! org-ref-open-bibtex-pdf-a ()
5     :override #'org-ref-open-bibtex-pdf
6     (save-excursion
7       (bibtex-beginning-of-entry)
8       (let* ((bibtex-expand-strings t)
9              (entry (bibtex-parse-entry t))
10              (key (reflex-get-bib-field "=key=" entry))
11              (pdf (or
12                   (car (-filter (lambda (f) (string-match-p "\\..pdf$" f))
13                               (split-string (reflex-get-bib-field "file" entry) ";")))
14                   (funcall 'org-ref-get-pdf-filename key))))
15         (if (file-exists-p pdf)
16             (org-open-file pdf)
17             (ding))))))
18
19 (defadvice! org-ref-open-pdf-at-point-a ()
20   "Open the pdf for bibtex key under point if it exists."
21   :override #'org-ref-open-pdf-at-point
22   (interactive)
23   (let* ((results (org-ref-get-bibtex-key-and-file))
24          (key (car results))
25          (pdf-file (funcall 'org-ref-get-pdf-filename key)))
26     (with-current-buffer (find-file-noselect (cdr results))
27       (save-excursion
28         (bibtex-search-entry (car results))
29         (org-ref-open-bibtex-pdf))))))
30
31 ;; Add keybinding to insert link
32 (map! :localleader
33       :map org-mode-map
34       :desc "Org-ref insert link" "C" #'org-ref-insert-link))

```

```

1 (setq citar-library-paths '("~/Zotero/storage")
2   citar-notes-paths '("~/PhD/bibliography/notes/")
3   citar-bibliography '("~/Zotero/library.bib"))

```

Citar

9.2.6 Exporting

General settings By default, Org only exports the first three levels of headings as ... headings. This is rather unfortunate as my documents frequently stray far beyond three levels of depth. The two main formats I care about exporting to are L^AT_EX and HTML. When using an `article` class, L^AT_EX headlines go from `\section`, `\subsection`, `\subsubsection`, and `\paragraph` to `\subgraph` — *five* levels. HTML5 has six levels of headings (`<h1>` to `<h6>`), but first level Org headings get exported as `<h2>` elements - leaving *five* usable levels.

As such, it would seem to make sense to recognize the first *five* levels of Org headings when exporting.

```

1 (setq org-export-headline-levels 5) ;; I like nesting

```

I'm also going to make use of an item in `ox-extra` so that I can add an `:ignore:` tag to headings for the content to be kept, but the heading itself ignored (unlike `:noexport:` which ignored both heading and content). This is useful when I want to use headings to provide a structure for writing that doesn't appear in the final documents.

```

1 (require 'ox-extra)
2 (ox-extras-activate '(ignore-headlines))

```

Since I (roughly) track Org HEAD, it makes sense to include the git version in the creator string.

```

1 (setq org-export-creator-string
2   (format "Emacs %s (Org mode %s)" emacs-version (org-release)))

```

L^AT_EX export

Compiling By default, Org uses the classical `pdflatex × 3 + bibtex`. This simply won't do in our modern world. `latexmk + biber` (which is used automatically with `latexmk`) is a simply superior combination.

```

1 ;; `org-latex-compilers' contains a list of possible values ("pdflatex" "xelatex" "lualatex")
2 ;; for the `%latex' argument.
3 (setq org-latex-pdf-process '("latexmk -shell-escape -pdf -quiet -f -%latex -interaction=nonstopmode
  ↪ -output-directory=%o %f"))

```

```

1 ;; Add 'svg' package to display SVG pictures (uses inkscape, imagemagik and ghostscript)
2 ;; (add-to-list 'org-latex-packages-alist '("" "svg"))
3 ;; (add-to-list 'org-latex-packages-alist '("" "fontspec")) ;; for xelatex
4 ;; (add-to-list 'org-latex-packages-alist '("utf8" "inputenc"))

```

Org L^AT_EX packages

Export PDFs with syntax highlighting This is for code syntax highlighting in export. You need to use `-shell-escape` with latex, and install the `python-pygments` package.

```

1 (add-to-list 'org-latex-packages-alist '("svgnames" "xcolor"))
2
3 ;; Should be configured per document, as a local variable
4 ;; (setq org-latex-listings 'minted)
5 ;; (add-to-list 'org-latex-packages-alist '("" "minted"))
6
7 (setq org-latex-minted-options '(("frame"          "lines")
8   ("fontsize"      "\\footnotesize")
9   ("tabsize"       "2")
10  ("breaklines"    "")
11  ("breakanywhere" "") ;; break anywhere, no just on spaces
12  ("style"         "default")
13  ("bgcolor"       "GhostWhite")
14  ("linenos"       "")))
15
16 ;; Link some org-mode blocks languages to lexers supported by minted
17 ;; via (pygmentize), you can see supported lexers by running this command
18 ;; in a terminal: `pygmentize -L lexers'
19 (dolist (pair '((ipython  "python")
20   (jupyter   "python")
21   (scheme    "scheme")
22   (lisp-data "lisp")
23   (conf      "ini")
24   (conf-unix "unixconfig")
25   (conf-space "unixconfig")
26   (authinfo  "unixconfig")
27   (conf-toml "yaml")
28   (gitconfig "ini")
29   (systemd   "ini")))

```

```

30      (gdb-script "unixconfig"))))
31 (unless (member pair org-latex-minted-langs)
32   (add-to-list 'org-latex-minted-langs pair)))

```

```

1 (after! ox-latex
2   (add-to-list 'org-latex-classes
3     ("scr-article"
4      "\\documentclass{scrartcl}"
5      ("\\section{%s}" . "\\section*{%s}")
6      ("\\subsection{%s}" . "\\subsection*{%s}")
7      ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
8      ("\\paragraph{%s}" . "\\paragraph*{%s}")
9      ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
10  (add-to-list 'org-latex-classes
11    ("lettre"
12     "\\documentclass{lettre}"
13     ("\\section{%s}" . "\\section*{%s}")
14     ("\\subsection{%s}" . "\\subsection*{%s}")
15     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
16     ("\\paragraph{%s}" . "\\paragraph*{%s}")
17     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
18  (add-to-list 'org-latex-classes
19    ("blank"
20     "[NO-DEFAULT-PACKAGES] \\n [NO-PACKAGES] \\n [EXTRA] "
21     ("\\section{%s}" . "\\section*{%s}")
22     ("\\subsection{%s}" . "\\subsection*{%s}")
23     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
24     ("\\paragraph{%s}" . "\\paragraph*{%s}")
25     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
26  (add-to-list 'org-latex-classes
27    ("bmc-article"
28     "\\documentclass[article,code,maths]{bmc}\\n [NO-DEFAULT-PACKAGES] \\n [NO-PACKAGES] \\n [EXTRA] "
29     ("\\section{%s}" . "\\section*{%s}")
30     ("\\subsection{%s}" . "\\subsection*{%s}")
31     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
32     ("\\paragraph{%s}" . "\\paragraph*{%s}")
33     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
34  (add-to-list 'org-latex-classes
35    ("bmc"
36     "\\documentclass[code,maths]{bmc}\\n [NO-DEFAULT-PACKAGES] \\n [NO-PACKAGES] \\n [EXTRA] "
37     ("\\chapter{%s}" . "\\chapter*{%s}")
38     ("\\section{%s}" . "\\section*{%s}")
39     ("\\subsection{%s}" . "\\subsection*{%s}")
40     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
41     ("\\paragraph{%s}" . "\\paragraph*{%s}")
42     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
43  (add-to-list 'org-latex-classes
44    ("IEEEtran"
45     "\\documentclass{IEEEtran}"
46     ("\\section{%s}" . "\\section*{%s}")
47     ("\\subsection{%s}" . "\\subsection*{%s}")
48     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
49     ("\\paragraph{%s}" . "\\paragraph*{%s}")
50     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
51  (add-to-list 'org-latex-classes
52    ("ieeeconf"
53     "\\documentclass{ieeeconf}"
54     ("\\section{%s}" . "\\section*{%s}")
55     ("\\subsection{%s}" . "\\subsection*{%s}")
56     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
57     ("\\paragraph{%s}" . "\\paragraph*{%s}")
58     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
59  (add-to-list 'org-latex-classes
60    ("sagej"
61     "\\documentclass{sagej}"

```

```

62     ("\\section{%s}" . "\\section*{%s}")
63     ("\\subsection{%s}" . "\\subsection*{%s}")
64     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
65     ("\\paragraph{%s}" . "\\paragraph*{%s}")
66     ("\\subparagraph{%s}" . "\\subparagraph*{%s}"))))
67 (add-to-list 'org-latex-classes
68   '("thesis"
69     "\\documentclass[11pt]{book}"
70     ("\\chapter{%s}" . "\\chapter*{%s}")
71     ("\\section{%s}" . "\\section*{%s}")
72     ("\\subsection{%s}" . "\\subsection*{%s}")
73     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
74     ("\\paragraph{%s}" . "\\paragraph*{%s}"))))
75 (add-to-list 'org-latex-classes
76   '("thesis-fr"
77     "\\documentclass[french,12pt,a4paper]{book}"
78     ("\\chapter{%s}" . "\\chapter*{%s}")
79     ("\\section{%s}" . "\\section*{%s}")
80     ("\\subsection{%s}" . "\\subsection*{%s}")
81     ("\\subsubsection{%s}" . "\\subsubsection*{%s}")
82     ("\\paragraph{%s}" . "\\paragraph*{%s}"))))
83
84 (setq org-latex-default-class "article")
85 ;; org-latex-tables-booktabs t
86 ;; org-latex-reference-command "\\cref{%s}"

```

Class templates

Export multi-files Org documents Let's say we have a multi-files document, with `main.org` as the entry point. Supposing a document with a structure like this:

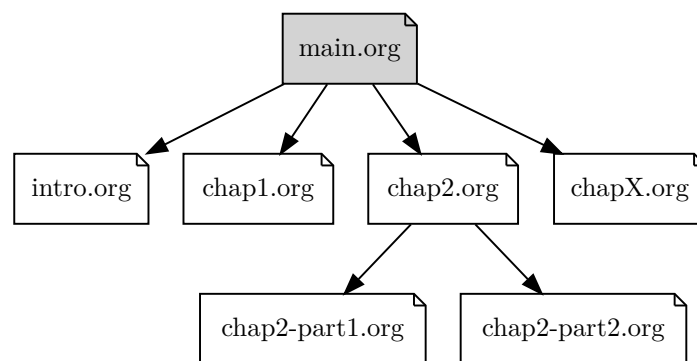


Figure 1: Example of a multi-files document structure

Files `intro.org`, `chap1.org`, ... are included in `main.org` using the Org command `.` In such a setup, we will spend most of our time writing in a chapter files, and not the `main.org`, where when want to export the document, we would need to open the top-level file `main.org` before exporting.

A solution to this is **to admit the following convention**:

If a file named `main.org` is present beside any other Org file, it should be considered as the entry point; and whenever we export to PDF (from any of the Org files like: `intro.org`, `chap1.org`, ...), we automatically jump to the `main.org`, and run the export there.

This can be achieved by adding an Emacs-Lisp *advice* around the `(org-latex-export-to-pdf)` to switch to `main.org` (if it exists) before running the export.

You can also set the variable `+org-export-to-pdf-main-file` to the main file, in `.dir-locals.el` or as a file local variable.

```

1 (defvar +org-export-to-pdf-main-file nil
2   "The main (entry point) Org file for a multi-files document.")
3
4 (advice-add
5   'org-latex-export-to-pdf :around
6   (lambda (orig-fn &rest orig-args)
7     (message
8       "PDF exported to: %s."
9       (let ((main-file (or (bound-and-true-p +org-export-to-pdf-main-file) "main.org"))))
10        (if (file-exists-p (expand-file-name main-file))
11            (with-current-buffer (find-file-noselect main-file)
12              (apply orig-fn orig-args))
13              (apply orig-fn orig-args))))))

```

Hugo Update files with last modified date, when `#+lastmod:` is available

```

1 (setq time-stamp-active t
2       time-stamp-start "#\\+lastmod:[ \\t]*"
3       time-stamp-end "$"
4       time-stamp-format "%04Y-%02m-%02d")
5
6 (add-hook 'before-save-hook 'time-stamp nil)

```

9.3 Text editing

9.3.1 Plain text

It's nice to see ANSI color codes displayed. However, until Emacs 28 it's not possible to do this without modifying the buffer, so let's condition this block on that.

```

1 (after! text-mode
2   (add-hook! 'text-mode-hook
3     (unless (derived-mode-p 'org-mode)
4       ;; Apply ANSI color codes
5       (with-silent-modifications
6         (ansi-color-apply-on-region (point-min) (point-max) t))))))

```

9.3.2 Academic phrases

When writing your academic paper, you might get stuck trying to find the right phrase that captures your intention. This package tries to alleviate that problem by presenting you with a list of phrases organized by the topic or by the paper section that you are writing. This package has around 600 phrases so far.

This is based on the book titled “English for Writing Research - Papers Useful Phrases”.

```

1 (use-package! academic-phrases
2   :commands (academic-phrases
3             academic-phrases-by-section))

```

9.3.3 Quarto

Integration of Quarto in Emacs.

```

1 (package! quarto-mode)

```

```

1 (use-package! quarto-mode
2   :when QUARTO-P)

```

9.3.4 French apostrophes

```

1 (defun +helper--in-buffer-replace (old new)
2   "Replace OLD with NEW in the current buffer."
3   (save-excursion
4     (goto-char (point-min))
5     (let ((case-fold-search nil)
6           (cnt 0))
7       (while (re-search-forward old nil t)
8         (replace-match new)
9         (setq cnt (1+ cnt)))
10      cnt)))
11
12 (defun +helper-clear-frenchy-punctuations ()
13   "Replace french apostrophes (') by regular quotes (')."
14   (interactive)
15   (let ((chars '("(" " " . "" ) (")" . "")))
16     (cnt 0))
17   (dolist (pair chars)
18     (setq cnt (+ cnt (+helper--in-buffer-replace (car pair) (cdr pair)))))
19   (message "Replaced %d matche(s)." cnt)))

```

9.3.5 Yanking multi-lines paragraphs

```

1 (defun +helper-paragraphized-yank ()
2   "Copy, then remove newlines and Org styling (/*_~)."
3   (interactive)
4   (copy-region-as-kill nil nil t)
5   (with-temp-buffer
6     (yank)
7     ;; Remove newlines, and Org styling (/*_~)
8     (goto-char (point-min))
9     (let ((case-fold-search nil))
10      (while (re-search-forward "[\n/*_~]" nil t)
11        (replace-match (if (s-matches-p (match-string 0) "\n" " " "")) t)))
12      (kill-region (point-min) (point-max))))
13
14 (map! :localleader
15       :map (org-mode-map markdown-mode-map latex-mode-map text-mode-map)
16       :desc "Paragraphized yank" "y" #' +helper-paragraphized-yank)

```

10 System configuration

10.1 Mime types

10.1.1 Org mode files

Org mode isn't recognized as its own mime type by default, but that can easily be changed with the following file. For system-wide changes try `/usr/share/mime/packages/org.xml`.

```

1 <mime-info xmlns='http://www.freedesktop.org/standards/shared-mime-info'>
2   <mime-type type="text/org">
3     <comment>Emacs Org-mode File</comment>
4     <glob pattern="*.org"/>
5     <alias type="text/org"/>

```



```
6 </mime-type>
7 </mime-info>
```

What's nice is that Papirus now has an icon for `text/org`. One simply needs to refresh their mime database:

```
1 update-mime-database ~/.local/share/mime
```

Then set Emacs as the default editor:

```
1 xdg-mime default emacs-client.desktop text/org
```

10.1.2 Registering `org-protocol://`

The recommended method of registering a protocol is by registering a desktop application, which seems reasonable.

```
1 [Desktop Entry]
2 Name=Emacs Org-Protocol
3 Exec=emacsclient %u
4 Icon=/home/hacko/.doom.d/assets/org-mode.svg
5 Type=Application
6 Terminal=false
7 MimeType=x-scheme-handler/org-protocol
```

To associate `org-protocol://` links with the desktop file:

```
1 xdg-mime default org-protocol.desktop x-scheme-handler/org-protocol
```

10.1.3 Configuring Chrome/Brave

As specified in the official documentation, we would like to invoke the `org-protocol://` without confirmation. To do this, we need to add this system-wide configuration.

```
1 read -p "Do you want to set Chrome/Brave to show the 'Always open ...' checkbox, to be used with the
↪ 'org-protocol://' registration? [Y | N]: " INSTALL_CONFIRM
2
3 if [[ "$INSTALL_CONFIRM" == "Y" ]]
4 then
5     sudo mkdir -p /etc/opt/chrome/policies/managed/
6
7     sudo tee /etc/opt/chrome/policies/managed/external_protocol_dialog.json > /dev/null <<'EOF'
8     {
9         "ExternalProtocolDialogShowAlwaysOpenCheckbox": true
10    }
11 EOF
12
13 sudo chmod 644 /etc/opt/chrome/policies/managed/external_protocol_dialog.json
14 fi
```

Then add a bookmarklet in your browser with this code:

```
1 javascript:location.href =
2     'org-protocol://roam-ref?template=r&ref='
3     + encodeURIComponent(location.href)
4     + '&title='
5     + encodeURIComponent(document.title)
6     + '&body='
7     + encodeURIComponent(window.getSelection())
```

10.2 Git

10.2.1 Git diffs

Based on this gist and this article.

```

1 *.tex diff=tex
2 *.bib diff=bibtex
3 *.{c,h,c++,h++,cc,hh,cpp,hpp} diff=cpp
4 *.m diff=matlab
5 *.py diff=python
6 *.rb diff=ruby
7 *.php diff=php
8 *.pl diff=perl
9 *.{html,xhtml} diff=html
10 *.f diff=fortran
11 *.{el,lisp,scm} diff=lisp
12 *.r diff=rstats
13 *.texi* diff=texinfo
14 *.org diff=org
15 *.rs diff=rust
16
17 *.odt diff=odt
18 *.odp diff=libreoffice
19 *.ods diff=libreoffice
20 *.doc diff=doc
21 *.xls diff=xls
22 *.ppt diff=ppt
23 *.docx diff=docx
24 *.xlsx diff=xlsx
25 *.pptx diff=pptx
26 *.rtf diff=rtf
27
28 *.{png,jpg,jpeg,gif} diff=exif
29
30 *.pdf diff=pdf
31 *.djvu diff=djvu
32 *.epub diff=pandoc
33 *.chm diff=tika
34 *.mhtml? diff=tika
35
36 *.{class,jar} diff=tika
37 *.{rar,7z,zip,apk} diff=tika

```

Then adding some regular expressions for it to `~/.config/git/config`, with some tools to view diffs on binary files.

```

1 # ===== TEXT FORMATS =====
2 [diff "org"]
3   xfuncname = "^(\{*\}+.*)*$"
4
5 [diff "lisp"]
6   xfuncname = "^(\{.*\})$"
7
8 [diff "rstats"]
9   xfuncname = "^([a-zA-Z.] + <- function.*)$"
10
11 [diff "texinfo"]
12 # from http://git.savannah.gnu.org/gitweb/?p=coreutils.git;a=blob;f=.gitattributes;h=c3b2926c78c939d94358cc63d05
13 ↪ 1a70d38cfea5d;hb=HEAD
14   xfuncname = "^@node[ \t][ \t]*\\{([^\,][^\,]*)\\}"
15
16 [diff "rust"]
17   xfuncname = "^([ \t]*(pub|)[ \t]*((fn|struct|enum|impl|trait|mod)[^\;]*))*$"
18
19 # ===== BINARY FORMATS =====
20 [diff "pdf"]
21   binary = true

```

```

21 # textconv = pdfinfo
22 # textconv = sh -c 'pdftotext "$@" -' # sudo apt install pdftotext
23 textconv = sh -c 'pdftotext -layout "$@" -enc UTF-8 -nopgbrk -q -'
24 cachetextconv = true
25
26 [diff "djvu"]
27 binary = true
28 # textconv = pdfinfo
29 textconv = djvutxt # yay -S djvulibre
30 cachetextconv = true
31
32 [diff "odt"]
33 textconv = odt2txt
34 # textconv = pandoc --standalone --from=odt --to=plain
35 binary = true
36 cachetextconv = true
37
38 [diff "doc"]
39 # textconv = wvText
40 textconv = catdoc # yay -S catdoc
41 binary = true
42 cachetextconv = true
43
44 [diff "xls"]
45 # textconv = in2csv
46 # textconv = xlscat -a UTF-8
47 # textconv = soffice --headless --convert-to csv
48 textconv = xls2csv # yay -S catdoc
49 binary = true
50 cachetextconv = true
51
52 [diff "ppt"]
53 textconv = catppt # yay -S catdoc
54 binary = true
55 cachetextconv = true
56
57 [diff "docx"]
58 textconv = pandoc --standalone --from=docx --to=plain
59 # textconv = sh -c 'docx2txt.pl "$@" -'
60 binary = true
61 cachetextconv = true
62
63 [diff "xlsx"]
64 textconv = xlsx2csv # pip install xlsx2csv
65 # textconv = in2csv
66 # textconv = soffice --headless --convert-to csv
67 binary = true
68 cachetextconv = true
69
70 [diff "ptx"]
71 # pip install --user pptx2md (currently not working with Python 3.10)
72 # textconv = sh -c 'pptx2md --disable_image --disable_wmf -i "$@" -o ~/.cache/git/presentation.md >/dev/null &&
73 ↪ cat ~/.cache/git/presentation.md'
74 # Alternative hack, convert PPTX to PPT, then use the catppt tool
75 textconv = sh -c 'soffice --headless --convert-to ppt --outdir /tmp "$@" && TMP_FILENAME=$(basename -- "$0")
76 ↪ && catppt "/tmp/${TMP_FILENAME%.*}.ppt'
77 binary = true
78 cachetextconv = true
79
80 [diff "rtf"]
81 textconv = unrtf --text # yay -S unrtf
82 binary = true
83 cachetextconv = true
84
85 [diff "epub"]
86 textconv = pandoc --standalone --from=epub --to=plain
87 binary = true
88 cachetextconv = true
89
90 [diff "tika"]

```

```

89 textconv = tika --config=~/.local/share/tika/tika-conf.xml --text
90 binary = true
91 cachetextconv = true
92
93 [diff "libreoffice"]
94 textconv = soffice --cat
95 binary = true
96 cachetextconv = true
97
98 [diff "exif"]
99 binary = true
100 textconv = exiftool # sudo apt install perl-image-exiftool

```

10.2.2 Apache Tika App wrapper

Apache Tika is a content detection and analysis framework. It detects and extracts metadata and text from over a thousand different file types. We will be using the Tika App in command-line mode to show some meaningful diff information for some binary files.

First, let's add a custom script to run `tika-app`:

```

1  #!/bin/sh
2  APACHE_TIKA_JAR="$HOME/.local/share/tika/tika-app.jar"
3
4  if [ -f "${APACHE_TIKA_JAR}" ]
5  then
6      exec java -Dfile.encoding=UTF-8 -jar "${APACHE_TIKA_JAR}" "$@" 2>/dev/null
7  else
8      echo "JAR file not found at ${APACHE_TIKA_JAR}"
9  fi

```

Add tika's installation instructions to the `setup.sh` file.

```

1  update_apache_tika () {
2      TIKA_JAR_PATH="$HOME/.local/share/tika"
3
4      if [ ! -d "${TIKA_JAR_PATH}" ]
5      then
6          mkdir -p "${TIKA_JAR_PATH}"
7      fi
8
9      TIKA_BASE_URL=https://archive.apache.org/dist/tika/
10     TIKA_JAR_LINK="${TIKA_JAR_PATH}/tika-app.jar"
11
12     echo -n "Checking for new Apache Tika App version... "
13
14     # Get the latest version
15     TIKA_VERSION=$(
16         curl -s "${TIKA_BASE_URL}" | # Get the page
17         pandoc -f html -t plain | # Convert HTML page to plain text.
18         awk '/([0-9]+\.[0-9]+\.[0-9])\// {print substr($1, 0, length($1)-1)}' | # Get the versions directories (pattern:
19         ↪ X.X.X/)
20         sort -rV | # Sort versions, the newest first
21         head -n 1 # Get the first (newest) version
22     )
23
24     if [ -z "${TIKA_VERSION}" ]
25     then
26         echo "Failed, check your internet connection."
27         exit 1
28     fi
29
30     echo "Latest version is ${TIKA_VERSION}"
31
32     TIKA_JAR="${TIKA_JAR_PATH}/tika-app-${TIKA_VERSION}.jar"
33     TIKA_JAR_URL="${TIKA_BASE_URL}${TIKA_VERSION}/tika-app-${TIKA_VERSION}.jar"

```

```

33
34 if [ ! -f "${TIKA_JAR}" ]
35 then
36     echo "New version available!"
37     read -p "Do you want to download Apache Tika App v${TIKA_VERSION}? [Y | N]: " INSTALL_CONFIRM
38     if [[ "$INSTALL_CONFIRM" == "Y" ]]
39     then
40         curl -o "${TIKA_JAR}" "${TIKA_JAR_URL}" && echo "Apache Tika App v${TIKA_VERSION} downloaded successfully"
41     fi
42     else
43         echo "Apache Tika App is up-to-date, version ${TIKA_VERSION} already downloaded to '${TIKA_JAR}'"
44     fi
45
46     # Check the existence of the symbolic link
47     if [ -L "${TIKA_JAR_LINK}" ]
48     then
49         unlink "${TIKA_JAR_LINK}"
50     fi
51
52     # Create a symbolic link to the installed version
53     ln -s "${TIKA_JAR}" "${TIKA_JAR_LINK}"
54 }
55
56 update_apache_tika;

```

When it detects that Tesseract is installed, Tika App will try to extract text from some file types. For some reason, it tries to use Tesseract with some compressed files like *.bz2, *.apk... etc. I would like to disable this feature by exporting an XML config file which will be used when launching the Tika App (using `--config=<tika-config.xml>`).

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <properties>
3   <parsers>
4     <parser class="org.apache.tika.parser.DefaultParser">
5       <parser-exclude class="org.apache.tika.parser.ocr.TesseractOCRParser"/>
6     </parser>
7   </parsers>
8 </properties>

```

10.3 Emacs' Systemd daemon

Let's define a Systemd service to launch Emacs server automatically.

```

1 [Unit]
2 Description=Emacs server daemon
3 Documentation=info:emacs man:emacs(1) https://gnu.org/software/emacs/
4
5 [Service]
6 Type=forking
7 ExecStart=sh -c 'emacs --daemon && emacsclient -c --eval "(delete-frame)'"
8 ExecStop=emacsclient --no-wait --eval "(progn (setq kill-emacs-hook nil) (kill-emacs))"
9 Restart=on-failure
10
11 [Install]
12 WantedBy=default.target

```

Which is then enabled by:

```

1 systemctl --user enable emacs.service

```

For some reason if a frame isn't opened early in the initialization process, the daemon doesn't seem to like opening frames later — hence the `&& emacsclient` part of the `ExecStart` value.

10.4 Emacs Client

10.4.1 Desktop integration

It can now be nice to use this as a 'default app' for opening files. If we add an appropriate desktop entry, and enable it in the desktop environment.

```

1  [Desktop Entry]
2  Name=Emacs (Client)
3  GenericName=Text Editor
4  Comment=A flexible platform for end-user applications
5  MimeType=text/english;text/plain;text/org;text/x-makefile;text/x-c++hdr;text/x-c++src;text/x-chdr;text/x-csrc;t
   ↪ ext/x-java;text/x-moc;text/x-pascal;text/x-tcl;text/x-tex;application/x-shellscrip;text/x-c;text/x-c++;
6  Exec=emacsclient -create-frame --frame-parameters="(fullscreen . maximized)"
   ↪ --alternate-editor="/usr/bin/emacs" --no-wait %F
7  Icon=emacs
8  Type=Application
9  Terminal=false
10 Categories=TextEditor;Utility;
11 StartupWMClass=Emacs
12 Keywords=Text;Editor;
13 X-KDE-StartupNotify=false

```

10.4.2 Command-line wrapper

A wrapper around `emacsclient`:

- Accepting `stdin` by putting it in a temporary file and immediately opening it.
- Guessing that the `tty` is a good idea when `$DISPLAY` is unset (relevant with SSH sessions, among other things).
- With a whiff of 24-bit color support, sets `TERM` variable to a `terminfo` that (probably) announces 24-bit color support.
- Changes GUI `emacsclient` instances to be non-blocking by default (`--no-wait`), and instead take a flag to suppress this behavior (`-w`).

I would use `sh`, but using arrays for argument manipulation is just too convenient, so I'll raise the requirement to `bash`. Since arrays are the only 'extra' compared to `sh`, other shells like `ksh` etc. should work too.

```

1  #!/usr/bin/env bash
2  force_tty=false
3  force_wait=false
4  stdin_mode=""
5
6  args=()
7
8  usage () {
9      echo -e "Usage: e [-t] [-m MODE] [OPTIONS] FILE [-]"
10
11      Emacs client convenience wrapper.
12
13      Options:
14      -h, --help          Show this message
15      -t, -nw, --tty       Force terminal mode
16      -w, --wait          Don't supply --no-wait to graphical emacsclient
17      -                    Take stdin (when last argument)
18      -m MODE, --mode MODE Mode to open stdin with
19      -mm, --maximized     Start Emacs client in maximized window
20
21      Run emacsclient --help to see help for the emacsclient."
22  }
23
24  while :

```

```

25 do
26   case "$1" in
27     -t | -nw | --tty)
28       force_tty=true
29       shift ;;
30     -w | --wait)
31       force_wait=true
32       shift ;;
33     -m | --mode)
34       stdin_mode=" ($2-mode)"
35       shift 2 ;;
36     -mm | --maximized)
37       args+=("--frame-parameters='(fullscreen . maximized)")
38       shift ;;
39     -h | --help)
40       usage
41       exit 0 ;;
42     --*=*)
43       set -- "$@" "${1%*=*}" "${1#*=}"
44       shift ;;
45     *)
46       [ "$#" = 0 ] && break
47       args+=("$1")
48       shift ;;
49   esac
50 done
51
52 if [ ! "${#args[*]}" = 0 ] && [ "${args[-1]}" = "-" ]
53 then
54   unset 'args[-1]'
55   TMP="$(mktemp /tmp/emacsstdin-XXX)"
56   cat > "$TMP"
57   args+=((--eval "(let ((b (generate-new-buffer \"*stdin*\"))) (switch-to-buffer b) (insert-file-contents
58     ↪ \"\$TMP\") (delete-file \"\$TMP\")\${stdin_mode})))"
59 fi
60
61 if [ -z "$DISPLAY" ] || $force_tty
62 then
63   # detect terminals with sneaky 24-bit support
64   if { [ "$COLORTERM" = truecolor ] || [ "$COLORTERM" = 24bit ]; } \
65     && [ "$(tput colors 2>/dev/null)" -lt 257 ]
66   then
67     if echo "$TERM" | grep -q "^\\w\\+-[0-9]"
68     then
69       termstub="${TERM%*-}"
70     else
71       termstub="${TERM#*-}"
72     fi
73
74     if infocmp "$termstub-direct" >/dev/null 2>&1
75     then
76       TERM="$termstub-direct"
77     else
78       TERM="xterm-direct"
79     fi # should be fairly safe
80   fi
81
82   emacsclient --tty -create-frame --alternate-editor="/usr/bin/emacs" "${args[@]}"
83 else
84   if ! $force_wait
85   then
86     args+=((--no-wait)
87   fi
88
89   emacsclient -create-frame --alternate-editor="/usr/bin/emacs" "${args[@]}"
90 fi

```

Useful aliases Now, to set an alias to use `e` with `magit`, and then for maximum laziness we can set aliases for the terminal-forced variants.

```

1 # Aliases to run emacs+magit
2 alias magit='e --eval "(progn (magit-status) (delete-other-windows))"'
3 alias magitt='e -t --eval "(progn (magit-status) (delete-other-windows))"'
4
5 # Aliases to run emacs+mu4e
6 alias emu='e --eval "(progn (=mu4e) (delete-other-windows))"'
7 alias emut='e -t --eval "(progn (=mu4e) (delete-other-windows))"'

```

And this to launch Emacs in terminal mode `et`, I use this as a default `$EDITOR`

```

1 #!/usr/bin/env bash
2 e -t "$@"

```

And `ev` for use with `$VISUAL`:

```

1 #!/usr/bin/env bash
2 e -w "$@"

```

```

1 export EDITOR="$HOME/.local/bin/et"
2 # export VISUAL=$HOME/.local/bin/ev

```

10.5 AppImage

Install/update the `appimageupdatetool.AppImage` tool:

```

1 update_appimageupdatetool () {
2     TOOL_NAME=appimageupdatetool
3     MACHINE_ARCH=$(uname -m)
4     APPIMAGE_UPDATE_TOOL_PATH="$HOME/.local/bin/${TOOL_NAME}"
5     APPIMAGE_UPDATE_TOOL_URL="https://github.com/AppImage/AppImageUpdate/releases/download/continuous/${TOOL_NAME}
6     ↪}-${MACHINE_ARCH}.AppImage"
7
8     if [ -f "${APPIMAGE_UPDATE_TOOL_PATH}" ] && "${APPIMAGE_UPDATE_TOOL_PATH}" -j "${APPIMAGE_UPDATE_TOOL_PATH}"
9     ↪ 2&>/dev/null
10    then
11        echo "${TOOL_NAME} already up to date"
12    else
13        if [ -f "${APPIMAGE_UPDATE_TOOL_PATH}" ]
14        then
15            echo "Update available, downloading latest ${MACHINE_ARCH} version to ${APPIMAGE_UPDATE_TOOL_PATH}"
16            mv "${APPIMAGE_UPDATE_TOOL_PATH}" "${APPIMAGE_UPDATE_TOOL_PATH}.backup"
17        else
18            echo "${TOOL_NAME} not found, downloading latest ${MACHINE_ARCH} version to ${APPIMAGE_UPDATE_TOOL_PATH}"
19        fi
20        wget -O "${APPIMAGE_UPDATE_TOOL_PATH}" "${APPIMAGE_UPDATE_TOOL_URL}" && # 2&>/dev/null
21        echo "Downloaded ${TOOL_NAME}-${MACHINE_ARCH}.AppImage" &&
22        [ -f "${APPIMAGE_UPDATE_TOOL_PATH}.backup" ] &&
23        rm "${APPIMAGE_UPDATE_TOOL_PATH}.backup"
24        chmod a+x "${APPIMAGE_UPDATE_TOOL_PATH}"
25    fi
26 }
27
28 update_appimageupdatetool;

```


10.6 Oh-my-Zsh

10.6.1 Path

Path to your oh-my-zsh installation.

```
1 export ZSH="$HOME/.oh-my-zsh"
```

10.6.2 Themes and customization:

Set name of the theme to load, if set to "random", it will load a random theme each time oh-my-zsh is loaded, in which case, to know which specific one was loaded, run: `echo $RANDOM_THEME` See github.com/ohmyzsh/ohmyzsh/wiki/Themes.

```
1 # Typewritten customizations
2 TYPEWRITTEN_RELATIVE_PATH="adaptive"
3 TYPEWRITTEN_CURSOR="underscore"
4
5 ZSH_THEME="typewritten/typewritten"
6
7 # Set list of themes to pick from when loading at random
8 # Setting this variable when ZSH_THEME=random will cause zsh to load
9 # a theme from this variable instead of looking in $ZSH/themes/
10 # If set to an empty array, this variable will have no effect.
11 # ZSH_THEME_RANDOM_CANDIDATES=( "robbyrussell" "agnoster" )
```

10.6.3 Behavior

```
1 # Uncomment the following line to use case-sensitive completion.
2 # CASE_SENSITIVE="true"
3
4 # Uncomment the following line to use hyphen-insensitive completion.
5 # Case-sensitive completion must be off. _ and - will be interchangeable.
6 # HYPHEN_INSENSITIVE="true"
7
8 # Uncomment the following line to disable bi-weekly auto-update checks.
9 # DISABLE_AUTO_UPDATE="true"
10
11 # Uncomment the following line to automatically update without prompting.
12 DISABLE_UPDATE_PROMPT="true"
13
14 # Uncomment the following line to change how often to auto-update (in days).
15 export UPDATE_ZSH_DAYS=3
16
17 # Uncomment the following line if pasting URLs and other text is messed up.
18 # DISABLE_MAGIC_FUNCTIONS="true"
19
20 # Uncomment the following line to disable colors in ls.
21 # DISABLE_LS_COLORS="true"
22
23 # Uncomment the following line to disable auto-setting terminal title.
24 # DISABLE_AUTO_TITLE="true"
25
26 # Uncomment the following line to enable command auto-correction.
27 # ENABLE_CORRECTION="true"
28
29 # Uncomment the following line to display red dots whilst waiting for completion.
30 # COMPLETION_WAITING_DOTS="true"
31
32 # Uncomment the following line if you want to disable marking untracked files
33 # under VCS as dirty. This makes repository status check for large repositories
34 # much, much faster.
35 # DISABLE_UNTRACKED_FILES_DIRTY="true"
```

```

36
37 # Uncomment the following line if you want to change the command execution time
38 # stamp shown in the history command output.
39 # You can set one of the optional three formats:
40 # "mm/dd/yyyy"|"dd.mm.yyyy"|"yyyy-mm-dd"
41 # or set a custom format using the strftime function format specifications,
42 # see 'man strftime' for details.
43 # HIST_STAMPS="mm/dd/yyyy"

```

10.6.4 Plugins

```

1 # Would you like to use another custom folder than $ZSH/custom?
2 ZSH_CUSTOM=$HOME/.config/my_ohmyzsh_customizations
3
4 # Which plugins would you like to load?
5 # Standard plugins can be found in $ZSH/plugins/
6 # Custom plugins may be added to $ZSH_CUSTOM/plugins/
7 # Example format: plugins=(rails git textmate ruby lighthouse)
8 # Add wisely, as too many plugins slow down shell startup.
9 plugins=(
10     zsh-autosuggestions
11     zsh-navigation-tools
12     zsh-interactive-cd
13     archlinux
14     ssh-agent
15     sudo
16     docker
17     systemd
18     tmux
19     python
20     pip
21     rust
22     repo
23     git
24     cp
25     rsync
26     ripgrep
27     fzf
28     fd
29     z
30 )

```

10.6.5 Bootstrap Oh-my-Zsh

```

1 source $ZSH/oh-my-zsh.sh

```

10.6.6 Aliases

```

1 # Aliases
2 alias zshconfig="vim ~/.zshrc"
3 alias ohmyzsh="ranger $ZSH"

```

10.7 Zsh user configuration

10.7.1 pbcopy and pbpaste

I like to define MacOS-like commands (pbcopy and pbpaste) to copy and paste in terminal (from stdin, to stdout). The pbcopy and pbpaste are defined using either xclip or xsel, you would need to install these

tools, otherwise we wouldn't define the aliases.

```

1  # Define aliases to 'pbcopy' and 'pbpaste'
2  if command -v xclip &> /dev/null
3  then
4      # Define aliases using xclip
5      alias pbcopy='xclip -selection clipboard'
6      alias pbpaste='xclip -selection clipboard -o'
7  elif command -v xsel &> /dev/null
8  then
9      # Define aliases using xsel
10     alias pbcopy='xsel --clipboard --input'
11     alias pbpaste='xsel --clipboard --output'
12 fi

```

10.7.2 netpaste

Define a netpaste command to paste to a Pastebin server.

```

1  alias netpaste='curl -F file=@- 0x0.st' # OR 'curl -F f:1=<- ix.io '

```

10.7.3 Sudo GUI!

And then define gsuon and gsuoff aliases to run graphical apps from terminal with root permissions, this requires xhost.

```

1  # To run GUI apps from terminal with root permissions
2  if command -v xhost &> /dev/null
3  then
4      alias gsuon='xhost si:localuser:root'
5      alias gsuoff='xhost -si:localuser:root'
6  fi

```

10.7.4 Neovim

Use Neovim instead of VIM to provide vi and vim commands.

```

1  # NeoVim
2  if command -v nvim &> /dev/null
3  then
4      alias vim="nvim"
5      alias vi="nvim"
6  fi

```

10.7.5 ESP-IDF

Add some aliases to work with the ESP-IDF framework.

```

1  if [ -d "$HOME/Softwares/src/esp-idf/" ]
2  then
3      alias esp-prepare-env='source $HOME/Softwares/src/esp-idf/export.sh'
4      alias esp-update='echo "Updating ESP-IDF framework..." && cd $HOME/src/esp-idf && git pull --all && echo
5      ↪ "Updated successfully"'
6  else
7      alias esp-prepare-env='echo "esp-idf repo not found. You can clone the esp-idf repo using git clone
8      ↪ https://github.com/espressif/esp-idf.git"'
9      alias esp-update=esp-prepare-env
10 fi

```

10.7.6 CLI wttr.in client

Define an alias to get weather information for my city:

```
1 export WTTRIN_CITY=Orsay
2
3 alias wttrin='curl wttr.in/$WTTRIN_CITY'
4 alias wttrin2='curl v2.wttr.in/$WTTRIN_CITY'
```

10.7.7 Minicom

Enable Meta key and colors in minicom:

```
1 export MINICOM='-m -c on'
```

10.7.8 Rust

Define Rust sources path, and add packages installed from cargo to the PATH.

```
1 export RUST_SRC_PATH=$HOME/.rustup/toolchains/stable-x86_64-unknown-linux-gnu/lib/rustlib/src/rust/src/
2 export PATH=$PATH:$HOME/.cargo/bin
```

I'm using the AUR package `clang-format-static-bin`, which provide multiple versions of Clang-format, I use it with some work projects requiring a specific version of Clang-format.

10.7.9 Clang-format

```
1 export PATH=$PATH:/opt/clang-format-static
```

10.7.10 CMake

Add my manually installed libraries to CMake and PATH.

```
1 export CMAKE_PREFIX_PATH=$HOME/Softwares/src/install
2 export PATH=$PATH:$HOME/Softwares/src/install/bin
```

10.7.11 Node

Set NPM installation path to local:

```
1 NPM_PACKAGES="${HOME}/.npm-packages"
2
3 # Export NPM bin path
4 export PATH="$PATH:$NPM_PACKAGES/bin"
5
6 # Preserve MANPATH if you already defined it somewhere in your config.
7 # Otherwise, fall back to `manpath` so we can inherit from `/etc/manpath`.
8 export MANPATH="${MANPATH-$(manpath)}:$NPM_PACKAGES/share/man"
9
10 # Tell Node about these packages
11 export NODE_PATH="$NPM_PACKAGES/lib/node_modules:$NODE_PATH"
```

Tell NPM to use this directory for its global package installs by adding this in `~/.npmrc`:

```
1 prefix = ~/.npm-packages
```

Some useful stuff (fzf, opam, Doom Emacs...)

10.7.12 tmux

I like to use `tmux` by default, even on my local sessions, I like to start a `tmux` in a default session on the first time I launch a terminal, and then, attach any other terminal to this default session:

```
1 # If not running inside Emacs (via vterm/eshell...)
2 if [ -z $INSIDE_EMACS ]
3 then
4     if command -v tmux && /dev/null && [ -z "$TMUX" ]
5     then
6         tmux attach -t default || tmux new -s default
7     fi
8 fi
```

10.7.13 Other stuff

```
1 # You may need to manually set your language environment
2 # export LANG=en_US.UTF-8
3
4 # Preferred editor for local and remote sessions
5 # if [[ -n $SSH_CONNECTION ]]; then
6 #     export EDITOR='vim'
7 # else
8 #     export EDITOR='mvim'
9 # fi
10
11 # Compilation flags
12 # export ARCHFLAGS="-arch x86_64"
13
14 # FZF
15 [ -f ~/.fzf.zsh ] && source ~/.fzf.zsh
16
17 # OPAM configuration
18 [[ ! -r $HOME/.opam/opam-init/init.zsh ]] || source $HOME/.opam/opam-init/init.zsh > /dev/null 2> /dev/null
19
20 # Add ~/.config/emacs/bin to path (for DOOM Emacs stuff)
21 export PATH=$PATH:$HOME/.config/emacs/bin
```

Define some environment variables.

```
1 export DS_DIR=~/.PhD/datasets-no/experiment_images/
2 export DSO_BIN_DIR=~/.PhD/workspace-no/vo/orig/dso/build/release/bin
3 export DSO_RES_DIR=~/.PhD/workspace-no/vo/orig/dso_results
```

Load my bitwarden-cli session, exported to BW_SESSION.

```
1 source ~/.bitwarden-session
```

10.8 Rust format

For Rust code base, the file `$HOME/.rustfmt.toml` contains the global format settings, I like to set it to:

```

1  # Rust edition 2018
2  edition = "2018"
3
4  # Use Unix style newlines, with 2 spaces tabulation.
5  newline_style = "Unix"
6  tab_spaces = 2
7  hard_tabs = false
8
9  # Make one line functions in a single line
10 fn_single_line = true
11
12 # Format strings
13 format_strings = true
14
15 # Increase the max line width
16 max_width = 120
17
18 # Merge nested imports
19 merge_imports = true
20
21 # Enum and Struct alignment
22 enum_discrim_align_threshold = 20
23 struct_field_align_threshold = 20
24
25 # Reorder impl items: type > const > macros > methods.
26 reorder_impl_items = true
27
28 # Comments and documentation formating
29 wrap_comments = true
30 normalize_comments = true
31 normalize_doc_attributes = true
32 format_code_in_doc_comments = true
33 report_fixme = "Always"
34 todo = "Always"

```

10.9 eCryptfs

10.9.1 Unlock and mount script

```

1  #!/bin/sh -e
2  # This script mounts a user's confidential private folder
3  #
4  # Original by Michael Halcrow, IBM
5  # Extracted to a stand-alone script by Dustin Kirkland <kirkland@ubuntu.com>
6  # Modified by: Abdelhak Bougouffa <abougouffa@fedoraproject.org>
7  #
8  # This script:
9  # * interactively prompts for a user's wrapping passphrase (defaults to their
10 #   login passphrase)
11 # * checks it for validity
12 # * unwraps a users mount passphrase with their supplied wrapping passphrase
13 # * inserts the mount passphrase into the keyring
14 # * and mounts a user's encrypted private folder
15
16 PRIVATE_DIR="Private"
17 PW_ATTEMPTS=3
18 MESSAGE=`gettext "Enter your login passphrase:"`
19
20 if [ -f $HOME/.ecryptfs/wrapping-independent ]
21 then
22     # use a wrapping passphrase different from the login passphrase
23     MESSAGE=`gettext "Enter your wrapping passphrase:"`
24 fi
25
26 WRAPPED_PASSPHRASE_FILE="$HOME/.ecryptfs/wrapped-passphrase"
27 MOUNT_PASSPHRASE_SIG_FILE="$HOME/.ecryptfs/$PRIVATE_DIR.sig"

```

```

28
29 # First, silently try to perform the mount, which would succeed if the appropriate
30 # key is available in the keyring
31 if /sbin/mount.ecryptfs_private >/dev/null 2>&1
32 then
33     exit 0
34 fi
35
36 # Otherwise, interactively prompt for the user's password
37 if [ -f "$WRAPPED_PASSPHRASE_FILE" -a -f "$MOUNT_PASSPHRASE_SIG_FILE" ]
38 then
39     tries=0
40
41     while [ $tries -lt $PW_ATTEMPTS ]
42     do
43         LOGINPASS=`zenity --password --title "eCryptFS: $MESSAGE"`
44         if [ $(wc -l < "$MOUNT_PASSPHRASE_SIG_FILE") = "1" ]
45         then
46             # No filename encryption; only insert fek
47             if printf "%s\0" "$LOGINPASS" | ecryptfs-unwrap-passphrase "$WRAPPED_PASSPHRASE_FILE" - |
48             ↪ ecryptfs-add-passphrase -
49             then
50                 break
51             else
52                 zenity --error --title "eCryptfs" --text "Error: Your passphrase is incorrect"
53                 tries=$((tries + 1))
54                 continue
55             fi
56         else
57             if printf "%s\0" "$LOGINPASS" | ecryptfs-insert-wrapped-passphrase-into-keyring
58             ↪ "$WRAPPED_PASSPHRASE_FILE" -
59             then
60                 break
61             else
62                 zenity --error --title "eCryptfs" --text "Error: Your passphrase is incorrect"
63                 tries=$((tries + 1))
64                 continue
65             fi
66         fi
67     done
68
69     if [ $tries -ge $PW_ATTEMPTS ]
70     then
71         zenity --error --title "eCryptfs" --text "Too many incorrect password attempts, exiting"
72         exit 1
73     fi
74
75     /sbin/mount.ecryptfs_private
76 else
77     zenity --error --title "eCryptfs" --text "Encrypted private directory is not setup properly"
78     exit 1
79 fi
80
81 if grep -qs "$HOME/.Private $PWD ecryptfs " /proc/mounts 2>/dev/null; then
82     zenity --info --title "eCryptfs" --text "Your private directory has been mounted."
83 fi
84
85 dolphin "$HOME/Private"
86 exit 0

```

10.9.2 Desktop integration

```

1 [Desktop Entry]
2 Type=Application
3 Version=1.0
4 Name=eCryptfs Unlock Private Directory
5 Icon=unlock

```

```

6 Exec=/home/hacko/.ecryptfs/ecryptfs-mount-private-gui
7 Terminal=False

```

10.10 GDB

10.10.1 Early init

I like to disable the initial message (containing copyright info and other stuff), the right way to do this is either by starting `gdb` with `-q` option, or (since GDB v11 I think), by setting in `~/.gdbearlyinit`.

```

1 # GDB early init file
2 # Abdelhak Bougouffa (c) 2022
3
4 # Disable showing the initial message
5 set startup-quietly

```

10.10.2 Init

GDB loads `$HOME/.gdbinit` at startup, I like to define some default options in this file, this is a WIP, but it won't evolve too much, as it is recommended to keep the `.gdbinit` clean and simple. For the moment, it does just enable pretty printing, and defines the `c` and `n` commands to wrap `continue` and `next` with a post `refresh`, which is helpful with the annoying TUI when the program outputs to the stdout.

```

1 # GDB init file
2 # Abdelhak Bougouffa (c) 2022
3
4 # Save history
5 set history save on
6 set history filename ~/.gdb_history
7 set history remove-duplicates 2048
8
9 # Set pretty print
10 set print pretty on
11
12 # This fixes the annoying ncurses TUI glitches and saves typing C-l each time to refresh the screen
13 define cc
14     continue
15     refresh
16 end
17
18 define nn
19     next
20     refresh
21 end
22
23 guile
24 # The code from the next sub-section is will be included here
25 <<guile-check-for-script>>
26 end

```

WIP: Guile Scheme per-program or per-project script I often debug programs with a lot of arguments, I would like to be able to set the arguments and the binary file to be launched in a per-project basis. GDB support scripting in GDB Script, Python and Guile Scheme (currently I'm using the latter).

This bit of code checks if the `gdb.scm` file exists in the working directory, and if so, loads it.

A more flexible way is to provide per-program configuration files (to debug a program named `fft`, I like to create a script named `fft.scm` which gets loaded after the file). The following is a WIP, for the moment, I need to call my custom command `dbg-guile` when GDB done loading symbols from the file, otherwise, the used (`current-progspace`) returns an object with no filename. I need a mechanism to hook the (`dbg-find-and-load`) to GDB's load file functionality.


```

1 (use-modules (gdb))
2
3 (define (dbg-check-and-load filename)
4   (if (file-exists? filename)
5     (begin (display (string-append "Found a Guile Scheme script, loading file " filename "\n"))
6             (load filename)
7             #t)
8     #f))
9
10 (define (dbg-find-and-load)
11   ;; Get the program name from the current progspace
12   ;; For a program named "prog", the priorities goes like this:
13   ;; 1. a script with the same program name (prog.scm) exists in the current directory
14   ;; 2. a script with the same program name (prog.scm) exists in the program directory
15   ;; 3. a script with the name (gdb.scm) exists in the current directory
16   (let ((dbg-prg-filename (progspace-filename (current-progspace))))
17     (if dbg-prg-filename
18       (or (dbg-check-and-load (string-append (basename dbg-prg-filename) ".scm"))
19           (dbg-check-and-load (string-append dbg-prg-filename ".scm")))
20       (dbg-check-and-load "gdb.scm"))))
21
22 ;; Run by default
23 (dbg-find-and-load)
24
25 ;; Define a command to load binary specific config
26 (register-command! (make-command "dbg-guile" #:invoke (lambda (self arg from-tty) (dbg-find-and-load))))

```

In my project, I create a `gdb.scm` (or `<program-name>.scm`) with something like this:

```

1 ;; Load program executable
2 (execute "file ./build/bin/my_program")
3
4 ;; Load program arguments
5 (execute (string-join '("set args "
6                        "arg1"
7                        "--param=arg2"))))

```

10.11 GnuPG

I add this to my `~/.gnupg/gpg-agent.conf`, to set the time-to-live to one day.

```

1 # Do not ask me about entered passwords for 24h (during the same session)
2 default-cache-ttl 86400
3 max-cache-ttl 86400
4
5 # As I'm using KDE, use Qt based pinentry tool instead of default GTK+
6 pinentry-program /usr/bin/pinentry-qt
7
8 # Allow pinentry in Emacs minibuffer (combined with epq-pinentry-mode)
9 allow-loopback-pinentry
10 allow-emacs-pinentry

```

10.12 Packages

I like to use the BMC class, however, I do not like to manually install stuff in system directories, so I made an Arch Linux AUR package `bmc-git` for it.

I do use the `metropolis` theme for Beamer presentations, so I'm maintaining a package of it in the AUR too.

```

1 check_and_install_pkg () {
2   PKG_NAME="$1"
3   if ! pacman -Qiq ${PKG_NAME} &> /dev/null

```

```
4  then
5      echo "Package ${PKG_NAME} is missing, installing it using yay"
6      yay -S ${PKG_NAME}
7  fi
8  }
9
10 check_and_install_pkg bmc-git
11 check_and_install_pkg beamer-theme-metropolis
```

10.13 KDE Plasma

On KDE, there is a good support for HiDPI displays, however, I faced annoying small icons in some contexts (for example, a right click on desktop). This can be fixed by setting `PLASMA_USE_QT_SCALING=1` before starting KDE Plasma. KDE sources the files with `.sh` extension found on `~/.config/plasma-workspace/env`, so let's create ours.

```
1  export PLASMA_USE_QT_SCALING=1
```