

Emacs Beginner's Tutorial v1

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1 README

- This is a makeshift Emacs tutorial for absolute beginners to enable you to do the most basic things with Emacs as your text editor.
- For the best gain from this tutorial, open Emacs on the terminal (command line interface) with `emacs -nw -q` in non-graphics mode, without loading a customization file (like `.emacs` or `init.el`).
- You should be able to complete this tutorial in less than 1 hr - likely less than half the time of the more comprehensive Emacs onboard tutorial (reachable e.g. from the startup screen).
- Unlike the standard tutorial, this is an instruction file: you will do the editing in a separate text file whose content you will download.

2 Buffer and key basics

- An Emacs **buffer** has three parts:
 - The main **editing** area at the top (to edit text)
 - The **mode line** below it (file and buffer information)
 - The **minibuffer** at the bottom (for messages and input)
- Most commands are bound to keys beginning with `C-` (CTRL), or `M` (for "Meta", which is the `<ALT>` key on most keyboards).
- For example, `C-x C-f` means: hold down CTRL and press x and f. `M-<` means: hold down ALT + SHIFT + < all at the same time.

3 The mode line - basic buffer movement

1. Open a new file with `C-x C-f`. At the prompt, enter the file name: `tutor.txt` ¹.
2. The modeline shows (among other things):
 - A few dashes to indicate the edit status (`---`)
 - A file name (`text.txt`)

¹Alternatively, you can also open the file directly from the command line: `emacs --file tutor.txt`.

- How far down in the file you've come (**All** because it's empty)
 - The line number your cursor is on (e.g. **L1**)
 - The file mode (**Text**)
3. Open a browser, open at tinyurl.com/22rt7t2f and save the file as `text.txt` in your downloads directory - `c:/User/yourname/Downloads`.
 4. In `tutor.txt`, enter `C-x i` and insert the file `text.txt` from its location, `Downloads`. If you mess up (at any time), type `C-g` to quit any command sequence:

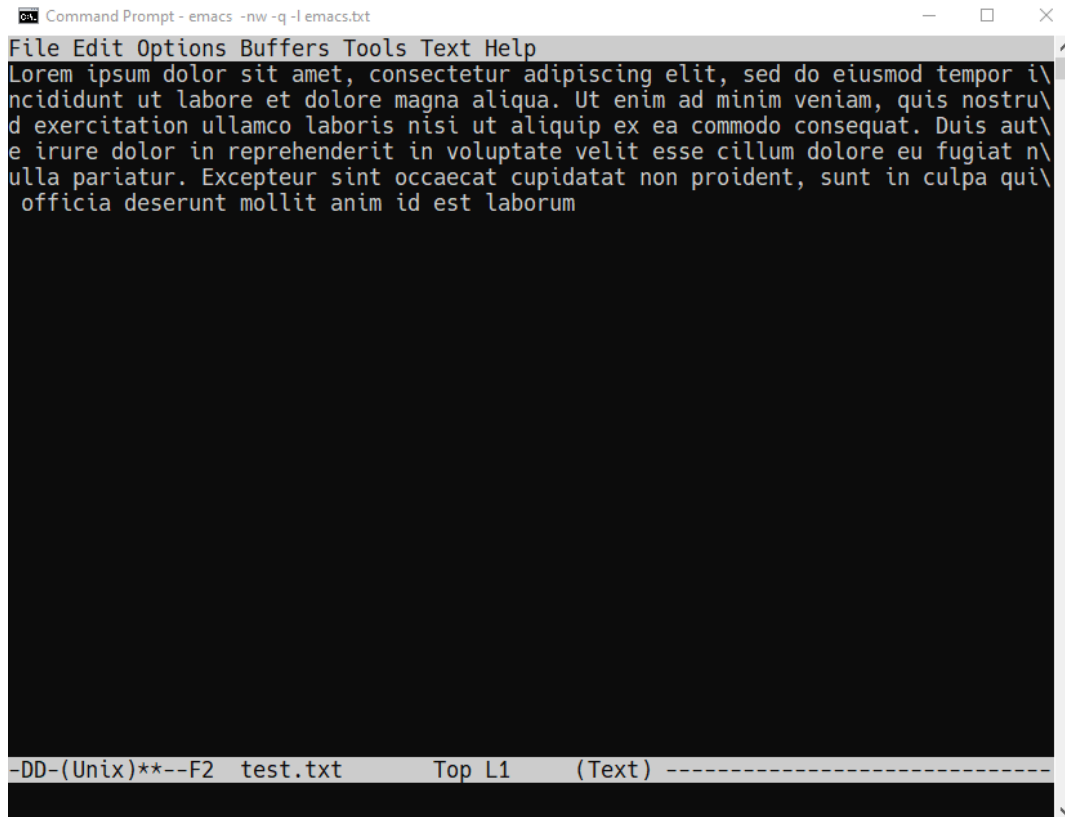


Figure 1: Inserting a text file into buffer with `C-x i`

5. The mode line now indicates that the file has been changed: `**--`
6. Save the file with `C-x C-s`. You should get a confirmation in the minibuffer, alongside the full path to the file, e.g.

Wrote `c:/Users/birkenkrahe/tutor.txt`

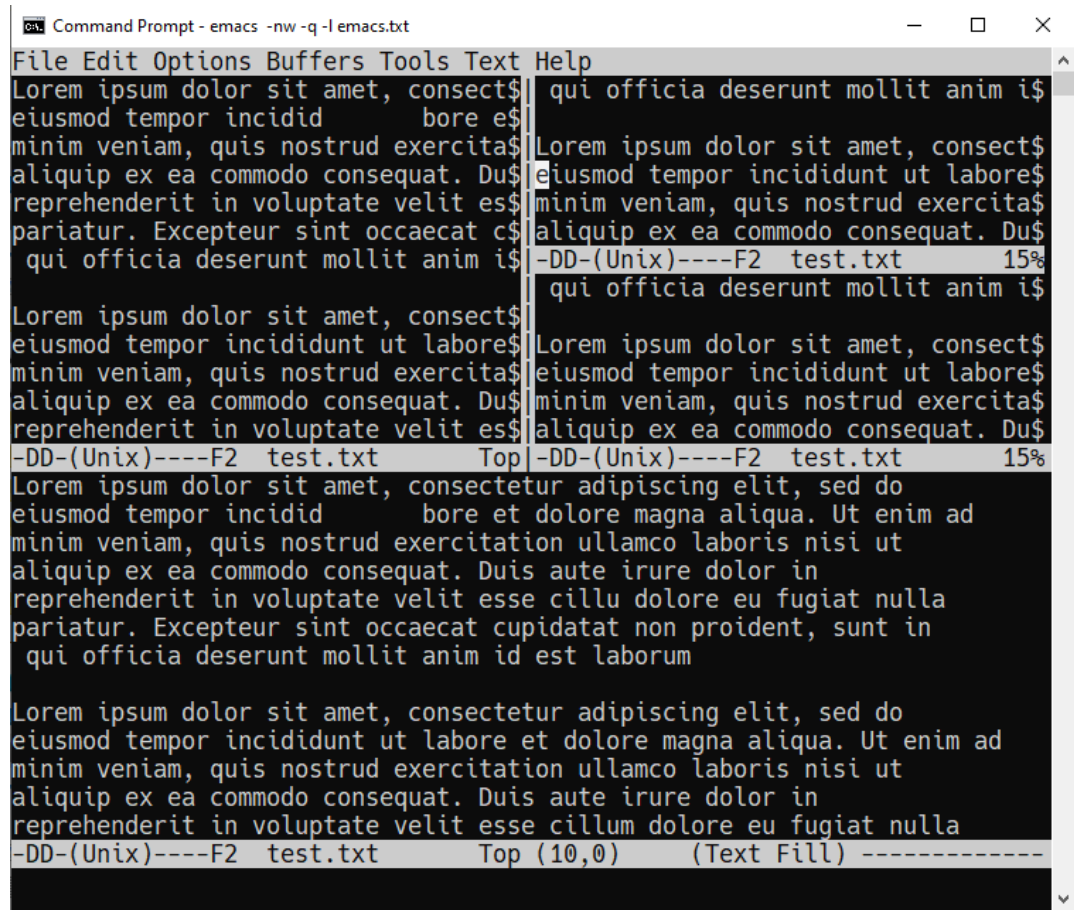
7. The text is saved as one long line. Go to the start of the line with `C-a`, then to the end with `C-e`.
8. Go back on the line with `C-b`, and forward with `C-f` (one character), or with `M-b` and `M-f` (one word).
9. Type `M-x column <TAB> <RET>` (that's `ALT + column + Tab-key + Enter`). The command completes to `M-x column-number-mode`. In the mode line, you will now see both row and column number of the cursor position.
10. This last command "toggles", which means that you can switch it on/off by repeating the command. Try that a couple of times.

4 Splitting windows

You can split windows any way you like.

1. Split the window horizontally with `C-x 2`.
2. Split the window you're in vertically with `C-x 3`.
3. Move between windows with `C-x o`².
4. Delete all but the current window with `C-x 1`.
5. Recreate the following window setup:

²There are packages that make window movement easier - e.g. I use the `ace-window` package. You can install and update Emacs packages with the package manager (`M-x package-list-packages`).



5 Indentation, lines, paragraphs, undo

1. To distribute the text over more than one line, enter `M-q`, or `M-x fill-paragraph`: this command will fill the text in lines (max 70 characters)³.
2. You can also toggle `M-x auto-fill-mode`, which will fill the paragraph any time you're at the end of a line.
3. Test that: go to the end of the current paragraph, enter a new (empty) line and insert the text from `test.txt` once again.

³You can change the `fill-column` value to any other value > 0 .

4. Enable `auto-fill-mode`, go to the end of the new line you just inserted, and press `<RET>`. The paragraph should be filled just so.
5. You probably want to see this again! Type `C-x u` (or `C-/` or `C-_`) to undo the last operation, then press `<RET>` again.
6. `C-x` commands can be repeated as often as you wish. For example, to go back 4 steps, enter `C-u 4 C-x u`.
7. Now you have multiple lines. To go up and down them, use `C-p` (up/previous) and `C-n` (down/next). How would you go up 10 lines? Right: `C-u 10 C-p`.
8. Add the `text.txt` files another three times. Each time:
 - `C-x i text.txt` to insert
 - `C-e` to go to the end of the line
 - Press `<RET>` to auto-fill paragraph
9. To scroll one page down in this large file, use `C-v`. To scroll up, use `M-v`.
10. To go to the top of the file, enter `M-<`. To go to the end of the file, enter `M->`.

6 Delete, copy, kill/cut, yank/paste text

1. You can delete the character under the cursor with `C-d`. Go ahead and delete some characters anywhere in the text.
2. You can delete forward by toggling `M-x overwrite-mode`. Try that: press the space bar (`<SPC>`) a few times with and without overwrite mode.
3. Switch overwrite mode off (no `Ovwr` in the mode line).
4. Highlight a region: mark the beginning of the region with `C-SPC` (minibuffer: `Mark set`), and then move the cursor to wherever you want to end it:
5. You can now run commands on the region, for example:
 - delete it `C-d`)

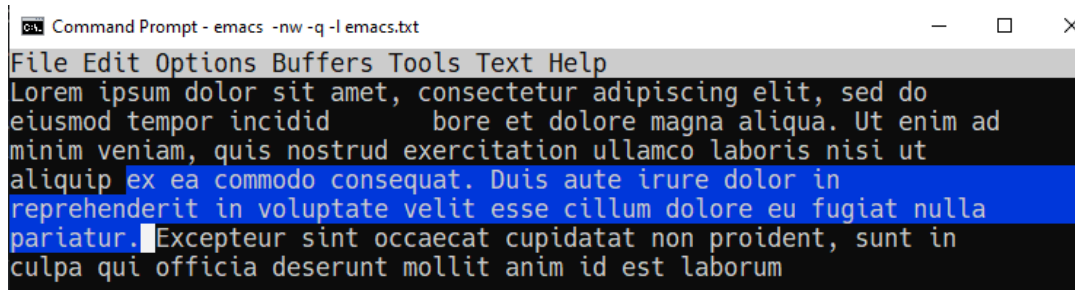
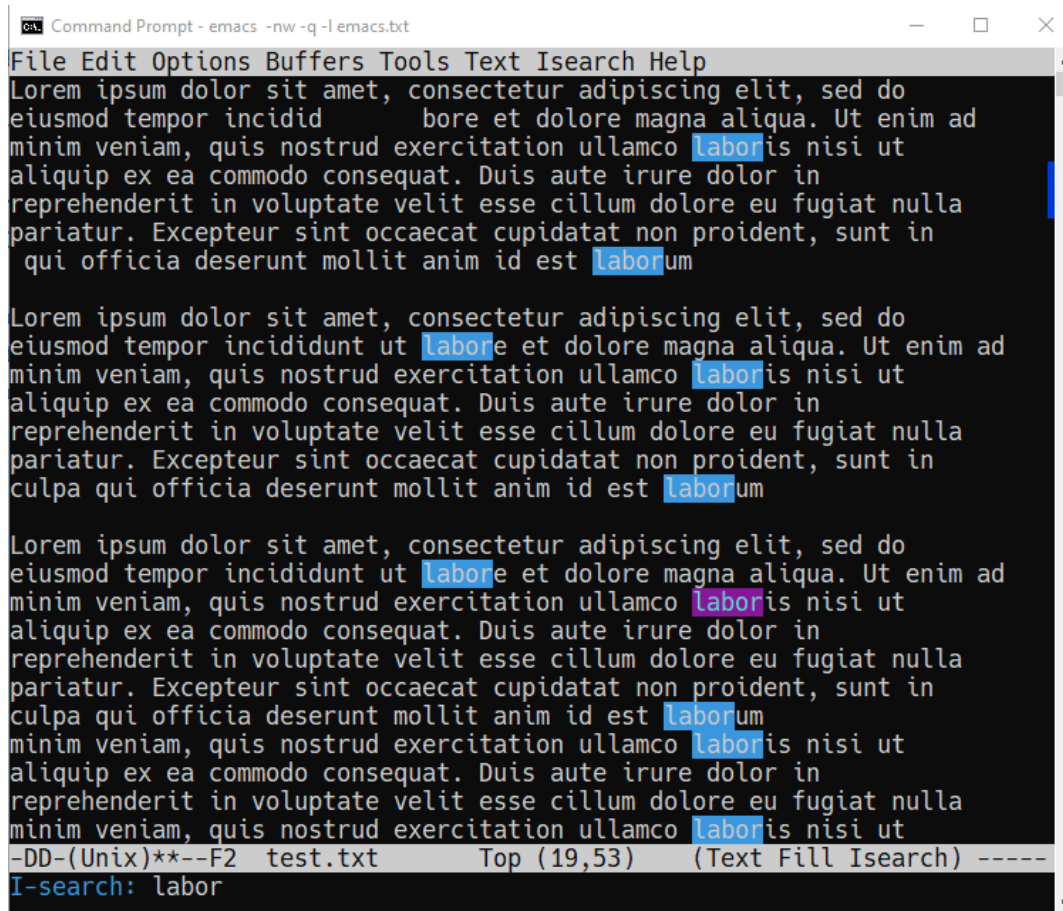


Figure 2: Highlight region after setting mark with C-SPC

- cut ("kill") it (C-w)
 - copy it (M-w)
 - paste ("yank") it (C-y)
6. To try this, mark a whole paragraph (beginning with **Lorem** and ending with **laborum**) and cut it (C-w).
 7. Move to the end of the buffer (M->) and yank the region there (C-y).
 8. Mark another paragraph and copy (M-w) it, then go to to the top of the buffer (M-<) and yank it (C-y).
 9. If you prefer to use the Windows key bindings (cut = C-x, copy = C-c and paste = C-v) you can toggle them with M-x cua-mode.
 10. However, cua-mode bindings will only be active when the mark is active, that is when a mark has been set or a region selected.

7 Searching up and down

1. Emacs supports "incremental" search: start it with C-s followed by the search term:
2. Search for **l**, and then add **o** for **lo**, backdelete and change it to **lu**, then backdelete and change it to **labor**. Repeat C-s to move through the found instances.
3. To end the search and get back where you started: C-g (quit). To stay where you found an instance: C-f.



The screenshot shows the Emacs editor window titled "Command Prompt - emacs -nw -q -l emacs.txt". The menu bar includes "File Edit Options Buffers Tools Text Isearch Help". The main text area contains three paragraphs of Lorem Ipsum. The word "labor" is highlighted in blue in the first paragraph, "labore" in the second, and "laborum" in the third. The status bar at the bottom shows "-DD-(Unix)*--F2 test.txt Top (19,53) (Text Fill Isearch) -----". Below the status bar, the text "I-search: labor" is displayed.

```
File Edit Options Buffers Tools Text Isearch Help
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do
eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad
minim veniam, quis nostrud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat. Duis aute irure dolor in
reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla
pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
qui officia deserunt mollit anim id est laborum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do
eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad
minim veniam, quis nostrud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat. Duis aute irure dolor in
reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla
pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
culpa qui officia deserunt mollit anim id est laborum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do
eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad
minim veniam, quis nostrud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat. Duis aute irure dolor in
reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla
pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
culpa qui officia deserunt mollit anim id est laborum
minim veniam, quis nostrud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat. Duis aute irure dolor in
reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla
minim veniam, quis nostrud exercitation ullamco laboris nisi ut
-DD-(Unix)*--F2 test.txt Top (19,53) (Text Fill Isearch) -----
I-search: labor
```

Figure 3: Incremental search with C-s

4. Search for **labor** again and keep going until the search wraps around the end of the buffer and goes back to the top.
5. Search backwards in the same manner with **C-r**. The minibuffer will tell you what kind of search you've got going, e.g. **Overwrapped I-search backward** when you incrementally searched past the buffer with **C-r**.
6. Stop the search and start it again: if you do not enter a search term but just type **C-s** or **C-r** again, the last search term will appear.

8 Directory and listing buffer

1. Remove all windows but one with **C-x 1**.
2. List the current directory with **C-x d** - this opens a new **Dired** ("Directory editor") buffer, which is very powerful.
3. **Dired** has a bunch of single letter commands. One is **s** to sort the files by name or time: toggle this by pressing **s** twice.
4. In the directory list, **.** stands for the current directory (the name of which appears at the top), and **..** stands for the next upper level directory.
5. When the cursor is on the line for that file or directory, you can:
 - rename it with **R**
 - copy it with **C** (upper case)
 - compress it (zip it) with **c** (lower case)
 - mark it for some other command with **m**
6. Now, you already have several buffers open, including the file **tutor.txt**, a **Dired** buffer, and others: display all open buffers in a separate window with **C-x C-b**.
7. Change to the ***Buffer List*** window with **C-x o**. Move the cursor on the line with ***scratch*** and press **<RET>** to open the ***scratch*** buffer.
8. Now enter **C-x b** and you see the message **Switch to buffer (default *Buffer List*)**: in the mini-buffer. If you press **<RET>**, you get back to the ***Buffer List***.

```

Command Prompt - emacs -nw -q -l emacs.txt
File Edit Options Buffers Tools Operate Mark Regexp Immediate Subdir Help ^
c:/Users/birkenkrahe:
total used in directory 25335 available 280 GiB
dr-xr-xr-x  1 SYSTEM      SYSTEM      4096 10-11 12:48 ..
drwxrwxrwx  1 Administrators SYSTEM      77824 01-16 17:42 .
dr-xr-xr-x  1 Birkenkrahe None           0 2021-08-05 3D Objects
drwxrwxrwx  1 Birkenkrahe None           0 2021-10-27 .android
drwxrwxrwx  1 Birkenkrahe None           0 2021-08-05 AppData
drwxrwxrwx  1 Birkenkrahe None          8192 12-31 20:53 Application D\
ata
-rw-rw-rw-  1 Birkenkrahe None           266 2022-05-08 .authinfo
-rw-rw-rw-  1 Birkenkrahe None          6367 12-09 10:55 .bash_history
-rw-rw-rw-  1 Birkenkrahe None           29 12-07 11:21 .bash-profile
-rw-rw-rw-  1 Birkenkrahe None          1439 11-14 15:22 BasicSummary

-DD1\%*--F2 birkenkrahe Top (7,59) (Dired by name) -----
CRM Buffer Size Mode File
.%* birkenkrahe 9872 Dired by name ~/
% Users 1007 Dired by name c:/Users/
test.txt 2727 Text ~/test.txt
% *Help* 1090 Help
text.txt 445 Text ~/text.txt
* t.txt 47368 Text ~/t.txt
% *GNU Emacs* 950 Fundamental
*scratch* 145 Lisp Interaction
%* *Messages* 9498 Messages
% *Disabled Command* 759 Help
%* *Completions* 207 Completion List

-DD1\%*--F2 *Buffer List* All (1,0) (Buffer Menu) -----

```

Figure 4: C-x C-b opens the **Buffer List** in a separate buffer

9. Enter `C-x b` again, but this time type `C-p` when the cursor is in the mini-buffer: the buffer you were in before that (the **Dired** buffer) is suggested. With `C-p` you can get to previous, with `C-n` to the next default until the list is at an end.
10. Using `C-x b`, return to the `tutor.txt` buffer and delete all other windows with `C-x 1`.

9 Open shell, write, export, time stamp file

To close, there are a few special environments worth noting - you'll be using them plenty later on:

1. `M-x eshell` opens a Linux-style shell. In the shell, at the prompt `$`, enter `pwd` - the answer should be the location of your `tutor.txt` file. You can also compile files in this shell.
2. Return to `tutor.txt`. Write the file to an Org-mode file `tutor.org` with `C-x C-w`: at the prompt in the minibuffer enter this name. The mode line will now list `tutor.org` and the mode (**Org**) instead of `tutor.txt` and the mode (**Text**).
3. Go to the top of the file (`M-<`), create an empty line and write into it: `* Headline` - the space between `*` and the text is important!
4. Org-files can be exported in a variety of file formats: **HTML**, **LaTeX**, **ODT**, **text** and more. Enter `C-c C-e` to open the Org-file export dispatcher. When the prompt **Export command:** in the mini-buffer appears, enter `h o` - the text will be opened as an HTML file in your default browser:
5. Remove all content from the file and save the empty file:
 - Mark whole buffer with `C-x h`
 - Delete with `C-d` or the backdelete key
 - Save file with `C-x C-s`
6. Insert these lines at the top of the buffer:

```
#+TITLE: Emacs Tutorial
#+AUTHOR: YourName [PLEGDED]
Time-stamp: <>
```

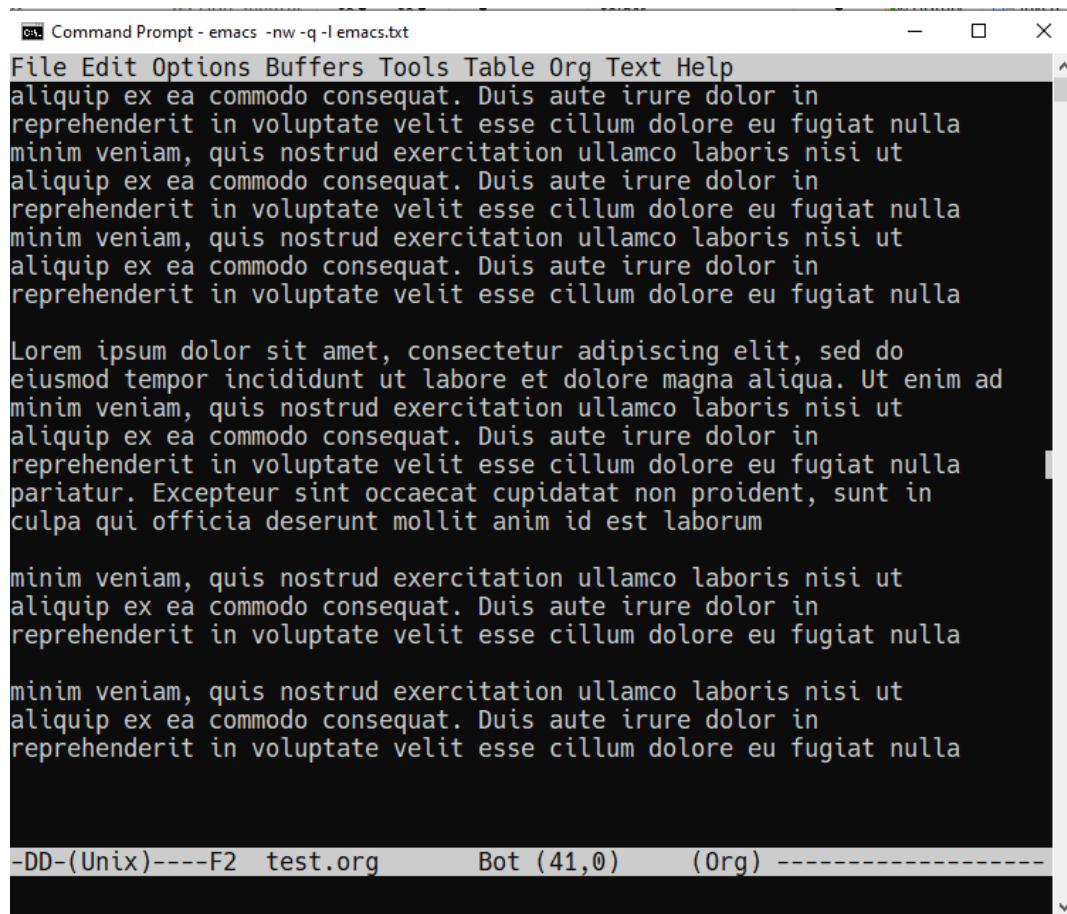


Figure 5: Modeline changes after writing the file as Org-file

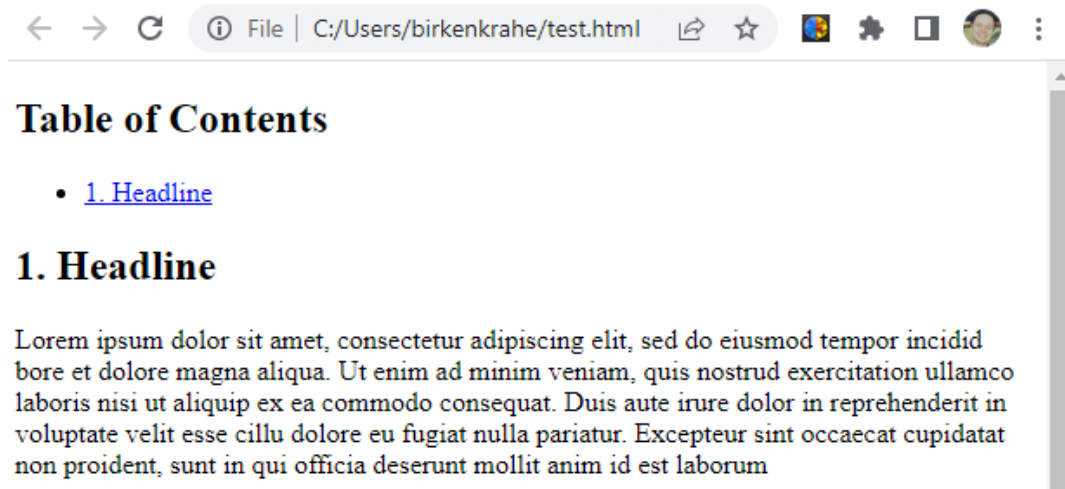


Figure 6: Top of Org-file dispatched as HTML with `C-x C-e h o`

7. Recall that "**Pledged**" means that you have actually completed the tutorial along the lines of the instructions and in good faith as laid out in the Lyon College Honor Pledge.
8. Insert a time stamp with the command `M-x time-stamp`:
9. Save the file with `C-x C-s` and submit it in Canvas.

10 Getting help

1. For the full tutorial experience, open the Emacs tutorial (link on start page, or `C-h t`). In class, we're going to start your home assignment with a self-made tutorial.
2. There is also complete self-documentation in hypertext stored inside Emacs. To access this system, enter `C-x i`. Info files expand into HTML files and are also available on the Web.
3. Note: you can open any Web page in Emacs with `M-x eww URL`.
4. To get help on a key binding, use `C-h k` and type the key.
5. To get help on a function, use `C-h f` and enter the function.
6. To get fuzzy help on anything, use `C-h a` followed by the term.

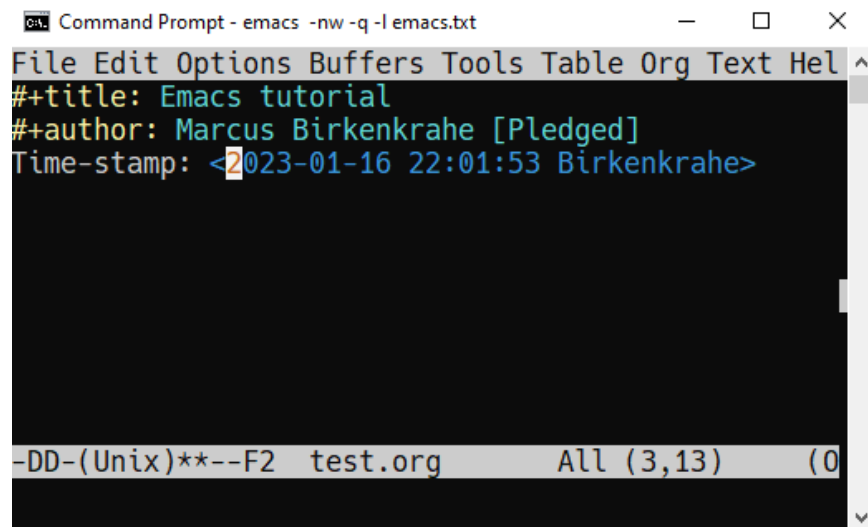


Figure 7: Inserting a time stamp in the Org-file with M-x time-stamp

11 Looking up online help

1. open the GNU Emacs home page in Emacs: M-x `eww` RET and give `gnu emacs` as the keyword.
2. open the Google search page in Emacs: M-x `eww` RET followed by `google.com`.
3. Look up the help for the undo command C-/.
4. Look up the help for the `undo` function.
5. Look up the help for `url` then open the browser on the URL (with C-c C-o): <https://tinyurl.com/3j5ddtuk>

12 More information: video, refcard, FAQs

- My notes for the video (2021) "Absolute Beginner's Guide to Emacs"
- GNU Emacs reference card (PDF)
- My FAQ: enter `emacs` in the search field

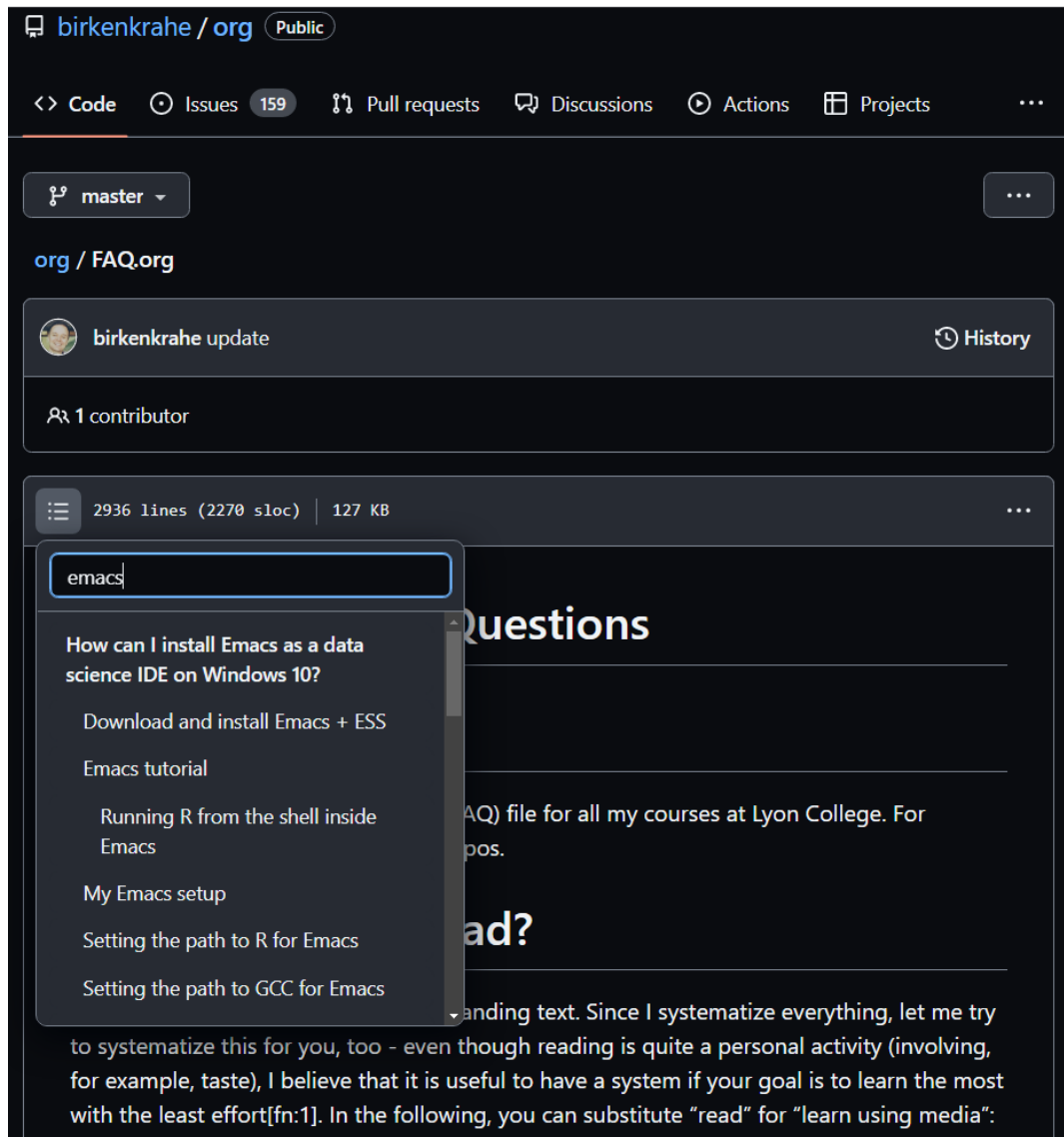


Figure 8: Searching for headlines with "Emacs" in the FAQ file

13 Glossary / Emacs cheat sheet

Here is the PDF version of the cheat sheet.

TERM/KEY	Meaning
buffer	holds text
minibuffer	messages and input
mode line	buffer information
C-x C-f	find-file
C-x i	insert-file
C-g	keyboard-quit
C-x C-s	save-buffer
C-a, C-e	start, end of line
C-f, C-b	forward-char , backward-char
M-f, M-b	forward-word , backward-word
M-<, M->	beginning, end of buffer
M-q	fill-paragraph
C-x u	undo last step
C-v, M-v	scroll up, down
M-<, M->	top, bottom of buffer
C-SPC	set mark (for region)
C-w (C-x)	cut/kill region (CUA)
C-y (C-v)	paste/yank region (CUA)
C-w (C-c)	copy region (CUA)
C-x 1	current window only
C-x 2	split window horizontally
C-x 3	split window veritically
C-x o	go to other window
C-x d	list directories (dired)
C-x C-b	list buffers
C-x b	switch to (last) buffer
M-x eshell	open (Linux-style) shell
C-c C-e	open Org export dispatch
C-c C-v t	org-babel-tangle file ⁴
<F6>, <F7>	display, hide inline files

⁴This operation refers to extracting source code from a code block. The header command `:tangle yes` has to be set.

14 Acknowledgements

I'm indebted to Jacob Strickland and Jacob Wolfrom for testing the first version, for their careful reading and for many comments that helped improve this tutorial.