

# Course Overview Practice Assignments

## Introduction to Programming - Spring 2023 - Lyon College

Marcus Birkenkrahe

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### Class Practice: first C program (due Jan 20)



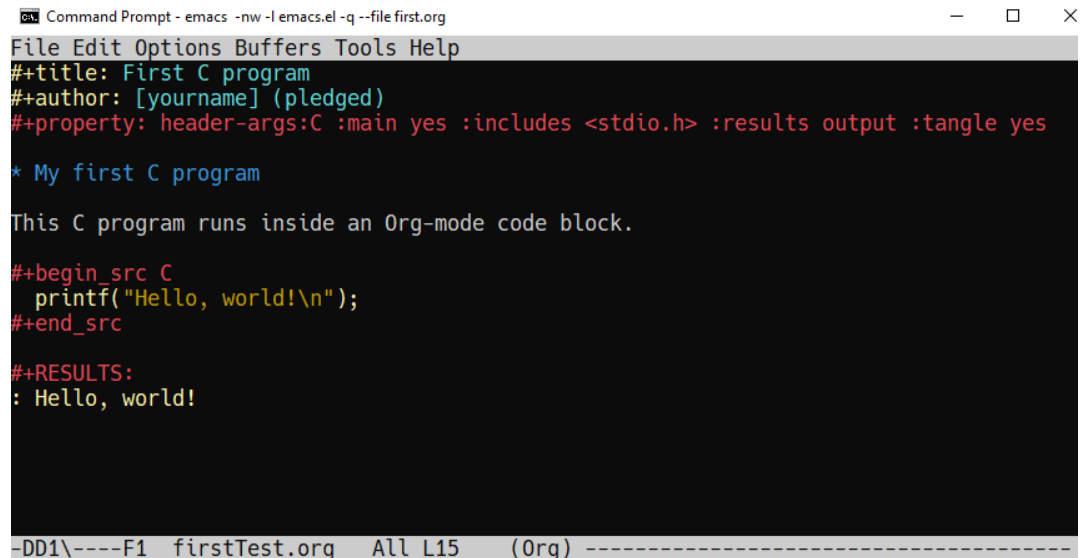
Figure 1: Books aren't the only way to be "literate" in programming!

(You can find a PDF of this exercise on GitHub)

Let's set Emacs up, write and run a first "literate" C program!

1. Open the command line terminal with `CMD` in the search field
2. At the prompt, type `gcc --version`
3. Open <https://github.com/birkenkrahe/org/> in a browser
4. Navigate to the repository `emacs` in GitHub
5. Click on the file name `.emacs` to open it

6. Open the **Raw** version of this file (there's a button)
7. Right click to **Save as** and save file as **emacs.txt** in **/Downloads**
8. Open a terminal by entering **CMD** in the Windows search bar
9. Pin the terminal to your taskbar
10. At the prompt, enter **DIR emacs.txt** - you should see the file
11. At the prompt, enter **emacs --version**
12. Enter **emacs -nw -l emacs.txt**
13. Inside Emacs, click <F10> and **ENTER** to open a new file
14. At the prompt at the bottom of the screen, enter **first.org**
15. Enter the following text (replace **yourname** with your own name):

A screenshot of the Emacs editor window. The title bar reads "Command Prompt - emacs -nw -l emacs.el -q --file first.org". The menu bar includes "File Edit Options Buffers Tools Help". The content area shows Org-mode header information: "#+title: First C program", "#+author: [yourname] (pledged)", and "#+property: header-args:C :main yes :includes <stdio.h> :results output :tangle yes". Below this is a section titled "\* My first C program" containing the text "This C program runs inside an Org-mode code block." followed by a C code block: "#+begin\_src C", "printf(\"Hello, world!\\n\");", "#+end\_src", and a results section: "#+RESULTS:", ": Hello, world!". The status bar at the bottom shows "-DD1\\----F1 firstTest.org All L15 (Org) -----".

```
Command Prompt - emacs -nw -l emacs.el -q --file first.org
File Edit Options Buffers Tools Help
#+title: First C program
#+author: [yourname] (pledged)
#+property: header-args:C :main yes :includes <stdio.h> :results output :tangle yes

* My first C program

This C program runs inside an Org-mode code block.

#+begin_src C
printf("Hello, world!\\n");
#+end_src

#+RESULTS:
: Hello, world!

-DD1\\----F1 firstTest.org All L15 (Org) -----
```

16. Run the program by putting the cursor anywhere on the code block and typing **CTRL-c CTRL-c** (or **C-c C-c**)
17. Tangle the code with **C-c C-v t** (or **M-x org-babel-tangle**)
18. Open a shell (terminal program) with **ALT-x eshell**

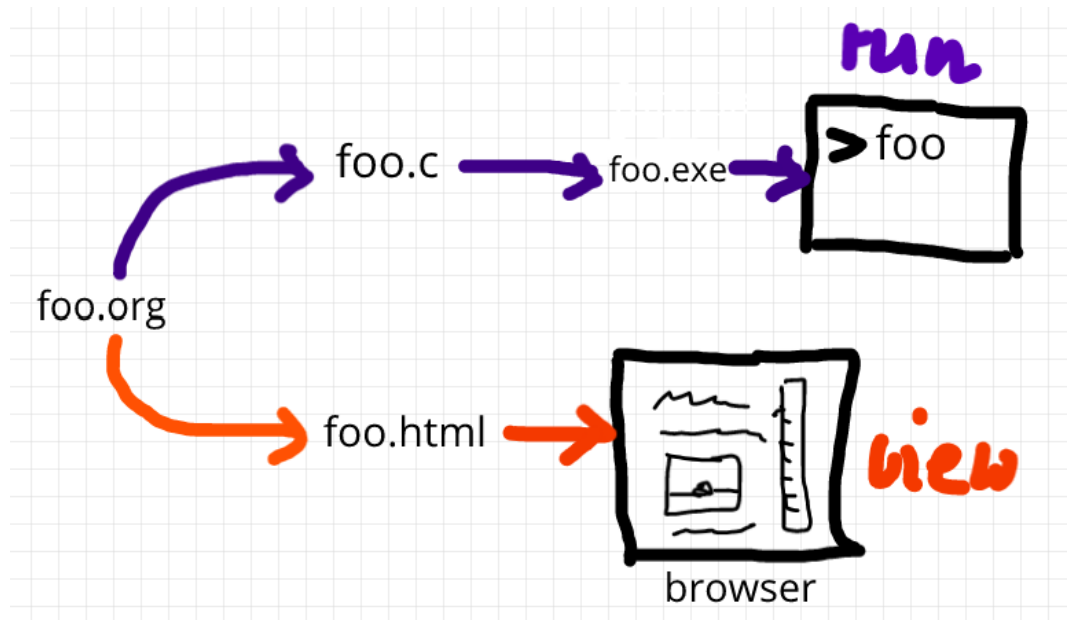


Figure 2: What happens when you tangle or weave a literate program

19. At the prompt, enter `ls -l first*` - you should see `first.C`
20. Enter `gcc first.C -o hello`
21. Enter `hello` to run the program.
22. Upload `first.org` as your first in-class assignment to Canvas!

## Home Assignment: Emacs tutorial (due Jan 23)

1. Open Emacs from the terminal application with `emacs -nw`
2. Open the Emacs tutorial (link on start page, or `C-h t`)
3. Complete the Emacs tutorial (start in class)
4. Insert these two lines at the top of the buffer:

```
STUDENT: YourName [PLEGDED]
Time-stamp: <>
```

```
Command Prompt - emacs -nw -q -l emacs.txt
File Edit Options Buffers Tools Help
Welcome to GNU Emacs, a part of the GNU operating system.
To follow a link, click Mouse-1 on it, or move to it and type RET.
To quit a partially entered command, type Control-g.

Important Help menu items:
Emacs Tutorial      Learn basic Emacs keystroke commands
Read the Emacs Manual View the Emacs manual using Info
(Non)Warranty       GNU Emacs comes with ABSOLUTELY NO WARRANTY
Copying Conditions  Conditions for redistributing and changing Emacs
More Manuals / Ordering Manuals How to order printed manuals from the FSF

Useful tasks:
Visit New File      Specify a new file's name, to edit the file
Open Home Directory Open your home directory, to operate on its files
Customize Startup    Change initialization settings including this screen

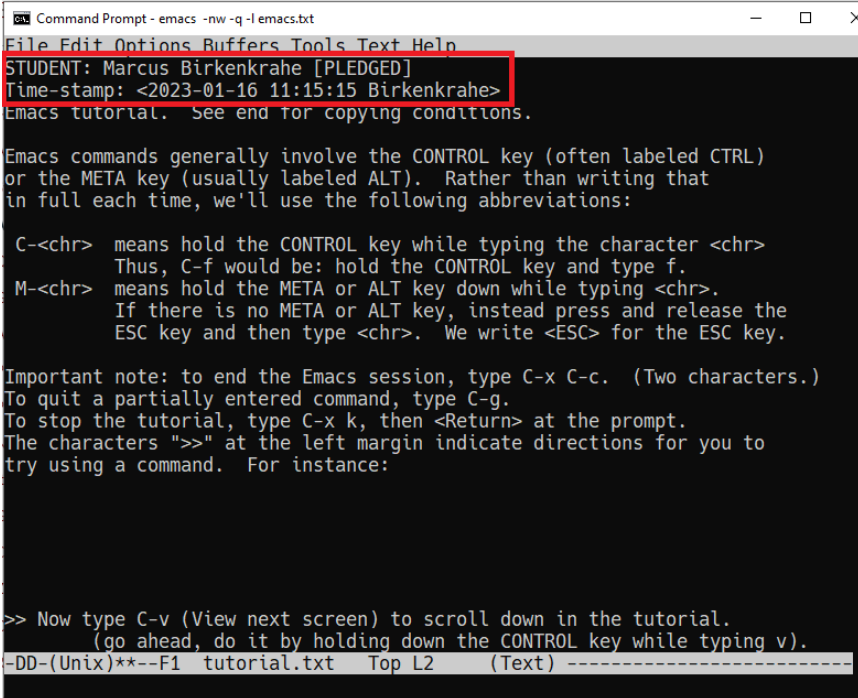
GNU Emacs 28.2 (build 2, x86_64-w64-mingw32)
of 2022-09-13
Copyright (C) 2022 Free Software Foundation, Inc.

If an Emacs session crashed recently, type M-x recover-session RET
to recover the files you were editing.

-DD1\%%--F1 *GNU Emacs* All L23 (Fundamental) -----
```

Figure 3: Emacs startup screen (M-x about-emacs) in no-window mode

5. Remember 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.
6. While visiting the buffer, insert a time stamp with the command `M-x time-stamp`. Save the file with `C-x C-w` as a file `tutorial.txt` file and submit it in Canvas. The top of the submission should look like this (with your name and your time stamp, not mine - the added text was marked in red by me):



```
Command Prompt - emacs -nw -q -l emacs.txt
File Edit Options Buffers Tools Text Help
STUDENT: Marcus Birkenkrahe [PLEGDED]
Time-stamp: <2023-01-16 11:15:15 Birkenkrahe>
Emacs tutorial. See end for copying conditions.

Emacs commands generally involve the CONTROL key (often labeled CTRL)
or the META key (usually labeled ALT). Rather than writing that
in full each time, we'll use the following abbreviations:

C-<chr> means hold the CONTROL key while typing the character <chr>
Thus, C-f would be: hold the CONTROL key and type f.
M-<chr> means hold the META or ALT key down while typing <chr>.
If there is no META or ALT key, instead press and release the
ESC key and then type <chr>. We write <ESC> for the ESC key.

Important note: to end the Emacs session, type C-x C-c. (Two characters.)
To quit a partially entered command, type C-g.
To stop the tutorial, type C-x k, then <Return> at the prompt.
The characters ">>" at the left margin indicate directions for you to
try using a command. For instance:

>> Now type C-v (View next screen) to scroll down in the tutorial.
    (go ahead, do it by holding down the CONTROL key while typing v).
-DD-(Unix)**--F1 tutorial.txt Top L2 (Text) -----
```

Figure 4: Author, pledged and time stamp at top of completed Emacs tutorial