

# FOAR705 - Learning Journal Week 5 - Software Carpentry Exercises

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Week 5: 23/8/19 - 29/8/19

## 28/8/19 - 2:15pm

Beginning the exercises in Software Carpentry. Some key points in the **Introducing the Shell** lesson.

- There are different ways to interact with a computer:
  - Graphical user interface (GUI) which normally uses a mouse.
  - Command-line interface which requires the knowledge of commands.
- The Shell is a program which runs other programs than doing calculations itself.
- The shell's main advantages are its high action-to-keystroke ratio, its support for automating repetitive tasks, and its capacity to access networked machines.
- The shell's main disadvantages are its primarily textual nature and how cryptic its command and operation can be.

## 28/8/19 - 2:32pm

Continuing on with the next lesson **Navigating Files and Directories**. Below are some useful commands.

```
pwd (Tells us which directory we are in)
ls (Gives a listing in the directory)
-F (Is a switch or a flag)
man ls (Brings up a manual)
```

**28/8/19 - 3:03pm**

Below is the exercise *Exploring More ls Flags*

**Objective:** See what happens when I use both the -l and -h option.

**Action:**

- Entered the command

```
ls -l
```

- Entered the command

```
ls -l -h
```

- Entered the command

```
ls -h
```

**Error:** None.

**Result:** The -l command makes the listing a long format. The -h and -l option makes it more readable for a human.

```
janakin — -bash — 89x28
Last login: Wed Aug 28 14:51:30 on ttys000
[Janakins-MacBook-Pro:~ janakin$ ls -l
total 0
drwx-----@ 3 janakin  staff   96 30 Aug  2018 Applications
drwx-----+ 18 janakin  staff  576 27 Aug 19:49 Desktop
drwx-----+ 18 janakin  staff  576 26 Jul 20:02 Documents
drwx-----+ 139 janakin staff 4448 28 Aug 00:48 Downloads
drwx-----@ 73 janakin  staff 2336 10 Apr 13:13 Library
drwx-----+ 7 janakin   staff  224  9 Aug  2018 Movies
drwx-----+ 10 janakin  staff  320 29 Mar 00:32 Music
drwx-----+ 25 janakin  staff  800  3 Jul 13:15 Pictures
drwxr-xr-x+  5 janakin  staff  160 27 Aug  2018 Public
[Janakins-MacBook-Pro:~ janakin$ ls -l -h
total 0
drwx-----@ 3 janakin  staff   96B 30 Aug  2018 Applications
drwx-----+ 18 janakin  staff  576B 27 Aug 19:49 Desktop
drwx-----+ 18 janakin  staff  576B 26 Jul 20:02 Documents
drwx-----+ 139 janakin staff  4.3K 28 Aug 00:48 Downloads
drwx-----@ 73 janakin  staff  2.3K 10 Apr 13:13 Library
drwx-----+ 7 janakin   staff  224B  9 Aug  2018 Movies
drwx-----+ 10 janakin  staff  320B 29 Mar 00:32 Music
drwx-----+ 25 janakin  staff  800B  3 Jul 13:15 Pictures
drwxr-xr-x+  5 janakin  staff  160B 27 Aug  2018 Public
[Janakins-MacBook-Pro:~ janakin$ ls -h
Applications  Documents  Library    Music      Public
Desktop       Downloads  Movies     Pictures
Janakins-MacBook-Pro:~ janakin$
```

28/8/19 - 3:10pm

Continuing on with the exercise *Listing Recursively and By Time*

**Objective:** Find out what order `ls -R -t` displays things.

**Action:** Entered the command

```
ls -R -t
```

**Error:** None.

**Result:** Not sure what quite happened but it did list ALOT of things. The solution on Software Carpentry says that it sorts it by time of last change.

```
janakin — -bash — 89x28

./Movies/Final Cut Backups.localized/Ohne Titel/20180916_1632_GMT+10.fcpbundle/Motion Templates.localized:

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle:
Settings.plist                      CurrentVersion.flexolibrary
__BackupInfo.plist                 Motion Templates.localized
__AsyncCopying                     CurrentVersion.plist
FFA C Licence

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle/__AsyncCopying:
Info.plist

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle/FFA C Licence:
FFA C Licence                      CurrentVersion.fcpevent Original Media

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle/FFA C Licence/FFA C Licence:
CurrentVersion.fcpevent

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle/FFA C Licence/Original Media:

./Movies/Final Cut Backups.localized/Ohne Titel/20180809_1152_GMT+10.fcpbundle/Motion Templates.localized:
Janakins-MacBook-Pro:~ janakin$
```

**28/8/19 - 3:24pm**

Have kept on following the instructions of the lesson and the only problem that I have encountered a typo error I entered.

```
data-shell — -bash — 79x55
Last login: Wed Aug 28 15:01:46 on ttys000
Janakins-MacBook-Pro:~ janakin$ ls -F Desktop
190311 NEC 015 - Sydney FC 015 - Original.mp4*
190311 NEC 017 - Sydney FC 017 - Original.mp4*
IMG_3666.jpg
IMG_3695.jpg
MVI_0181.MP4*
Nikki/
Nikki USB/
Player Interviews/
Player Interviews.zip
Screen Shot 2019-08-23 at 11.20.21 am.png
data-shell/
dogs/
Janakins-MacBook-Pro:~ janakin$ ls -F Desktop/data-shell
creatures/          north-pacific-gyre/      solar.pdf
data/               notes.txt               writing/
molecules/         pizza.cfg
Janakins-MacBook-Pro:~ janakin$ cd Desktop
Janakins-MacBook-Pro:Desktop janakin$ cd data-shell
Janakins-MacBook-Pro:data-shell janakin$ cd data
Janakins-MacBook-Pro:data janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:data janakin$ ls
amino-acids.txt  animals.txt  morse.txt  planets.txt  sunspot.txt
animal-counts  elements  pdb  salmon.txt
Janakins-MacBook-Pro:data janakin$ cd data-shell
-bash: cd: data-shell: No such file or directory
Janakins-MacBook-Pro:data janakin$ cd..
-bash: cd.: command not found
Janakins-MacBook-Pro:data janakin$ cd ..
Janakins-MacBook-Pro:data-shell janakin$ pwd
/Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:data-shell janakin$ ls -F -a
./          data/          pizza.cfg
../         molecules/     solar.pdf
.bash_profile  north-pacific-gyre/  writing/
creatures/    notes.txt
Janakins-MacBook-Pro:data-shell janakin$ cd
Janakins-MacBook-Pro:~ janakin$ pwd
/Users/janakins
Janakins-MacBook-Pro:~ janakin$ cd Desktop/data-shell/data
Janakins-MacBook-Pro:data janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:data janakin$ ls -F
amino-acids.txt  elements/  planets.txt
animal-counts/  morse.txt  salmon.txt
animals.txt      pdb/       sunspot.txt
Janakins-MacBook-Pro:data janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:data janakin$ cd /Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:data-shell janakin$ pwd
/Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:data-shell janakin$
```

28/8/19 - 3:30pm

Doing the exercise *Absolute vs Relative Paths*

Amanda can only use these commands to navigate to the home directory.

```
cd ~  
cd ~/data/..  
cd  
cd ..
```

**28/8/19 - 3:32pm**

Doing the exercise *Relative Path Resolution*

If

```
pwd
```

displays

```
/Users/thing
```

then

```
ls -F ../backup
```

will display

```
original/ pnas_final/ pnas_sub/
```

**28/8/19 - 3:35pm**

Doing the exercise *ls Reading Comprehension*

The correct answer is

```
ls -r -F  
ls -r -F /Users/backup
```

28/8/19 - 3:38pm

Continuing with the lesson. Below is a screenshot of my Terminal progress.

```
data-shell — -bash — 79x55
molecules/          pizza.cfg
Janakins-MacBook-Pro:~ janakin$ cd Desktop
Janakins-MacBook-Pro:Desktop janakin$ cd data-shell
Janakins-MacBook-Pro:Desktop janakin$ cd data
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:Desktop janakin$ ls
amino-acids.txt  animals.txt      morse.txt        planets.txt       sunspot.txt
animal-counts   elements         pdb              salmon.txt
Janakins-MacBook-Pro:Desktop janakin$ cd data-shell
-bash: cd: data-shell: No such file or directory
Janakins-MacBook-Pro:Desktop janakin$ cd..
-bash: cd..: command not found
Janakins-MacBook-Pro:Desktop janakin$ cd ..
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:Desktop janakin$ ls -F -a
./          data/          pizza.cfg
../         molecules/     solar.pdf
.bash_profile  north-pacific-gyre/  writing/
creatures/    notes.txt
Janakins-MacBook-Pro:Desktop janakin$ cd
Janakins-MacBook-Pro:~ janakin$ pwd
/Users/janakins
Janakins-MacBook-Pro:~ janakin$ cd Desktop/data-shell/data
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:Desktop janakin$ ls -F
amino-acids.txt  elements/        planets.txt
animal-counts/  morse.txt        salmon.txt
animals.txt     pdb/             sunspot.txt
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell/data
Janakins-MacBook-Pro:Desktop janakin$ cd /Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:Desktop janakin$ pwd
/Users/janakins/Desktop/data-shell
Janakins-MacBook-Pro:Desktop janakin$ ls north-pacific-gyre/2012-07-03/
NENE01729A.txt  NENE01812A.txt  NENE01978B.txt  NENE02043A.txt
NENE01729B.txt  NENE01843A.txt  NENE02018B.txt  NENE02043B.txt
NENE01736A.txt  NENE01843B.txt  NENE02040A.txt  gooddiff
NENE01751A.txt  NENE01971Z.txt  NENE02040B.txt  goostats
NENE01751B.txt  NENE01978A.txt  NENE02040Z.txt
Janakins-MacBook-Pro:Desktop janakin$ ls nor
ls: nor: No such file or directory
Janakins-MacBook-Pro:Desktop janakin$ ls north-pacific-gyre/
2012-07-03
Janakins-MacBook-Pro:Desktop janakin$ ls north-pacific-gyre/2012-07-03/
NENE01729A.txt  NENE01812A.txt  NENE01978B.txt  NENE02043A.txt
NENE01729B.txt  NENE01843A.txt  NENE02018B.txt  NENE02043B.txt
NENE01736A.txt  NENE01843B.txt  NENE02040A.txt  gooddiff
NENE01751A.txt  NENE01971Z.txt  NENE02040B.txt  goostats
NENE01751B.txt  NENE01978A.txt  NENE02040Z.txt
Janakins-MacBook-Pro:Desktop janakin$
```

**28/8/19 - 3:46pm**

Am now up to the next lesson **Working With Files and Directories**

**Objective:** Create a directory

**Action:** Entered command

```
mkdir thesis
```

**Error:** None.

**Result:** New directory created.

**28/8/19 - 3:47pm**

**Objective:** Create a text file.

**Action:**

- Entered the commands

```
cd thesis  
nano draft.txt
```

- Entered text 'It's not "publish or perish anymore, it's "share and thrive".'
- Pressed Ctrl + O
- Pressed Enter
- Pressed Ctrl + X.

**Error:** None.

**Result:** New file draft.txt created.



```
thesis — -bash — 80x24
Last login: Wed Aug 28 15:44:26 on ttys000
Janakins-MacBook-Pro:~ janakin$ pwd
/Users/janakin
Janakins-MacBook-Pro:~ janakin$ ls
Applications  Documents      Library        Music          Public
Desktop       Downloads     Movies         Pictures
Janakins-MacBook-Pro:~ janakin$ cd Desktop/data-shell/
Janakins-MacBook-Pro:data-shell janakin$ ls -F
creatures/      north-pacific-gyre/  solar.pdf
data/           notes.txt            writing/
molecules/      pizza.cfg
Janakins-MacBook-Pro:data-shell janakin$ mkdir thesis
Janakins-MacBook-Pro:data-shell janakin$ ls -F
creatures/      north-pacific-gyre/  solar.pdf
data/           notes.txt            thesis/
molecules/      pizza.cfg            writing/
Janakins-MacBook-Pro:data-shell janakin$ cd thesis
Janakins-MacBook-Pro:thesis janakin$ nano draft.txt
```

```
thesis — nano draft.txt — 80x24
GNU nano 2.0.6      File: draft.txt

It's not "publish or perish" any more,
it's "share and thrive".

```

[ Wrote 3 lines ]

```
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

28/8/19 - 3:52pm

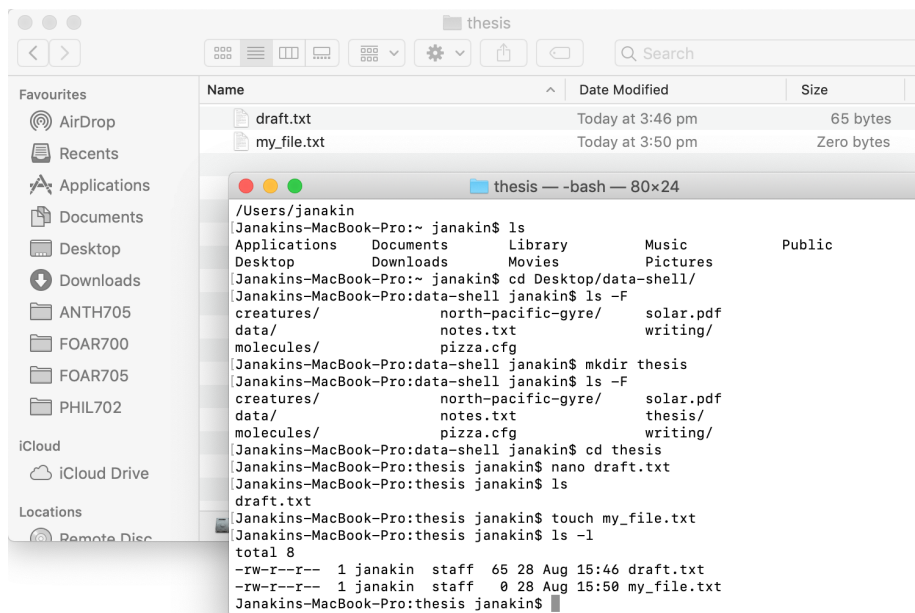
**Objective:** Creating a file a different way.

**Action:** Entered the command

```
touch my_file.txt
```

**Error:** None.

**Result:** New my\_file.txt created.



28/8/19 - 3:57pm

**Objective:** Carry on with *Moving files and directories* exercises.

**Action:** Entered the commands

```
cd ~/Desktop/data-shell/
mv thesis/draft.txt thesis/quotes.txt
ls thesis
mv thesis/quotes.txt .
```

```
ls thesis
ls quotes.txt
```

**Error:** None.

**Result:** Success. Renamed and moved files as instructed from lesson.

```
data-shell — -bash — 78x43
Janakins-MacBook-Pro:~ janakin$ pwd
/Users/janakin
Janakins-MacBook-Pro:~ janakin$ ls
Applications  Documents      Library        Music          Public
Desktop       Downloads      Movies         Pictures
Janakins-MacBook-Pro:~ janakin$ cd Desktop/data-shell/
Janakins-MacBook-Pro:data-shell janakin$ ls -F
creatures/    north-pacific-gyre/  solar.pdf
data/         notes.txt           writing/
molecules/    pizza.cfg
Janakins-MacBook-Pro:data-shell janakin$ mkdir thesis
Janakins-MacBook-Pro:data-shell janakin$ ls -F
creatures/    north-pacific-gyre/  solar.pdf
data/         notes.txt           thesis/
molecules/    pizza.cfg           writing/
Janakins-MacBook-Pro:data-shell janakin$ cd thesis
Janakins-MacBook-Pro:thesis janakin$ nano draft.txt
Janakins-MacBook-Pro:thesis janakin$ ls
draft.txt
Janakins-MacBook-Pro:thesis janakin$ touch my_file.txt
Janakins-MacBook-Pro:thesis janakin$ ls -l
total 8
-rw-r--r--  1 janakin  staff   65 28 Aug 15:46 draft.txt
-rw-r--r--  1 janakin  staff    0 28 Aug 15:50 my_file.txt
Janakins-MacBook-Pro:thesis janakin$ cd ~/Desktop/data-shell/
Janakins-MacBook-Pro:data-shell janakin$ mv thesis/draft.txt thesis/quotes.txt
Janakins-MacBook-Pro:data-shell janakin$ ls
creatures    north-pacific-gyre  solar.pdf
data         notes.txt          thesis
molecules    pizza.cfg          writing
Janakins-MacBook-Pro:data-shell janakin$ ls thesis
my_file.txt  quotes.txt
Janakins-MacBook-Pro:data-shell janakin$ mv thesis/quotes.txt .
Janakins-MacBook-Pro:data-shell janakin$ ls
creatures    notes.txt          thesis
data         pizza.cfg          writing
molecules    quotes.txt
north-pacific-gyre  solar.pdf
Janakins-MacBook-Pro:data-shell janakin$ ls thesis
my_file.txt
Janakins-MacBook-Pro:data-shell janakin$ ls quotes.txt
quotes.txt
Janakins-MacBook-Pro:data-shell janakin$
```

**28/8/19 - 3:59pm**

Currently on exercise *Moving to the Current Folder*. The correct command to move the files to the current folder is

```
mv ../analyzed/sucrose.dat ../analyzed/maltose.dat .
```

**28/8/19 - 4:02pm**

**Objective:** Copy files and directories.

**Action:** Entered the commands

```
cp quotes.txt thesis/quotations.txt
ls quotes.txt thesis/quotations.txt
cp -r thesis thesis_backup
ls thesis thesis_backup
```

**Error:** None.

**Result:** Successfully copied files and directories.

```
data-shell — -bash — 78x43
Janakins-MacBook-Pro:data-shell janakin$ mkdir thesis
Janakins-MacBook-Pro:data-shell janakin$ ls -F
creatures/      north-pacific-gyre/      solar.pdf
data/           notes.txt                thesis/
molecules/      pizza.cfg                writing/
Janakins-MacBook-Pro:data-shell janakin$ cd thesis
Janakins-MacBook-Pro:thesis janakin$ nano draft.txt
Janakins-MacBook-Pro:thesis janakin$ ls
draft.txt
Janakins-MacBook-Pro:thesis janakin$ touch my_file.txt
Janakins-MacBook-Pro:thesis janakin$ ls -l
total 8
-rw-r--r--  1 janakin  staff   65 28 Aug 15:46 draft.txt
-rw-r--r--  1 janakin  staff    0 28 Aug 15:50 my_file.txt
Janakins-MacBook-Pro:thesis janakin$ cd ~/Desktop/data-shell/
Janakins-MacBook-Pro:data-shell janakin$ mv thesis/draft.txt thesis/quotes.txt
Janakins-MacBook-Pro:data-shell janakin$ ls
creatures      north-pacific-gyre      solar.pdf
data           notes.txt               thesis
molecules      pizza.cfg               writing
Janakins-MacBook-Pro:data-shell janakin$ ls thesis
my_file.txt    quotes.txt
Janakins-MacBook-Pro:data-shell janakin$ mv thesis/quotes.txt .
Janakins-MacBook-Pro:data-shell janakin$ ls
creatures      notes.txt               thesis
data           pizza.cfg               writing
molecules      quotes.txt              solar.pdf
north-pacific-gyre
Janakins-MacBook-Pro:data-shell janakin$ ls thesis
my_file.txt
Janakins-MacBook-Pro:data-shell janakin$ ls quotes.txt
quotes.txt
Janakins-MacBook-Pro:data-shell janakin$ cp quotes.txt thesis/quotations.txt
Janakins-MacBook-Pro:data-shell janakin$ ls quotes.txt thesis/quotations.txt
quotes.txt      thesis/quotations.txt
Janakins-MacBook-Pro:data-shell janakin$ cp -r thesis thesis_backup
Janakins-MacBook-Pro:data-shell janakin$ ls thesis thesis_backup
thesis:
my_file.txt    quotations.txt

thesis_backup:
my_file.txt    quotations.txt
Janakins-MacBook-Pro:data-shell janakin$
```

28/8/19 - 4:05pm

On the exercise *Renaming files*. The command you would want to use is

```
mv statistics.txt statistics.txt
```

**28/8/19 - 4:07pm**

On the exercise *Moving and copying*. The output is

```
recombine
```

**28/8/19 - 4:09pm**

**Objective:** Remove files and directories

**Action:** Entered the commands

```
rm quotes.txt  
ls quotes.txt
```

**Error:** None.

**Result:** quotes.txt deleted.

**28/8/19 - 4:10pm**

On the exercise *Using rm Safely*. We would want to use

```
rm -i
```

to have Terminal confirm if we want to delete something. This is to ensure we don't accidentally delete a file we did not intend to.

**28/8/19 - 4:12pm**

**Objective:** Copy with Multiple Filenames

**Action:** Entered the commands

```
mkdir backup  
cp amino-acids.txt animals.txt backup/
```

```
ls -F
cp amino-acids.txt animals.txt morse.txt
```

**Error:** Unsure if an actual error or what the lesson wanted.

**Result:** See attached screen shot.

```
[Janakins-MacBook-Pro:data janakin$ cp amino-acids.txt animals.txt morse.txt ]
usage: cp [-R [-H | -L | -P]] [-fi | -n] [-apvXc] source_file target_file
        cp [-R [-H | -L | -P]] [-fi | -n] [-apvXc] source_file ... target_directory
Janakins-MacBook-Pro:data janakin$ █
```

**28/8/19 - 4:15pm**

On the exercise *List filenames matching a pattern*. The answer is #3.

```
[Janakins-MacBook-Pro:molecules janakin$ ls *t*ane.pdb ]
ethane.pdb      methane.pdb      octane.pdb      pentane.pdb
[Janakins-MacBook-Pro:molecules janakin$ ls *t?ne.* ]
octane.pdb      pentane.pdb
[Janakins-MacBook-Pro:molecules janakin$ ls *t??ne.pdb ]
ethane.pdb      methane.pdb
[Janakins-MacBook-Pro:molecules janakin$ ls ethane.* ]
ethane.pdb
Janakins-MacBook-Pro:molecules janakin$ █
```

**28/8/19 - 4:15pm**

On the exercise *More on Wildcards*. The code I would enter is

```
cp *calibration.txt backup/calibration
cp 2015-11-* send_to_bob/all_november_files/
cp *-23-dataset* send_to_bob/all_datasets_created_on_a_23rd/
```

**28/8/19 - 4:15pm**

On the exercise *Organizing Directories and Files*. The code I would enter is

```
mv *.dat analyzed
```

**28/8/19 - 4:17pm**

On the exercise *Reproduce a folder structure*. The commands

```
mkdir 2016-05-20
mkdir 2016-05-20/data
mkdir 2016-05-20/data/processed
mkdir 2016-05-20/data/raw
```

and

```
mkdir 2016-05-20
cd 2016-05-20
mkdir data
cd data
mkdir raw processed
```

The third set of commands would produce an error because `mkdir` can't create a subdirectory in a non-existent one.

The final set of commands puts the 'raw' and 'processed' directories at the same level as the 'data' directory.