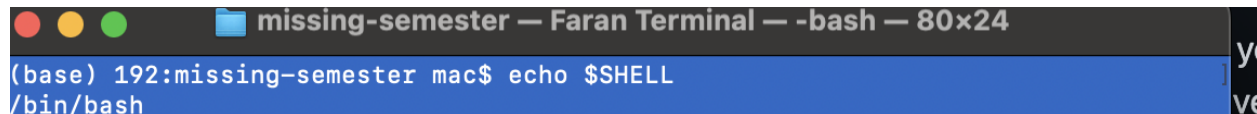


Q1:For this course, you need to be using a Unix shell like Bash or ZSH. If you are on Linux or macOS, you don't have to do anything special. If you are on Windows, you need to make sure you are not running cmd.exe or PowerShell; you can use Windows Subsystem for Linux or a Linux virtual machine to use Unix-style command-line tools. To make sure you're running an appropriate shell, you can try the command `echo $SHELL`. If it says something like `/bin/bash` or `/usr/bin/zsh`, that means you're running the right program.

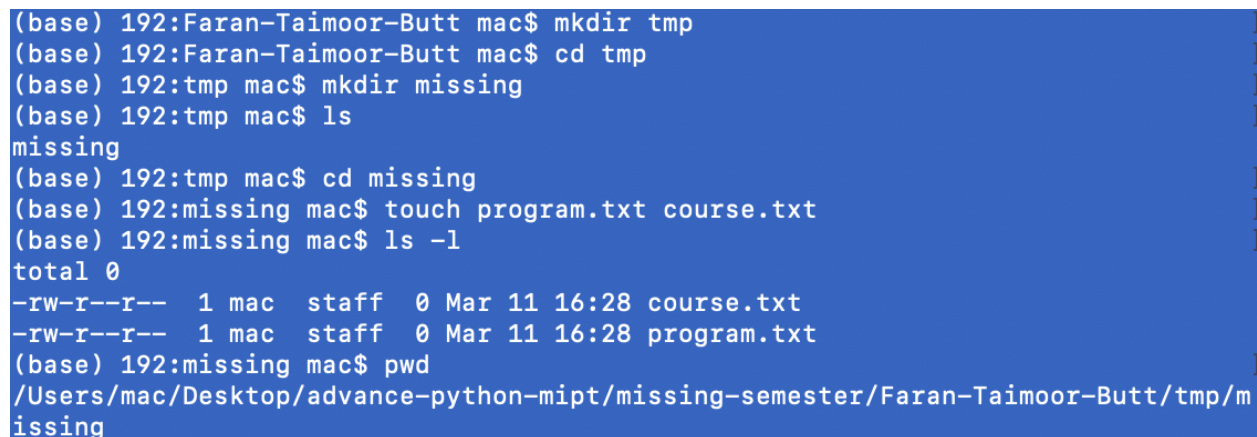
Ans:



```
missing-semester — Faran Terminal — -bash — 80x24
(base) 192:missing-semester mac$ echo $SHELL
/bin/bash
```

Q2:Create a new directory called missing under /tmp

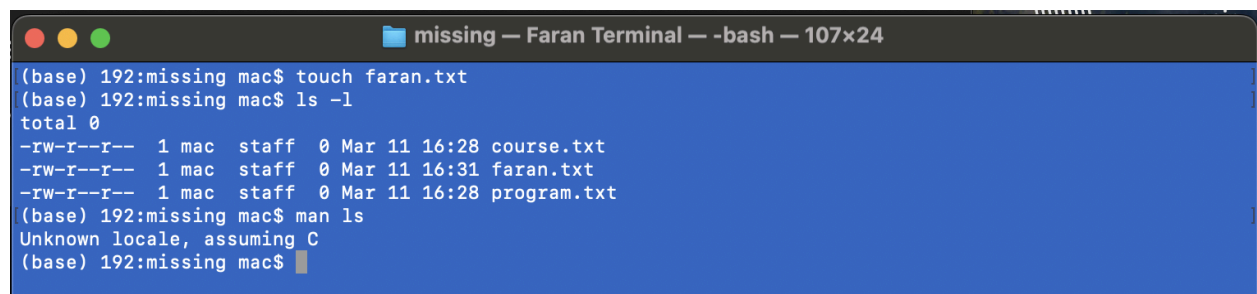
Ans:



```
(base) 192:Faran-Taimoor-Butt mac$ mkdir tmp
(base) 192:Faran-Taimoor-Butt mac$ cd tmp
(base) 192:tmp mac$ mkdir missing
(base) 192:tmp mac$ ls
missing
(base) 192:tmp mac$ cd missing
(base) 192:missing mac$ touch program.txt course.txt
(base) 192:missing mac$ ls -l
total 0
-rw-r--r--  1 mac  staff  0 Mar 11 16:28 course.txt
-rw-r--r--  1 mac  staff  0 Mar 11 16:28 program.txt
(base) 192:missing mac$ pwd
/Users/mac/Desktop/advance-python-mipt/missing-semester/Faran-Taimoor-Butt/tmp/missing
```

Q3: Look up the touch program. The man program is your friend.

Ans:



```
missing — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ touch faran.txt
(base) 192:missing mac$ ls -l
total 0
-rw-r--r--  1 mac  staff  0 Mar 11 16:28 course.txt
-rw-r--r--  1 mac  staff  0 Mar 11 16:31 faran.txt
-rw-r--r--  1 mac  staff  0 Mar 11 16:28 program.txt
(base) 192:missing mac$ man ls
Unknown locale, assuming C
(base) 192:missing mac$
```

Q4: Use touch to create a new file called semester in missing.

```
(base) 192:tmp mac$ touch missing/semester
```

Q5: Write the following into that file, one line at a time:

```
#!/bin/sh
```

```
curl --head --silent https://missing.csail.mit.edu
```

The first line might be tricky to get working. It's helpful to know that # starts a comment in Bash, and ! has a special meaning even within double-quoted (") strings. Bash treats single-quoted strings (') differently: they will do the trick in this case. See the Bash quoting manual page for more information.

Ans:

```
tmp — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ rm -rf semester
(base) 192:missing mac$ cd ..
(base) 192:tmp mac$ touch missing/semester
(base) 192:tmp mac$ echo '#!/bin/sh' > missing/semester
(base) 192:tmp mac$ echo 'curl --head --silent https://missing.csail.mit.edu' >> missing/semester
(base) 192:tmp mac$ cat missing/semester
#!/bin/sh
curl --head --silent https://missing.csail.mit.edu
```

Q6: Try to execute the file, i.e. type the path to the script (./semester) into your shell and press enter. Understand why it doesn't work by consulting the output of ls (hint: look at the permission bits of the file).

Ans:

```
(base) 192:missing mac$ pwd
/Users/mac/Desktop/advance-python-mipt/missing-semester/Faran-Taimoor-Butt/tmp/missing
(base) 192:missing mac$ ./semester
-bash: ./semester: Permission denied
(base) 192:missing mac$ ls -l semester
-rw-r--r--  1 mac  staff  61 Mar 11 16:37 semester
```

"x" is missing from the permissions

Q7:Run the command by explicitly starting the sh interpreter, and giving it the file semester as the first argument, i.e. sh semester. Why does this work, while ./semester didn't?

Ans:

```
missing — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ sh semester
HTTP/2 200
server: GitHub.com
content-type: text/html; charset=utf-8
last-modified: Sat, 01 Feb 2025 18:13:13 GMT
access-control-allow-origin: *
etag: "679e6439-205d"
expires: Tue, 11 Mar 2025 12:09:33 GMT
cache-control: max-age=600
x-proxy-cache: MISS
x-github-request-id: AB54:165D1D:FA954:11D707:67D025A4
accept-ranges: bytes
date: Tue, 11 Mar 2025 11:59:48 GMT
via: 1.1 varnish
age: 15
x-served-by: cache-del21746-DEL
x-cache: HIT
x-cache-hits: 1
x-timer: S1741694388.412488,VS0,VE1
vary: Accept-Encoding
x-fastly-request-id: 86b83e93c6b8dc6bba9f862d320b8ac5a215c8f0
content-length: 8285
```

This worked because “sh” is explicitly being called to run the script.

Q8:Look up the chmod program (e.g. use man chmod).

```
missing — Faran Terminal — less ◀ man chmod — 107x24
CHMOD(1)                                     General Commands Manual          CHMOD(1)

NAME
  chmod — change file modes or Access Control Lists

SYNOPSIS
  chmod [-fhv] [-R [-H | -L | -P]] mode file ...
  chmod [-fhv] [-R [-H | -L | -P]] [-a | +a | =a] ACE file ...
  chmod [-fhv] [-R [-H | -L | -P]] [-E] file ...
  chmod [-fhv] [-R [-H | -L | -P]] [-C] file ...
  chmod [-fhv] [-R [-H | -L | -P]] [-N] file ...

DESCRIPTION
  The chmod utility modifies the file mode bits of the listed files as specified by the mode operand.
  It may also be used to modify the Access Control Lists (ACLs) associated with the listed files.

  The generic options are as follows:

  -f      Do not display a diagnostic message if chmod could not modify the mode for file, nor modify
          the exit status to reflect such failures.

  -H      If the -R option is specified, symbolic links on the command line are followed and hence
          unaffected by the command. (Symbolic links encountered during tree traversal are not
```

*Chmod will help us make the file executable because it is used to **change file modes***

Q9: Use `chmod` to make it possible to run the command `./semester` rather than having to type `sh semester`. How does your shell know that the file is supposed to be interpreted using `sh`? See this page on the shebang line for more information.

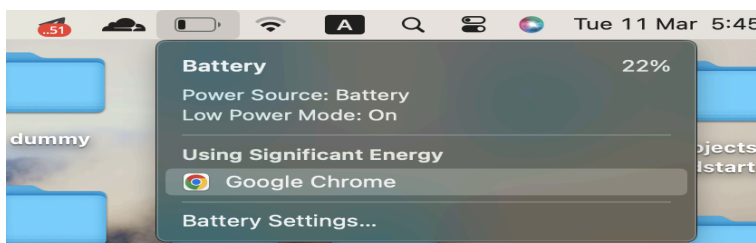
```
missing — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ chmod +x semester
(base) 192:missing mac$ ls -l semester
-rwxr-xr-x  1 mac  staff   61 Mar 11 16:37 semester
(base) 192:missing mac$ ./semester
HTTP/2 200
server: GitHub.com
content-type: text/html; charset=utf-8
last-modified: Sat, 01 Feb 2025 18:13:13 GMT
access-control-allow-origin: *
etag: "679e6439-205d"
expires: Tue, 11 Mar 2025 12:09:33 GMT
cache-control: max-age=600
x-proxy-cache: MISS
x-github-request-id: AB54:165D1D:FA954:11D707:67D025A4
accept-ranges: bytes
age: 343
date: Tue, 11 Mar 2025 12:05:16 GMT
via: 1.1 varnish
x-served-by: cache-del21725-DEL
x-cache: HIT
x-cache-hits: 0
x-timer: S1741694716.388212,VS0,VE2
vary: Accept-Encoding
x-fastly-request-id: 64d3426a932d69d55d8a4f3b9863dbb2eaed2236
```

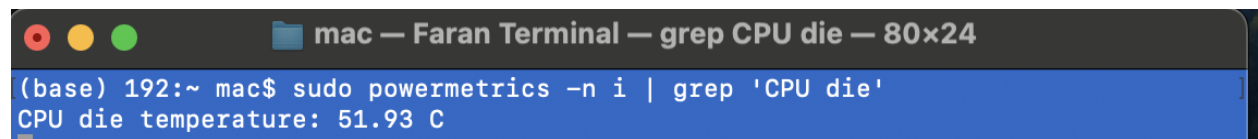
Q10: Use `|` and `>` to write the "last modified" date output by `semester` into a file called `last-modified.txt` in your home directory.

```
missing — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ ./semester | grep -i "last-modified" > last-modified.txt
(base) 192:missing mac$ cat last-modified.txt
last-modified: Sat, 01 Feb 2025 18:13:13 GMT
(base) 192:missing mac$
```

Q11: Write a command that reads out your laptop battery's power level or your desktop machine's CPU temperature from `/sys`. Note: if you're a macOS user, your OS doesn't have `sysfs`, so you can skip this exercise.

```
missing — Faran Terminal — -bash — 107x24
(base) 192:missing mac$ pmset -g batt | grep -o '[0-9]\|+%'
22%
(base) 192:missing mac$
```





A terminal window titled "mac — Faran Terminal — grep CPU die — 80x24". The window has a dark gray title bar with three colored window control buttons (red, yellow, green) on the left. The main content area has a blue background. It displays a command prompt and the execution of a command.

```
(base) 192:~ mac$ sudo powermetrics -n i | grep 'CPU die'
CPU die temperature: 51.93 C
```