8.1 The Command Line – Tutorial

At the end of this tutorial you should be able to:

- Execute commands in Terminal
- Navigate the directory structure
- View the list of files and directories within a directory
- Create directories
- Copy and move files and directories to new locations or names
- Remove files and directories

How to complete this tutorial

- Go through each question in order and complete any tasks that are described in the question.
- As you complete the questions, mark your answer to each question.
- Questions will be either:
    - multiple-choice questions that require you to provide either a single answer or to select multiple answers
    - questions that require a short text answer
- Open the associated quiz on Quercus and enter your answers to each question to verify that you completed the tutorial questions correctly.
- Alternatively, open the Quercus quiz when you start the tutorial and verify your answers as you complete the tutorial. **Note that there may be some information that is in this file that is not in the Quercus quiz!**
- The answers will be released at the end of the week.

Before you begin

- Open a new terminal session from your JupyterHub (New > Terminal)
- Set the PWD to `/home/jovyan/Week9/9.1.BLAST/Tutorial.9.1`

Data Sources:
Cancer data sourced from PCAWG (ICGC/TCGA, Nature 2020): https://dcc.icgc.org/

8.1.1: Introduction to the Command Line Interface

Question 1

Which command interpreter is used by Terminal?

a. tcsh
b. dash
c. zsh
d. bash

Question 2

Another command recognized by bash is `cal`. Execute the `cal` command to determine what it outputs:

a. A description of the Command Accessible Language
b. A calendar for the current month
c. The current time in California
d. A calculator interface

8.1.2: Navigating the Directory Structure

Question 3

Type and execute a command to change the present working directory (PWD) to `Week.8/8.1.The.Command.Line/Tutorial.8.1`. Now type the command `pwd`. What is the output?

a. `/home/jovyan/Week.8/8.1.The.Command.Line/Tutorial.8.1`
b. `~/Week.8/8.1.The.Command.Line/Tutorial.8.1`
c. `/home/jovyan/Week.8/8.1.The.Command.Line`
d. `~/Week.8/8.1.The.Command.Line`

Question 4

What command should you execute to list all the files and directories in the PWD? (You should be in the `Tutorial.8.1` directory after the previous question.)

Question 5

If you are currently in `Tutorial.8.1` and you run the command `cd ../..` and then the command `pwd`, what will be output?

a. `/home/jovyan/Week.8/8.1.The.Command.Line/Tutorial.8.1`
b. `/home/jovyan/Week.8/8.1.The.Command.Line`
c. `/home/jovyan/Week.8`
d. `/home/jovyan/Week.8/8.2.Files`

Question 6
If you execute the command `cd ~` which directory will you be in?

a. Root directory
b. Parent directory
c. Child directory
d. Home directory

Question 7
If you are not currently there, navigate back to the `Tutorial.8.1` directory.
Within this directory is a directory named `gynecological_cancers` which has a child directory called `uterine_cancers`. Write a command to set the PWD to the `uterine_cancers` directory (using the RELATIVE path).
What command did you use?

Question 8
You should now be in the `uterine_cancers` directory.
Within the `Tutorial.8.1` directory there is a directory called `gastrointestinal_cancers`. Write a command to set the PWD to the `gastrointestinal_cancers` directory (using the RELATIVE path).
What command did you use?

Question 9
Explore the other directories within the Tutorial.8.1 directory. Navigate back to the `gastrointestinal_cancers` directory. Write a command (using the RELATIVE path) to list the files in the `mature_b-cell_cancers` directory.
What command did you use?

8.1.3: Modifying the Directory Structure

Question 10

Set the PWD to `/home/jovyan/Week.8/8.1.The.Command.Line/Tutorial.8.1`
Create a new directory in the `Tutorial.8.1` called `low_survival_rate_cancers`.
Which command did you use?

a. `crdir low_survival_rate_cancers`
b. `newdir low_survival_rate_cancers`
c. `nwdir low_survival_rate_cancers`
d. `mkdir low_survival_rate_cancers`

Question 11

Examination of the files for each of the cancer types reveals that the three most deadly cancers in our dataset are: ovarian cancer (17% survival rate), pancreatic cancer (45% survival rate) and acute myeloid leukemia (54% survival rate).
You should still be in the directory `Tutorial.8.1`. Use the `ls` command to determine where the file each of the 3 cancers is and then copy (not move!) each file into `low_survival_rate_cancers`.
Which command did you use to copy the `ovarian_cancer.txt` file?

Question 12

Navigate into the `low_survival_rate_cancers` directory and verify that it contains the three files you just copied.
There are two methods to perform the following task:

- create a new file called `AML.txt` in this directory that contains the exact same information as the file `acute_myeloid_leukemia.txt`
- delete the file called `acute_myeloid_leukemia.txt`

One of the methods uses the following 2 commands:

```
cp acute_myeloid_leukemia.txt AML.txt
rm acute_myeloid_leukemia.txt
```

The other method only requires one command. What is the other method?

Question 13 (SELECT ALL THAT APPLY)

Set the PWD to `low_survival_rate_cancers`. Run the following 4 commands (in order):

```
cp pancreatic_cancer.txt ovarian_cancer.txt
rm AML.txt
mkdir pancreas
mv pancreatic_cancer.txt pancreas/pancreas_file_2.txt
```

Which of the following statements are true about the contents of the `low_survival_rate_cancers` directory after running these commands?

a. There is no file named `ovarian_cancer.txt`
b. There is no file named `pancreatic_cancer.txt`
c. There is a file named `AML.txt`
d. There is a new directory called `pancreas` that contains one file called `pancreas_file_2.txt`
e. The file `ovarian_cancer.txt` contains data for ovarian cancer patients
f. All `.txt` files in the directory contain data for pancreatic cancer patients