

A+ will be down for a version upgrade on Tuesday 03.01.2023 at 9-12.

**This course has already ended.**


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# Using the Linux shell

## Exercise 1

 The deadline for the assignment has passed (Monday, 5 December 2022, 23:59).

### Using the Linux Shell

The following Google Colab includes a short tutorial relevant to the questions Exploring the Linux Shell Colab link  
(<https://colab.research.google.com/drive/1P34rilTB-0yccsu62E5JYRrJs17UCMtu>)

#### 1. Using the shell

##### Question 1 1 / 1

1. Which ones of the following are examples of a UNIX shell?

☐ Powershell

☒ Bash

☒ Zsh

☐ Pwd

✓ Correct!

##### Question 2 1 / 1

2. Which of the below commands will list the contents of the current directory, including hidden files and the read/write/execute rights of each file?

- ☐ ls -l
  - ☒ ls -la
  - ☒ ls -l -a
  - ☒ ls -al
- ✓ Correct!

### Question 3 1 / 1

3. Which of the below commands will print out the value of the HOME variable?

- ☒ echo \$HOME
  - ☒ echo \${HOME}
  - ☐ echo HOME
  - ☐ echo \$(HOME)
- ✓ Correct!

### Question 4 1 / 1

4. What commands can we use to look at some contents of a file without fully loading it into memory?

- ☒ tail
  - ☒ head
  - ☐ cat
  - ☒ less
- ✓ Correct!

### Question 5 1 / 1

5. What will happen when the following command is executed?: touch data\_a.txt && mkdir data\_a || mkdir data\_b && touch data\_b.txt

- ☐ 1 file is created(data\_a.txt). 1 directory is created: (data\_b)
  - ☒ 2 files are created(data\_a.txt and data\_b.txt). 1 directory is created: (data\_a)
  - ☐ 2 files are created(data\_a.txt and data\_b.txt). 1 directory is created: (data\_b)
  - ☐ 1 file is created(data\_a.txt). 1 directory is created: (data\_a)
- ✓ Correct!

### Question 6 1 / 1

6. Which commands will result in a new text file data.txt being created in the current directory?

- ☐ echo data.txt
- ☒ echo data >> data.txt
- ☐ mkdir data.txt

✓ **touch data.txt**

✓ Correct!

**Question 7** 1 / 1

**7. Which commands will print out the contents of the data.txt file?**

☐ echo data.txt

✓ **cat data.txt**

✓ **cat data.txt >> proxy.txt && cat proxy.txt**

✓ **cat data.txt | cat**

✓ Correct!

Submit

## Exercise 2

⚠ The deadline for the assignment has passed (Monday, 5 December 2022, 23:59).

### More on the Linux Shell

The following Google Colab includes a short tutorial relevant to the questions Exploring the Linux Shell Colab link  
(<https://colab.research.google.com/drive/1P34rilTB-0yccsu62E5JYRrJs17UCMtu>)

#### 1. More on the shell

**Question 1** 1 / 1

**1. Assume we have launched Ping in a shell window, as a foreground process. How can we make it a background process without opening a new shell? Try this with ping.**

☐ Press Ctrl+C

☐ Press Ctrl+Z

☐ Enter the 'bg' command

● **None of the above**

✓ Correct!

**Question 2** 1 / 1

**2. What is the function of the /dev/null node in the Linux file system?**

- ☐ It is a pointer to kernel space
- ☐ It is a device driver for devices that do not fit any other node under '/dev' (e.g. char, usb)
- ☒ **It is a node that discards any written data**
- ☐ It is a mounting point for an external file system

✓ Correct!

**Question 3 1 / 1****3. Which Linux command can be used to terminate a background process via process signalling?**

- ☐ signal
- ☐ ping
- ☐ term
- ☒ **kill**

✓ Correct!

**Question 4 1 / 1****4. Which one of the following is NOT a standard UNIX data stream?**

- ☐ stderr
- ☒ **stdio**
- ☐ stdout
- ☐ stdin

✓ Correct!

**Question 5 1 / 1****5. Which pairs of commands can we use to create and delete directories in the Linux file system?**

- ☒ **mkdir & rmdir**
- ☐ cp & del
- ☐ mkdir & del
- ☒ **cp & rmdir**

✓ Correct!

**Question 6 1 / 1****6. Given a Linux terminal, how can we determine the shell we are currently running?**

- ☒ **Using an environment variable**
- ☒ **The command "ps -p \$\$"**
- ☐ The command "pwd"

☐ The command "shell"

✓ Correct!

### Question 7 1 / 1

7. Which one of the following is NOT a Linux process state?

- ☐ Running
- ☐ Zombie
- ☐ Stopped
- ☒ **Paused**

✓ Correct!

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## Exercise 3

⚠ The deadline for the assignment has passed (Monday, 5 December 2022, 23:59).

### Bash scripts

The following Google Colab includes the code and description of the assignment Exploring the Linux Shell Colab link  
(<https://colab.research.google.com/drive/1P34rilTB-0yccsu62E5JYRrJs17UCMtu>)

1. Some of the following questions require you to complete the TODOs found in the "Exercise: Shell Scripts and Signals" section from the Colab link

### Question 1 2 / 2

1. Which of the following is true regarding the command: "chmod u+x first\_script.sh"?

- ☐ the result of chmod u+x will add anyone (owner, group, others) execution permissions for the file first\_script.sh
- ☒ **the result of chmod u+x will add execution permissions only to the owner of the file**
- ☒ **calling "chmod 500 first\_script.sh" would have the same effect**
- ☐ calling "chmod 777 first\_script.sh" would have the same effect

✓ Correct!

**Question 2 2 / 2****2. Which of the following is true regarding signals?**

- ☒ **the trap statement can be used to catch signals**
- ☐ if a process receives the SIGKILL signal, it is able to perform clean-up operations before quitting
- ☒ **SIGINT is sent by the system when the user interrupts the execution of the script by pressing Ctrl+C**
- ☐ signal names cannot be abbreviated without their SIG prefix (e.g KILL instead of SIGKILL)

✓ Correct!

**Question 3 2 / 2****3. What is true regarding the kill command?**

- ☐ the syntax of the command is the following: kill PID signal
- ☒ **we can use the number of a signal in the kill command instead of its name**
- ☐ supposing we have two different users and none of them is the root user, they are able to kill each other's processes
- ☒ **we can use multiple signals with the kill command**

✓ Correct!

**Question 4 2 / 2****4. Which of the following is true regarding TODO1 and TODO2?**

- ☒ **each ... should be replaced with the name or the number of the corresponding signal**
- ☐ we need to use signals TRAP and TERM to quit and interrupt the process
- ☒ **we need to use signals QUIT and INT to quit and interrupt the process**
- ☐ sigquit() will have the same effect as sigint()

✓ Correct!

**Question 5 2 / 2****5. Which of the following is true regarding TODO3? ?**

- ☐ we don't need to use the PID of the process we just created, because the kill command will automatically kill sleep 100
- ☒ **the signal given to the kill command will be caught by the trap statement written in the script**
- ☒ **the kill command sends the signal (given as a parameter) to the process created by the script**
- ☒ **we need to use the PID of the process we just created for running kill**

✓ Correct!

**Question 6 2 / 2****6. Sending QUIT and then INT to our process will output:**

- ☐ just a line containing "script ending"
- ☒ **lines "quitting signal received" and "script ending" in this order**
- ☐ lines "script ending" and "quitting signal received" in this order
- ☐ the output will not be visible in the terminal

✓ Correct!

**Question 7 2 / 2****7. Suppose you just ran the bash script and see the message "test script started. My PID is ..." . Which of the following is true?"**

- ☐ Hitting Ctrl+C has the same effect as sending SIGINT to our process and will output "quitting signal received" before ending
- ☒ **Hitting Ctrl+C has the same effect as sending SIGINT to our process and will output "script ending" before ending**
- ☐ we cannot interrupt the process before sleep finishes
- ☐ if we interrupt and run the file again, we will always have the same value for PID

✓ Correct!

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