# UNIX/Linux Operating Systems – Written Exam

Duration: 1 hour  
Total Points: 20

**NAME:**

**Group:**

## Section A – Theoretical Questions (8 points)

1. (2 pts) Explain the architecture of a typical Linux operating system. Include the roles of each element.

2. (2 pts) List and describe four essential Linux shell commands. Include what each one does.

* First command:
* Second command:
* Third command:
* Fourth command:

3. (1 pt) What the difference between prompt, terminal, shell, and command line?

* Shell:
* Prompt:
* Terminal:
* Command line:

4. (1 pt) How can 'stdout' and 'stderr' be redirected in Linux?

* stdout:
* stderr:

5. (2 pts) Explain what a pipe (|) does in a command. Give an example of a useful pipeline with at least two commands and explain you exemple

## Section B – Command Analysis & Short Tasks (12 points)

6. (1 pt) You are in a directory containing multiple .txt files. Write a command that: - Creates a subdirectory named texts - Moves all .txt files into that subdirectory.

7. (1 pt) What does the following command do?  
 `ls /etc | grep conf | wc -l`

8. (2 pt) Write a command that lists the last 10 lines of a file called 'system.log' and counts how many of them contain the word 'ERROR'.

9. (1 pt) Write a shell command to extract and sort (alphabetically) all usernames from `/etc/passwd`.

10. (2 pts) You have a file called `logs.txt`. Write a pipeline (|) that extracts all lines containing the word 'fail' (case-insensitive), shows only the first two words of each line, removes duplicates, and sorts the result in reverse order.

11 (1pts)

Create a script ‘hello.sh’ that:

-Ask the user for their name

-reads the input

-print “Hello your\_name” where your\_name is the name provided by the user

Write the full script below:

12. (4 pts) Shell script  
  
Create a script that:  
- Asks the user to enter three file names.

-Assuming that all the files exist:

-Find the number of lines in each file.

-Use if statements to determine which file has the highest line count.

-Display the name of the file with the most lines and how many lines it contains.  
  
Write the full script below: