#### Homework 3

## **Quick Start Guide**

- Install the latest version Virtualbox. Use installation package based on your operating system in the link below:
  - https://www.virtualbox.org/wiki/Downloads
- Install the "Extension Pack" according to your installed Virtualbox version with the same link.
- You can set your virtual machine disk by accessing File --> Preferences --> General -->
  Default Machine Folder.
- Import the file .ova to Virtualbox.
- Start imported operating system in Virtualbox.
- Login as "user" with password "sysprog2019"
- Hint: https://projects.ui.ac.id/projects/kuliahsysprog/wiki/Import\_Virtual\_Appliance

#### Part A: Unix Shell Introduction

- 1. List down five types of shell as well as the advantages and disadvantages.
- 2. Complete the table below with 20 UNIX common command with the way to use it and explain it briefly.

Command	Example of use	Description			
Ls	1. \$ ls	1. lists file in the current directory			
	2. \$ ls -lrt	2. lists file in the long format			

3. Unix provide us an information of a directory or a file by using ls -l command. Below the example of ls -l command's output.

Line	output								
1	\$ ls -1								
2	total 6004								
3	drwxrwxrwx	1	thoriq	thoriq	4096	Sep	5	2018	Books
4	-rwxrwxrwx	1	thoriq	thoriq	5012547	Feb	8	2018	ujian.pdf
5	-rwxrrwx	1	thoriq	thoriq					input.txt
6	drwxr-xrwx	1	thoriq	thoriq	4096	Apr	24	2018	'Term 2'
7	drwxrw-rwx	1	thoriq	thoriq	4096	Apr	24	2018	'Term 3'
8	drwxrwxr	1	thoriq	thoriq	4096	Apr	24	2018	'Term 4'
9	drwxrwxx	1	thoriq	thoriq	4096	Nov	16	2018	'Term 5'
10	drwxrwxrwx	1	thoriq	thoriq	4096	Mar	26	21:01	'Term 6'
11	drwxrwxrwx	1	thoriq	thoriq	4096	Sep	17	23:08	'Term 7'

- What does the line number 2 mean?
- Explain briefly what each column from row 3 to 11 tells us.
- According to the column number 1 from row 3 to 11, explain in detail why is there 10 characters with 5 different kind of characters (d,r,w,x,-), what does every character stand for?
- What are the differences (in terms of its behavior) between the 'column 1 characters' that associated to a file and to a directory?
- If I want to create a new directory or new file, what is the 'column 1 characters' that associated to them? Why is like that?

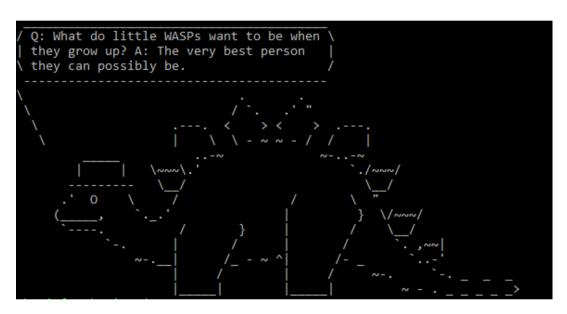
- 4. Answer these questions briefly.
  - What are Shell variables?
  - What is the difference between \$\* and \$@?
  - What are the differences between & / &&?
  - What is the lifespan of a variable inside a shell script?

### **Part B: Simple Program**

1. What is the output program below. Explain what does \$# stand for?

```
#!/bin/bash
echo $#
```

2. Let's find out about Fortune and Cowsay. Install and try it. Explain in brief how to install and its behavior.



3. Download unformatted JSON here (http://bit.ly/unformatted-json-sysprog1920). Write a bash script that read a file you have already downloaded and beautify it into formatted JSON. Write down your program (bash script) as well as how to run it.

**Note**: don't hardcode the path of the unformatted JSON file! **Hint**: don't overthink, use as many resources you can get.

# **Submission Format**

- 1. Answer all these questions in a PDF format named answer.pdf and wrap it in tar.gz format with format name **NPM\_NAME\_CLASS\_HW3.tar.gz** (example: 0806444700 TONNY A HW1.tar.gz). Add any additional files if needed.
- 2. If you collaborate with someone, please write your collaborator's name. Plagiarism will be sanctioned with 0 score for this assignment.
- 3. Submit your answer via Scele.