Template Week 5 – Operating Systems

Student number:

Assignment 5.1: Unix-like

a) Find out what the difference is between UNIX and unix-like operating systems?

UNIX is an operating system that was originally developed in the 1970s. UNIX-like systems refer to operating systems that behave similarly to UNIX but may have different features or origins. Examples of UNIX-like systems are Linux and macOS. These systems follow UNIX design principles but may have different implementations.

b) Study the image above named UNIX timeline. Find out who Ken Thompson, Dennis Ritchie, Bill Joy, Richard Stallman, and Linus Torvalds are and what they have contributed to the development of UNIX or unix-like systems and to IT in general. **TIP!** English-language sources often contain more detailed information about these individuals.

- Ken Thompson helped create UNIX and developed the B programming language.
- Dennis Ritchie co-created UNIX and also developed the C programming language, which is widely used in software development.
- Bill Joy helped design the BSD UNIX system, which became influential in UNIX development.
- Richard Stallman founded the GNU Project to develop free software and create an open-source operating system.
- Linus Torvalds created Linux, a UNIX-like operating system, which became the foundation for many modern systems.

c) What is the philosophy of the GNU movement?

The GNU movement is focused on providing software that is free for anyone to use, modify, and distribute. It advocates for software freedom and aims to create a system where users control their software, rather than being restricted by proprietary licenses.

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.

Yes, Ubuntu mostly follows the philosophy of the GNU movement because it is based on Linux, which is open-source, and uses many GNU tools. Ubuntu is free and allows users to modify and distribute the software, aligning with the principles of the GNU movement.

e) Find out what is the Windows Subsystem for Linux?

WSL is a feature in Windows that allows you to run a Linux distribution (like Ubuntu) directly on Windows without needing to use a virtual machine. It provides a Linux environment on Windows for developers and system administrators.

f) Find out, which operating system family belongs to Android, iOS and ChromeOS?

- Android is part of the Linux family.
- iOS belongs to the Darwin family, which is a Unix-like operating system.
- ChromeOS is based on Linux and is part of the Linux family as well.

Assignment 5.2: Supercomputers and gameconsoles

a) Research on this site what supercomputers are used for and write a short summary of it:
https://www.computerhistory.org/timeline/search/?q=Supercomputer

Supercomputers are very powerful computers used for big tasks like predicting the weather, doing science experiments, and solving difficult problems.

b) IBM is a company that has already built a number of supercomputers. One of them is IBM's Roadrunner. The CPU developed for this supercomputer was further developed at a later stage as the CPU for the PlayStation 3 console. Find out what a **PlayStation 3 cluster** is and what it was used for?

A PlayStation 3 cluster is many PlayStation 3 consoles connected together to work as one big supercomputer. It was used for research and other jobs that need a lot of computer power.

c) You can build a supercomputer by putting a few computers together in a cluster. Here's what Oracle did with a collection of Raspberry Pi's, for example:
https://blogs.oracle.com/developers/post/building-the-worlds-largest-raspberry-pi-cluster
What specific operating system is running on this cluster?

The Raspberry Pi cluster uses Linux, a system called Raspberry Pi OS, which is made for Raspberry Pi devices.

d) Does Oracle's Raspberry Pi supercomputer appear in the list of the 500 fastest supercomputers in the world? Make a logical decision for this, without going through the entire list.
https://www.top500.org/lists/top500/list/2023/06/

No, it probably doesn't. Even though it's a cool project, it doesn't have the power of the fastest supercomputers in the world.

e) What CPU architecture is used for the PlayStation 5 and Xbox Series X?
What operating systems run on these consoles?
What conclusion can you draw from the answer to the previous question?

The PlayStation 5 uses a special AMD CPU and runs a system based on FreeBSD.
The Xbox Series X also uses an AMD CPU and runs a Windows-based system.

Both consoles use similar CPUs, but they have different operating systems: PlayStation 5 uses FreeBSD, and Xbox Series X uses Windows.

Assignment 5.3: Working with Windows

Take relevant screenshots of the assignments below

a) Practice for about 10 minutes with the ⊞ keyboard shortcuts combinations, skip the general shortcuts in this exercise. Take a look at which screens are opened.

b) The file explorer can be opened with ⊞ + E, Which key combination could you also use?

c) Open the system properties with a ⊞ key combination, take a screenshot of the open screen. Paste this screenshot into this template.

d) Open task manager with a key combination. Take screenshots of the tabs: processes (shows active processes), performance, and users. Place these three screenshots in this template.

e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector, or the second screen. Which key combination should you use for this?

f) If you leave the classroom for a while and you leave your laptop behind, it is wise to lock the screen. Your Apps will continue to run in the background. So, for example, if you're waiting for a download that takes a while, lock the screen and get a cup of coffee. Which key combination do you use for this?

g) Open the Run screen with a key combination. On this screen, type CMD and press <enter>. Take a screenshot of this result and paste it into this template.

Working in the File Explorer

Relevant screenshots **copy** command:

Relevant screenshots **tree** command:

Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.

Terminating Processes

Relevant Screenshots Task Manager Window:

Install Software

Relevant screenshots that the following software is installed:

- WinSCP
- Notepad++
- 7zip

Assignment 5.4: Working with Linux

Relevant screenshots + motivation

Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation

Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Assignment 5.7: Digital forensics

Relevant screenshots + motivation

Assignment 5.8: Steganography

Relevant screenshots + motivation

Bonus point assignment – week 5

Make relevant screenshots + motivation:

- Proof that the FOG server is installed and is functioning correctly.
- Proof that the FOG server has made a back-up of the Windows11 VM or the Ubuntu 24.04 Desktop VM.

Ready? Save this file and export it as a pdf file with the name: **week5.pdf**