**Homework 1**

Submission date: 15/10/2019 Date of your submission

Name & Surname: Sinan Demir

Id: 16050111046

**My Answers for Essay Part:**

1. **Exercise 1.1**

* To provide an environment where computer users can ensure that the program they use works properly and efficiently to the hardware of the system.
* To allocate the necessary resources in accordance with the specified problem and to ensure that this distinction is made in a fair and efficient manner.
* To prevent users from using any program, computer errors and misuse, and to check the operation of I/O devices.

1. **Exercise 1.6**

A privilege is required to perform these operations; (a) set value of timer, (b) clear memory, (e) turn off interrupts, (f) modify entries in device-status table, (h) access I/O device.

1. **Exercise 1.10**

Caches are useful when multiple components need to exchange data and perform transfers at different speeds between components. The cache decodes the transfer problem by providing an intermediate rate buffer between the components. In this way, the device does not have to wait.

1. **Exercise 1.14**

An interruption occurs when an event that occurs due to software or hardware (the buffer of the network card, the hard disk completing the IO operation, the error splitting by zero during arithmetic operations) must be reported immediately. A trap is an exception in a user process, but interrupt is interrupt is something generated by the hardware (devices like the hard disk, graphics card, I/O ports, etc.). User programs create traps for debugging purposes. A trap can be used to search for OS routines or to catch arithmetic errors.

1. **Exercise 2.1**

System calls are the interface provided by the operating system for services. Although these tasks contain instructions in assembly language, they are usually written in C, C ++ languages. Thanks to system calls, the programmer does not need to intervene directly in the hardware, and this avoids possible system errors.

1. **Exercise 2.3**

At the Unix systems, a fork system call and then an execution system call is required to initiate a new process. If the fork call clones the current execution process, the execution call occupies a new process based on a different executable file than the initialization process.

1. **Exercise 2.15**

These models are message-passing and shared-memory. When we look at the advantages and disadvantages of message-passing, the advantage of message-passing is that they can work fast on small data models, but they can slow down on big data models. When we look at the strengths and weaknesses of shared memory; It provides maximum speed and ease of communication, but there are some problems in the areas of protection and synchronization between processes.

**My Answers for Programming Part:**

1. **The screenshot for strace program**