Assignment 2

19/10/2026

40 Points Possible

Attempt 1

In Progress

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Unlimited Attempts Allowed

11/10/2026 to 21/10/2026

Details

Please submit your answers in a **digitally typed format**. All answers must be typed using a word processor or another appropriate digital tool.

Handwritten answers, photographs, or screenshots of notebook pages will not be accepted.

Please ensure that your answers are clearly organized, readable, and submitted in **PDF format**.

Exercise Questions

1.1. What are the three main purposes of an operating system?

1.5. Explain how separating user mode from kernel mode helps protect the operating system and computer resources.

1.6. Determine which of the following operations should require privileged execution:

a. Changing the timer value

b. Reading the system clock

c. Clearing memory

d. Executing a trap instruction

e. Disabling interrupts

f. Changing the device-status table

g. Switching from user mode to kernel mode

h. Accessing an I/O device

1.10. Explain two benefits of caches, the problems they address, and the difficulties they introduce. Why would making a cache as large as its underlying storage device not necessarily eliminate the need for that device?

1.12. Compare clustered systems with multiprocessor systems. Explain what two computers in a cluster need to cooperate and maintain high service availability.

1.14. Explain the purpose of interrupts and distinguish interrupts from traps. Discuss whether a user application can intentionally generate a trap and why it might do so.

1.19. Arrange the following storage technologies from slowest to fastest:

a. Hard-disk drives

b. Registers

c. Optical disks

d. Main memory

e. Nonvolatile memory

f. Magnetic tapes

g. Cache

1.24. Discuss the challenges of designing operating systems for mobile devices compared with traditional personal computers.