saegis campus

Faculty of Computing and Technology

Department of Computer Science

Bachelor of Honors in Computer Science | Software Engineering | Information Technology

Batch 01 – Semester 02

End Examination

Year 2023

CS|SE|IT 1208 – Operating Systems

Duration: Three Hours

Instructions to the candidates:

1. **Answer ALL the questions.**
2. Illustrate your answers with clear diagrams wherever applied.
3. The paper is marked out of 100 marks.
4. Follow the general guidelines given by the department of examination.

Question 1

1. Explain the difference between "Polling" and "Interrupts" which are used in operating systems to handle events.

(04 Marks)

2. Explain how an Interrupt is handled by the operating system once it has been generated while describing the purpose of the interrupt vector.

(06 Marks)

3. "Direct Memory Access" (DMA) is used to enhance performance. Explain how it enhances the performance while describing what DMA is.

(04 Marks)

4. Describe the storage hierarchy while giving special attention to speed, cost and volatility.

(06 Marks)

5. Discuss the purpose of caching while describing the concept of caching. You may use diagrams to illustrate your answer. (05 Marks)

(Total 25 Marks)

Question 2

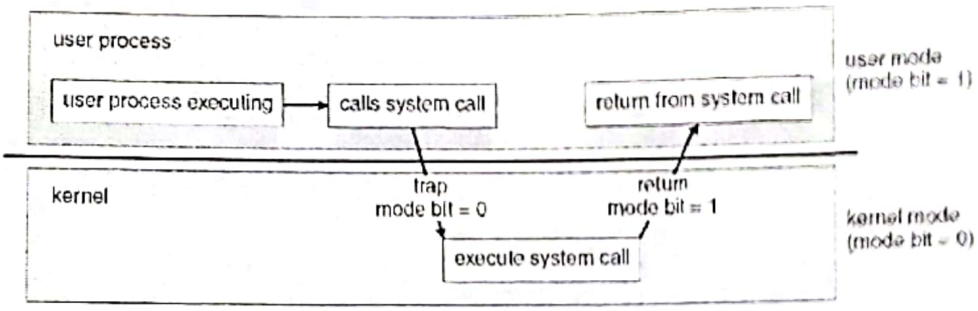
1. Briefly describe three advantages of multiprocessor systems.

(06 Marks)

2. Distinguish between Asymmetric multiprocessing and Symmetric multiprocessing. You may use a diagram to illustrate your answer.

(04 Marks)

3. Given diagram shows the dual mode operation of a system. Explain the purpose of dual mode operation while explaining how it works.



(06 Marks)

4. Explain the process, memory and storage management activities performed by the operating system.

(09 Marks)

(Total 25 Marks)

Question 3

1. Briefly describe three services provided by the operating system.

(06 Marks)

2. In system calls, there are three methods for passing parameters to the kernel. Briefly describe the three methods and then write the specific advantages of one over the other (if any).

(08 Marks)

3. Discuss the advantages of virtualization.

(06 Marks)

4. Giving an example distinguish between the host and the guest in a virtualized environment.

(05 Marks)

(Total 25 Marks)

Question 4

1. Give a simple definition for a process.

(02 Marks)

2. In UNIX, what are the consequences of calling fork() and exec() system calls?

(04 Marks)

3. Explain how the cooperating processes speeds up the computations.

(04 Marks)

4. Describe the direct and indirect communication of message passing in under inter process communication.

(08 Marks)

5. Describe the purpose of the Process Control Block.

(03 Marks)

6. Describe the usages of different queues in process scheduling.

(04 Marks)

(Total 25 Marks)

********** **END OF THE PAPER** **********