

OPERATING SYSTEM CONCEPTS

ONLINE MT QP - SPRING-2021

Consider a scenario where 4 processes in the system (P1 to P4) execute on the CPU and perform I/O operations as mentioned below:

1. Process P1 starts execution first and executes on the CPU for 8ms after which it needs to perform I/O operation for 30ms.
2. Process P2 gets CPU as Process P1 now has started performing I/O operations.
3. Process P2 executes on the CPU for 10ms after which it needs to perform I/O operation for 12ms.
4. Process P3 gets CPU as Process P2 now has started performing I/O operations.
5. Process P3 executes on the CPU for 12ms after which it needs to perform I/O operation for 12ms after which its execution will complete.
6. Process P2 gets CPU again as its I/O operation for 12ms is complete and Process P1 is still performing I/O operations whereas Process P3 now has started performing I/O operations.
7. Process P2 executes on the CPU for 8ms after which it needs to perform I/O operation for 8ms after which its execution will complete.
8. Process P1 gets CPU as Process P2 now has started perform I/O operations and I/O operations of Process P1 are complete.
9. Process P1 executes on the CPU for 10ms after which it completes its execution, at this time Process P2 and P3 have already completed their execution.
10. Process P4 gets CPU as Process P1, P2 and P3 are all have completed their execution.
11. Process P4 executes on the CPU for 8ms after which it performs I/O operation for 7ms and also completes its execution.

Q1. Draw the time line for above mentioned scenario using:

- i) Uni-Programmed Environment (5)
- ii) Multi-Programmed Environment (5)

Q2. Calculate CPU Utilization and CPU Wastage for above mentioned scenario using:

- i) Uni-Programmed Environment (5)
- ii) Multi-Programmed Environment (5)

INSTRUCTIONS:

- Write your answer on a page with a BLUE or BLACK Ball Point / Pen.
- Your Name, Roll #, Class Name, and Date must be mentioned on the top of the page.
- Answer of Q1 should be on FIRST PAGE.
- Answer of Q2 should be on SECOND PAGE.
- Take the picture of your answers written on PAGE ONE and PAGE TWO and place those TWO pictures in a PDF File having your roll # as the name of the file.
- You must submit/upload only one PDF File containing answers of your questions on LMS within TWO Hours.