COSC 3380 — Operating Systems

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Homework: Number 2

Question 1.1 Assume that at time 5 no system resources are being used except for the processor and memory. Now consider the following events:

- At time 5: P1 executes a command to read from disk unit 3.

- At time 15: P5s time slice expires.

- At time 18: P7 executes a command to write to disk unit 3.

- At time 20: P3 executes a command to read from disk unit 2.

- At time 24: P5 executes a command to write to disk unit 3.

- At time 28: P5 is swapped out.

- At time 33: An interrupt occurs from disk unit 2: P3s read is complete.

- At time 36: An interrupt occurs from disk unit 3: P1s read is complete.

- At time 38: P8 terminates.

- At time 40: An interrupt occurs from disk unit 3: P5s write is complete.

- At time 44: P5 is swapped back in.

- At time 48: An interrupt occurs from disk unit 3: P7s write is complete.

For each time 22, 37, and 47, identify which state each process is in. If a process is blocked, further identify the event on which is it blocked.

Solution

- At time 22:
    - P1 is blocked for I/O
    - P3 is blocked for I/O
    - P5 is ready/running
    - P7 is blocked for I/O
    - P8 is ready/running

- At time 37:

- P3 is put into ready or running
- P8 is put into ready or running
- P1 is put into ready or running
- P5 is put into blocked suspend
- P7 is blocked for I/O

- At time 47
  - P7 is still blocked for I/O
  - P1 is still in ready or running
  - P3 is still in ready or running
  - P5 is moved to ready/suspend state
  - P8 will exit.