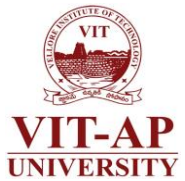
CSE2008: Operating Systems

L10 L11 & L12: CPU Scheduling Algorithms



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Recap

- Introductory Concepts
- Process Fundamentals
- IPC

Outline

- Role of CPU Schedular
- Concept of Preemption
- CPU Scheduling Algorithms
  - FCFS
  - SJF
  - SRTF
  - Priority
  - Round-Robin
  - Multilevel Queue Scheduling
  - Multi-Processor Scheduling

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- Role of CPU Schedular
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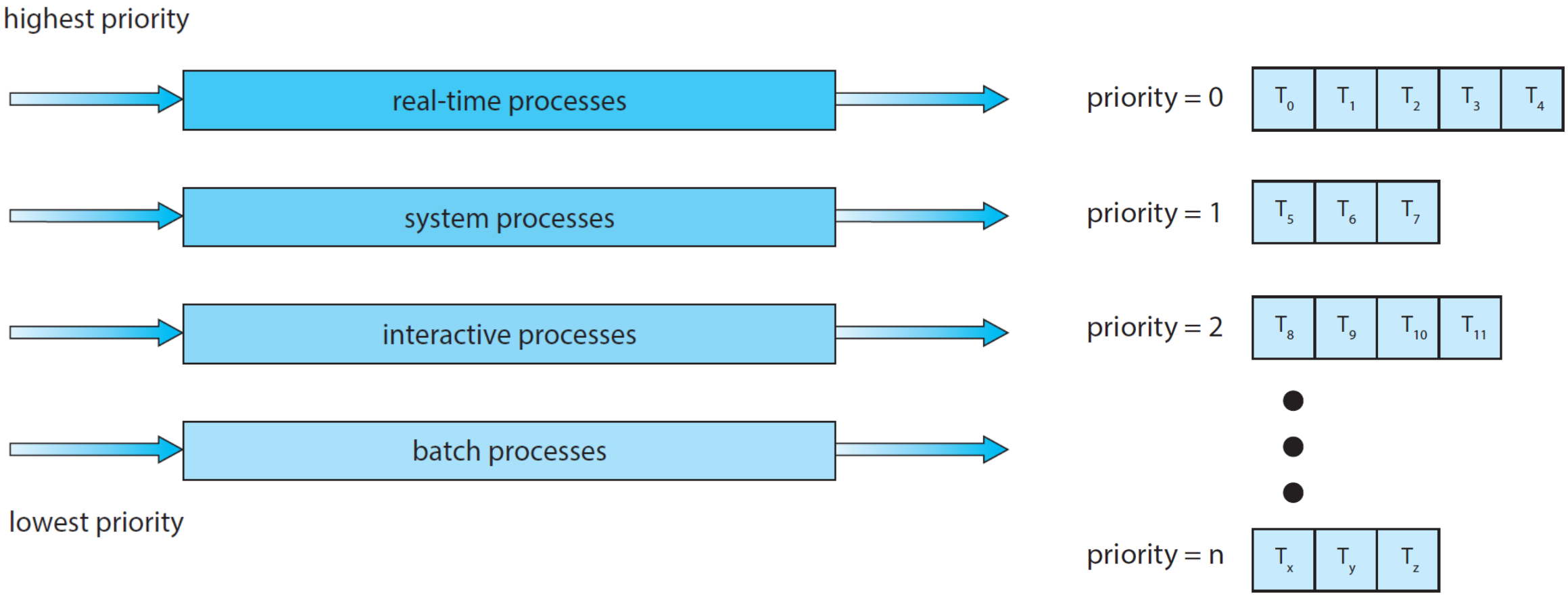
Discussed in details with many examples on whiteboard, refer to your class notes! And practice with more examples on your own.

Multilevel Queue Scheduling

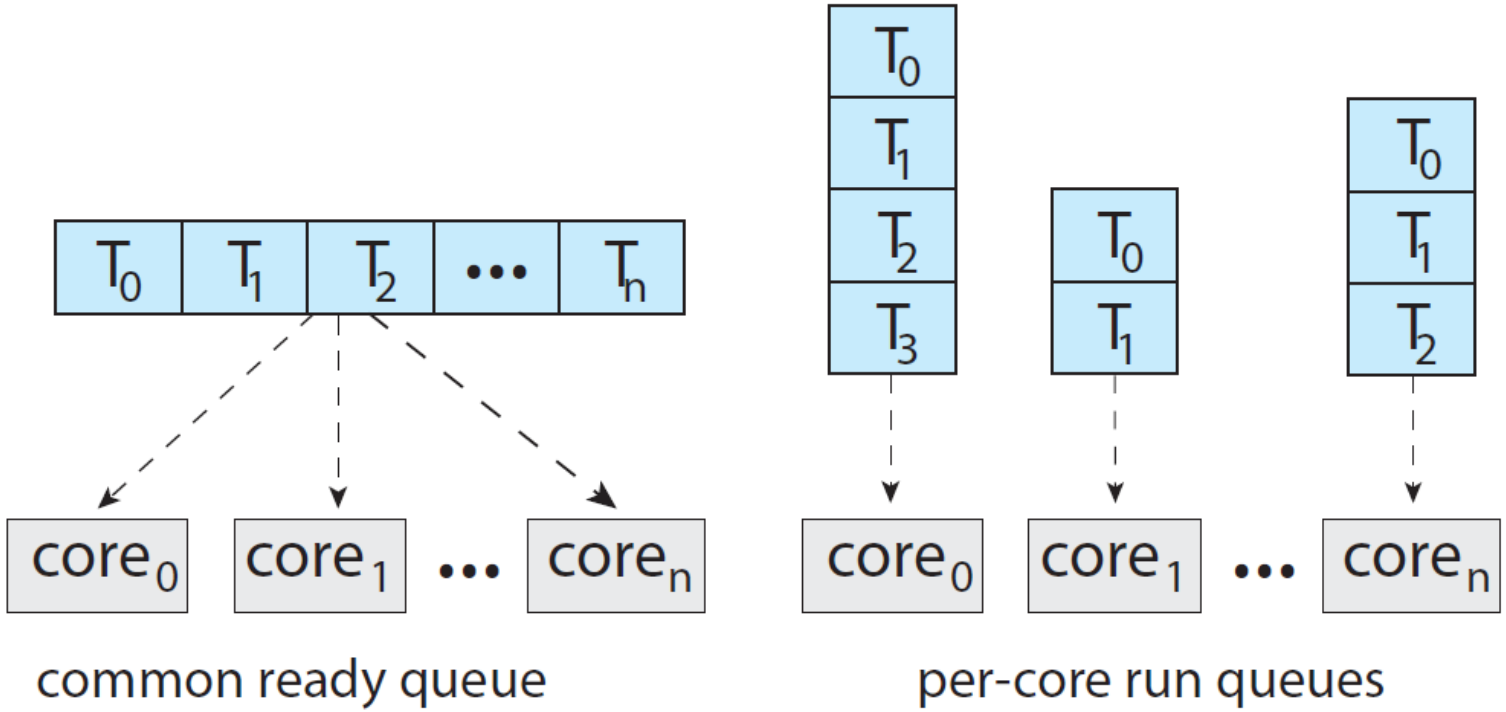


Multilevel Feedback Queue Scheduling

- Normally, when the multilevel queue scheduling algorithm is used, processes are permanently assigned to a queue when they enter the system. If there are separate queues for foreground and background processes, for example, processes do not move from one queue to the other, since processes do not change their foreground or background nature. This setup has the advantage of low scheduling overhead, but it is inflexible.
- The multilevel feedback queue scheduling algorithm, in contrast, allows a process to move between queues. The idea is to separate processes according to the characteristics of their CPU bursts. If a process uses too much CPU time, it will be moved to a lower-priority queue. This scheme leaves I/O-bound and interactive processes—which are typically characterized by short CPU bursts—in the higher-priority queues. In addition, a process that waits too long in a lower-priority queue may be moved to a higher-priority queue. This form of aging prevents starvation.

Multi-Processor Scheduling

- Two possible strategies for organizing the threads eligible to be scheduled



Self Study:

- Practice for drawing Gannt Chart and calculating the average waiting time and turn-around time following all the algorithms taught, with more examples.

Reference

- Abraham Silberschatz , Peter B. Galvin, Greg Gagne, “Operating System Concepts”, Addison Wesley, 10th edition, 2018
  - Chapter 5: Section 5.1 – 5.3

Next

- Multithreading Models

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Thank You