<u>Vocabulary</u>

1. **Multiprogramming**

2. **Mechanism**

3. **Policies**

4. **CPU Bound**

5. **I/O Bound**

6. **Non-preemtive Scheduling**

   - Is the type of scheduling that once the CPU has been allocated to a process, it keeps the CPU until it terminates or blocks

7. **Preemtive Scheduling**

   - Is type of scheduling where CPU can be taken from a running process and allocated to another
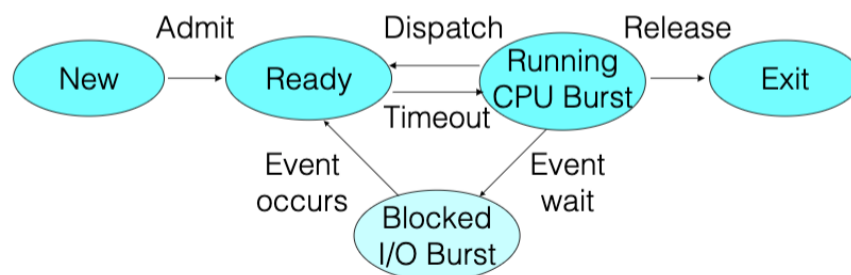
8. **Context Switching**

   - Is dispatching a process from a ready queue

9. **Convoy Effect**

   - All other processes wait for the one big process to release the CPU

1   Recall State Diagram

- Thread/Process is blocked during I/O burst and therefore **does not use CPU**

2   Scheduling Goals

- All Systems

- – Fairness - Each process receives fair share of CPU
  - – Avoid starvation
  - – Policy enforcement - Usage policies should be met
  - – Balance - All parts of the system should be busy

- Bach Systems

  - – Throughput - Maximize job completed per hour
  - – Turnaround time - Minimize time between submission and completion
  - – CPU utilization - Keeps the CPU busy all the time

3 Scheduling Goals

- Interactive Systems

  - – Response time - Minimize time between receiving request and starting to produce output
    - ∗ Response time = First Run Time - Arrival Time
  - – Proportionality - "Simple" tasks complete quickly

- Real-Time Systems

  - – Meet deadlines
  - – Predictability

4 Process State Diagram

- Dispatching a process from the ready queue is called **context switching**
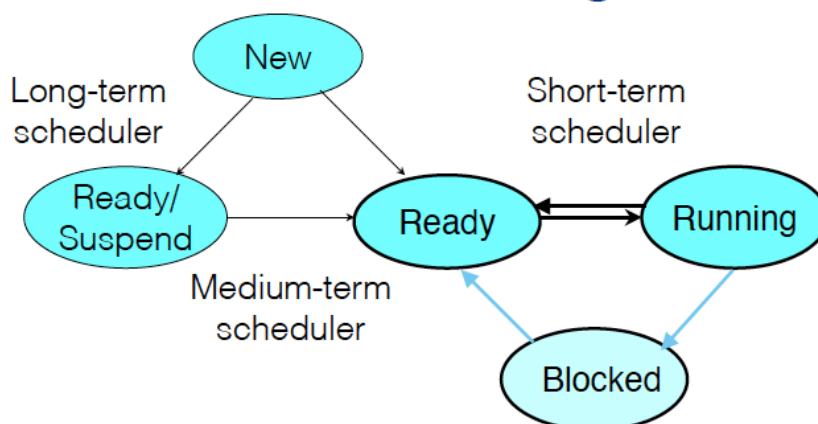
5   Algorithm: Shortest Job First

- Is optimal with respect to **average wait time**

6   Algorithm: Round Robin

- Designed for time-sharing systems

- Pre-emptive

- Ready queue is circular

- Choice of quantum is chritical