CS 377
Discussion 3

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Reminders

- Lab 1 due Oct. 8
- Assignment details should be on website
For Today...

- Review of process scheduling algorithms:
  - FCFS
  - Round Robin
  - SJF
  - MLFQ
  - Lottery Scheduling

- Worksheet
For Today...

- Review of process scheduling algorithms:
  - FCFS
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  - Lottery Scheduling
- Worksheet
FCFS

- What is it?
  - First come first serve: jobs are scheduled in the order that they arrive

- Advantages?
  - Simplicity

- Disadvantages?
  - Average wait time can be high if shorter jobs are scheduled after longer jobs
  - Poor use of both I/O and CPU, CPU bound jobs force I/O bound jobs to wait for CPU
Round Robin

- What is it?
  - Use time slice and preemption to switch between jobs

- Advantages?
  - Fairness: each job uses CPU equally

- Disadvantages?
  - Average wait time can be bad
SJF

- **What is it?**
  - Shortest job first: do short jobs before long ones

- **Advantages?**
  - Provably optimal in minimizing average wait time

- **Disadvantages?**
  - Impossible to predict how long a job will take
  - Long jobs can possibly starve
MLFQ

- **What is it?**
  - Multi-level feedback queues: multiple queues with different priorities
  - Round robin at each level, completing time slice reduces priority

- **Advantages?**
  - Adaptive: past behavior predicts the future
  - Approximates SJF

- **Disadvantages?**
  - Fairness: long jobs can starve
Lottery Scheduling

- **What is it?**
  - Every job has a number of tickets, winning ticket randomly chosen
  - Give more tickets to shorter jobs, every job gets at least 1 ticket

- **Advantages?**
  - Avoids starvation
  - Approximates SJF

- **Disadvantages?**
  - Adding/deleting jobs affects all jobs proportionately, independent of number of tickets