

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

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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 jobs gets at least 1 ticket
- Advantages?
 - Avoids starvation
 - Approximates SJF
- Disadvantages?
 - Adding/deleting jobs affects all jobs proportionately, independent of number of tickets