Exam 1 Review
CS 537: Introduction to Operating Systems

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Administrivia

- P3 Due Today
- Code reviews begin this Friday (look for an email from your TA)
- Midterm 1 Scheduled:
    - Regular Time: Oct 15th, 5:45-7:15
        - Last name A-K: Van Vleck B102
        - Last name L-Z: Ingraham B10
    - Unable to attend? Fill out this form
    - Alternate Time: Oct 16th, 5:45-7:15, Psych Bldg 121
    - McBurney Time: Oct 15th, 5:45-8:45pm, CS 1257
    - Bring **#2 Pencil**, one sheet of **8.5x11 (A4) notes**, and **UW Student ID**

Exam 1 review

https://tinyurl.com/cpsc537-exam1 – all questions from quizzes

Survey 1

Answer a few questions about how the course is going so far.

https://tinyurl.com/cs537-fa24-survey1

Major concepts

OS Roles

- Provide Common Services
- Resource Manager

CPU virtualization

- Processes
  - Life Cycle
  - Process State
  - OS Role in Managing Processes (At power-on, at job creation, during execution, at job completion)
- `fork()`, `exec()`, `wait()`
- Mechanisms for limited direct execution (Timer Interrupt, User/Kernel Mode, Traps)
- Scheduling policies (FCFS, SJF, STCF, RR, MLFQ) and metrics (turnaround time, response time)

Major concepts (cont.)

Memory virtualization

- Address space Layout (Code, Heap, Stack)
- `malloc()`, `free()`
- Base/Bounds
- Segmentation
- Paging
  - TLB
  - Multi-level page tables
- Swapping

Sample Questions

- Describe all steps that occur during a context switch.
- Explain the flow of control of a system call.
- What information must be kept in the process control block?
- What types of jobs will be in the high priority and low priority queues in MLFQ?
- Why do we have multiple metrics for measuring the performance of scheduling algorithms?

Sample Questions (cont.)

- What are the advantages and disadvantages of paging?
- When is segmentation preferred to paging?
- How do you convert a VA to a PA under paging? under segmentation?
- What issue does a TLB address? What issue does a multi-level page table address?
- When does a page fault occur?

Previous semester exams can be found on Canvas under Files -> Old Exams.