New York University

CSCI-UA.0202-003: Operating Systems (Undergrad): Fall 2025

Quiz 5

- Write your full name on both:
  - the bubble sheet in the "Name" field
  - the quiz booklet
- Write your NYU NetID on the quiz booklet and the bubble sheet in the "ID" field
- Use a #2 pencil to fill in your answers on the bubble sheet (preferred, but you can also use a pen)
- This quiz contains 6 questions only. Each question has choices from A to D
- Fill the bubbles completely by darkening the entire circle, as shown in the example
- Only mark answers for questions 1-6. Do not mark any bubbles beyond question 6
- Choose only one answer per question
- Submit your bubble sheet **together with your quiz booklet**

Name:

NetId:

1. Which of the following is a key advantage of Lottery Scheduling over strict priority-based schedulers?
   (A) It ensures that a process holding at least one ticket will not be starved.
   (B) It provides the most predictable and lowest possible latency.
   (C) It has lower overhead than STCF.
   (D) It minimizes average turnaround time for all job mixes.

2. Consider a system with long-running CPU-bound jobs and an I/O-bound job that frequently waits for the disk. Which scheduling setup would achieve the best disk utilization according to the slides?
   (A) FCFS/FIFO, as it has very low scheduling overhead.
   (B) Round Robin with a very large time quantum (e.g., 100ms).
   (C) STCF, because it always prioritizes the I/O-bound job's short CPU bursts.
   (D) Round Robin with a very small time quantum (e.g., 1ms).

3. What is the fundamental concept of paging as a memory management scheme?
   (A) Allocating a single contiguous block of physical memory to each process.
   (B) Dividing both virtual and physical memory into fixed-size chunks called pages.
   (C) Storing the entire address space of every process in physical RAM simultaneously.
   (D) Using a base and a bounds register for address translation.

4. In the context of virtual memory, what is the role of the Memory Management Unit (MMU)?
   (A) It is a software component of the OS that decides which pages to swap to disk.
   (B) It is the part of the CPU's ALU that performs calculations on addresses.
   (C) It is the hardware that performs the fast translation from a virtual address to a physical address.
   (D) It is a data structure in RAM that is synonymous with the page table.

5. In a Round-Robin (RR) scheduler, what is the practical effect of setting the time quantum to be extremely large?
   (A) The system will spend most of its time performing context switches.
   (B) The average response time will be minimized for all jobs.
   (C) The scheduling behavior will effectively become the same as FCFS/FIFO.
   (D) The scheduler will give strong preference to I/O-bound jobs.

6. In a Lottery Scheduling system, Process A has 60 tickets, Process B has 30 tickets, and Process C has 10 tickets. If Process C terminates and its tickets are removed from the system, what is the new probability of Process B winning the next lottery?
   (A) $\frac{3}{10}$
   (B) $\frac{1}{3}$
   (C) $\frac{1}{2}$
   (D) $\frac{2}{3}$