CST 334: Operating Systems

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# OSTEP Chapter 7

**Purpose**. Scheduling of resources is something that happens in many kinds of systems, not just operating systems. The purpose of this assignment is to help you understand basic scheduling policies, and some of the ways that are used to measure the performance of a scheduling policy.

Note: you will need to be able to solve scheduling problems by hand in the exams, so make sure you can solve problems like problems 4 and 5 below.

**Instructions**. Read OSTEP chapter 7 and answer the following questions by downloading and editing [chap7.txt](https://drive.google.com/file/d/1IxnMEldYlLdaZyWWBtot4IxDmTf1MfCI/view?usp=sharing)

1. What does “preemptive scheduling” mean?
   1. processes are run one at a time
   2. all processes are eventually run
   3. one process can be stopped to let another one run
2. (T/F) Round-robin tends to perform better than other scheduling algorithms with respect to average turnaround time.
3. (T/F) Response time is always less than turnaround time.
4. Compute the average response time when running three jobs of length 10, 20, 30 seconds using shortest job first scheduling. Assume the jobs arrive at the same time.
5. Compute the average turnaround time when running three jobs of length 10, 20, 30 seconds using shortest job first scheduling. Assume the jobs arrive at the same time.
6. Compute the average response time when running three jobs of length 20, 30, 10 seconds using FIFO scheduling. Assume the jobs arrive at almost exactly the same time, but that the jobs arrive in the listed order (in other words, 20 before 30 before 10).
7. Compute the average turnaround time when running three jobs of length 20, 30, 10 using FIFO scheduling. Use the same assumptions about arrival as in the previous problem.
8. Compute the average response time when running three jobs of length 10, 15, 30 seconds using round robin scheduling. Assume the jobs arrive at the same time, and that each time slice is 1 second long.
9. Compute the average turnaround time when running three jobs of length 10, 15, 30 seconds using round robin scheduling. Assume the jobs arrive at the same time. Assume each time slice is very short -- you do not need to know the exact length of the time slice to solve the problem.
10. Assume jobs A, B, and C have lengths 10, 20, and 30 seconds respectively. Assume job C arrives at time 0, job B arrives at time 5, and job A arrives at time 10. Compute the average response time. Don't forget that the response time for a process begins when a process is ready for service. Use shortest-time-to-completion-first as the scheduling policy.
11. Assume jobs A, B, and C have lengths 10, 20, and 30 seconds respectively. Assume job C arrives at time 0, job B arrives at time 5, and job A arrives at time 10. Compute the average turnaround time. Use shortest-time-to-completion-first as the scheduling policy.

**Submission**: Submit your edited chap7.txt on iLearn.

**Grading**: Each problem is worth 10 points.