

On my honor, I have not given, nor received, nor witnessed any unauthorized assistance on this work.

Print name and sign: _____

Question:	1	2	3	4	5	6	Total
Points:	5	4	8	6	3	4	30
Score:							

General Note: the problem set contains plenty of implementation problems with mathematical answers that ensure your understanding of the scheduling algorithms. While you should expect some of those type of questions on the quiz, you should also expect some conceptual questions. This quiz gives some examples of conceptual questions.

1. Shortest-time-to-Completion-First (STCF) is actually a pretty good scheduling algorithm.

(a) (3 points) State how this algorithm works.

(b) (2 points) If STCF is such a good algorithm, why do we hardly ever see it implemented and in use in operating systems?

2. (4 points) In a MLFQ, there is a rule which states: “After some time period S , move all the jobs in the system to the topmost queue.”. What is the purpose (necessity?) of this rule?

3. (8 points) Most hardware provides user mode (for applications) and kernel mode (for the OS). The tricky part is transitions from one to the other. We accomplish this transition using a system call. What happens during the system call?

4. (6 points) On Unix-like operating systems, we use the `fork()`, `exec()` (and variants of `exec()` like `execvp()`) and `wait()` to manage processes. Explain (briefly!) what each of these calls do.

5. (3 points) What is the fundamental purpose of the timer interrupt?

6. (4 points) How do you calculate both response time and turnaround time for a particular scheduling algorithm? What are the tradeoffs between the two metrics?