Name: Sean Lossef **RCS ID:** losses @rpi.edu

CSCI 4210 — Operating Systems ⋈
Spring 2020 Quiz 7 (April 20, 2020)

- This is an open book, open notes quiz. Please do not use any other people as resources including your classmates.
- This quiz is designed to take 25 minutes; therefore, for 50% extra time accommodations, the expected time is 38 minutes and 100% extra time accommodations is 50 minutes (i.e., the end of class).
- Questions will not be answered except when there is a glaring mistake or ambiguity in a question. Please do your best to interpret and answer each question.
- Below is an honor code pledge for this course. By submitting this quiz for grading, you are asserting that you agree with and will abide by this pledge.

Honor Pledge: On my honor, I have neither given nor received any unauthorized aid on this quiz.

1. **(4 POINTS)** What does the return code from the `select()` when the timeout value is exceeded without a file descriptor becoming ready?
   Circle the best answer.

   (a) -1
   (b) 0
   (c) 1
   (d) Number of file descriptors idle
   (e) EXIT_FAILURE
   (f) None of the above

2. **(4 POINTS)** Which macro can be used to check if a file descriptor has pending activity when the `select()` statement returns? Circle the best answer.

   (a) `FD_CLR()`
   (b) `FD_ISSET()`
   (c) `FD_SET()`
   (d) `FD_ZERO()`
   (e) All of the above
   (f) None of the above

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3. **(4 POINTS)** What is not a disadvantage of a Fixed Partitioning Scheme? Circle the best answer.

   (a) It is complicated
   (b) Memory fragmentation
   (c) Does not work with relocatable code
   (d) Processes interfere with one another
   (e) All of the above
   (f) None of the above

For questions 4 and 5, consider a Dynamic Memory scheme allocating contiguous memory for processes. Each question begins with an initial memory map

MEMORY (dynamic partitioning scheme):

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAABBB   The set of A's defines one partition
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB    (for process A), the set of B's defines
BBBBBBBBBBBBBBBBBBBBBBB........    another partition, etc.
.CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC.
..........MMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMM..........
.............NNNNNNNNNNNNN.....   As time goes by, processes arriving
.................FFFFFFFFFFFFFFF    and leaving the system cause the memory
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFF    to become increasingly fragmented
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
FGGGGGGGGGGGGGGGGGGG............
................HHHHHHHHHH.....
```

And inserts a new process **Y** requiring 10 memory units.

4. **(4 POINTS)** Where would **Y** be inserted using the **WORST FIT** algorithm? Circle the best answer.

   (a) After **B**
   (b) After **C**
   (c) After **M**
   (d) After **N**
   (e) After **G**
   (f) After **H**

5. **(4 POINTS)** Where would **Y** be inserted using the **NEXT FIT** algorithm? Assume **H** was the process that came just before **Y** Circle the best answer.

   (a) After **B**
   (b) After **C**
   (c) After **M**
   (d) After **N**
   (e) After **G**
   (f) After **H**