Question 1 (10pts) For a preemptive CPU scheduling approach such as Round Robin, what is the potential disadvantage of making the CPU time slice (i.e., the amount of time a job is allowed to use the CPU before it is preempted) too small? and state how it could hurt throughput.

Too many CPU resources spent on context switching.
10 points for correct answer, 5 for a “glimmer” of hope, 0 otherwise

Question 2 (10pts) For a preemptive CPU scheduling approach such as Round Robin, what is a potential disadvantage of making the CPU time slice too large? and state how it could hurt average response time.

Short jobs have to wait for long jobs..
10 points for correct answer, 5 for a “glimmer” of hope, 0 otherwise

Question 3 (15pts) TRUE or FALSE (and briefly justify your answer), the multi-level feedback approach prevents starvation of CPU-intensive jobs.

FALSE – if new short jobs keep entering the system the long-running jobs never get to run. 5 points for FALSE and 10 for a reasonable explanation (5 for “glimmer” if said FALSE).
**Question 4 (10pts)** Which one of the following is not a mechanism for sharing data between threads in different address spaces: (no explanation necessary).

a) Message Passing (e.g., send/receive)
b) Dual-mode operation
c) File System reads and writes
d) Shared Memory

*Answer is “b” NO PARTIAL CREDIT.*

**Question 5 (15 pts)** Briefly describe a technique for protecting programs from accessing each other’s memory that does not require hardware support.

*Two options here --- Strong Typing and Compiler Checking. 15 points for getting give partial credit in 5 point increments as you see fit.*

**Question 6 (10 pts) TRUE or FALSE:** One advantage of a segment-based memory management scheme over a “Base and Bounds” scheme is that it provides more protection against one program accessing the memory of another. *No explanation necessary*

*Answer is FALSE, NO PARTIAL CREDIT*

**Question 7 (10 pts)** Which one of the following is true about page-based memory allocation:

a) It requires the use of a best-fit strategy for memory allocation.
b) It removes the possibility for external fragmentation.
c) It removes the possibility for internal fragmentation.
d) It removes the problems associated with “sparse” address spaces.

*Answer is “B”. NO PARTIAL CREDIT*

**Question 8 (10 pts)** Briefly describe the advantage of introducing a Translation Lookaside Buffer (TLB) into the address translation process when the page tables themselves are stored in virtual memory.
Speeds up the address translation process by avoiding the need to read page table entries from memory or even from disk. 10 points for any reasonable answer here – even speeds it up with no other explanation is okay.

**Question 9 (10 pts) TRUE or FALSE;** If the TLB does not contain a mapping for a page in a virtual address space then it is known that that page does not have a corresponding frame in physical memory. *(no explanation necessary)*

*Answer is FALSE, NO PARTIAL CREDIT*

THE END of QUIZ #2