CSC 456 Operating Systems (Updated 9:00 PM 4/25) (FINAL ONE ☺)
Spring 2021
Instructor: Dr. Stephen Krebsbach
Exam II
100 points Due: April 27th 6:00 PM (CST)

Record You answers using the Quiz for EXAM II

Please do the following.

1) (6 pts) If we take a system and change its page/frame size to a smaller size then

a) The TLB reach with be smaller
b) The page table will be smaller
c) The Logical address register will need to get bigger
d) The Physical address register will need to get smaller

2) (6 pts) If the size of the "delta" (/_\ = ?) as part of the Working Set model is set smaller

a) Its working set will also get smaller
b) Its working set will get bigger
c) The locality of Reference will get smaller
d) It may lead to Thrashing

3) (6 pts) Assuming a 1-KB (1024 bytes) page size, what is the page number (p) and offset(d) for the following address reference (values are in decimal) - Address : **3265**

a) p = 3 d = 1
b) p = 1 d = 2433
c) p = 3 d = 193
d) p = 2 d = 24

4) (6 pts) Consider the logical address space of 512 pages of 1024 words each, mapped into a Physical memory of 64 frames. How many **bits** are there in the **Physical** address?

a) 18
b) 16
c) (64,1024)
d) 10

5) (6 pts) Consider the following segment table

Segment	Base	Length
0	200	350
1	2200	150
2	50	180

What is the physical address of the following logical address? Address : (**2 , 110)**

a) 160
b) 290
c) There is an error in the segment table!
d) Segmentation Fault !

6) (6 pts) Consider the following page reference string: **1,2,1,2,3,1,3,2,3,1,2,3,1**
Assuming **pure** demand paging and **3 frames** allocation, how many times will the Page Replacement Algorithm need to be run?
Use the First-in-First-Out (**FIFO**) algorithm.

a) 3
b) 2
c) 1
d) 0

7) (6 pts) Consider the following page reference string: **1,2,1,3,4,3,2,3,4,3,3,1**
Assuming **pure** demand paging and **4 frames** allocation, how many page faults will the Least Recently Used (**LRU**) algorithm produce?

a) 5
b) 4
c) 3
d) 0

8) (6 pts) As the quantum (q) time for the Round Robin (RR) short term Schedule is set larger and larger

a) It will become just like First-Come-First-Served Algorithm
b) No process will ever run
c) It would increase the number of Context switches
d) The degree of Multi-programming will increase

9) (6 pts) The Scheduling Criteria "Waiting Time" for a process is

a) the total time it waits in the "Wait" state
b) the total time the user waits for it to get done
c) the total time of the context switching it waits for
d) None of the others

10) (6 pts) Using an External Priority Preemptive short-term scheduling algorithm

a) can lead to deadlocks
b) can lead to starvation
c) will lead to the convoy effect
d) is provably Optimal for large numbers of processes

11) (11 pts) Given the following information what will be the **AVERAGE WAIT TIME** for **ROUND ROBIN** (RR)? [If needed quantum = 5 and order in the queue is 1 -> 2 -> 3 -> 4]

Job #	Burst Rate	Arrival Time
1	24	0
2	17	0
3	33	0
4	100	0

a) 63.00
b) 43.50
c) 61.75
d) 210

12) (11 pts) Given the following information what will be the **AVERAGE WAIT TIME** for **SHORTEST REMINING TIME FIRT** (SRJF)? [If needed, quantum = 5 and order in the queue is 1 -> 2 -> 3 -> 4]

Job #	Burst Rate	Arrival Time
1	24	10
2	17	6
3	33	14
4	100	0

a) 61.75
b) 38.00
c) 30.00
d) 21.75

13) (6 pts) The Second-Chance page replacement algorithm when choosing a victim

a) Gives a page only 1 second chance and will be the victim the next time it chooses one
b) Gives a page a second chance when ever its reference bit is set to 1
c) Only gives pages with their reference bit set to 0 a second chance
d) Will only chance one page's reference bit

14) (6 pts) The COPY-ON_WRITE technique can be used when a parent forks a child process. In this technique

a) new child pages are only created to copy the parent's code pages.
b) the child shares the parent's pages using the same page table
c) new child pages are only created when the shared page is going to be modified
d) a copy of all pages is written out to the backing store and written back in when needed

15) (6 pts) The Page-Fault-Frequency (PFF) approach

a) counts the sum of all page faults in the system
b) allows for a bigger working set and less page faults
c) attempts to determine the correct range of page faults to be allowed
d) Never needs to swap out a process