Operating Systems (CS-2205)
Semester: VI Final 2017

Roll No

Objective Type

Total Time: 25 Minutes
Total Marks: 12

Note: Encircle the right option for each of the following questions.

1. Memory Management technique in which system stores and retrieves data from secondary storage for use in main memory is called _____?

A. Fragmentation	B. Swapping	C. Mapping	D. None of these

2. Which of the following is a synchronization tool _____.

A. Thread	B. Pipe	C. Semaphore	D. Socket

3. Round-robin scheduling falls under the category of _____.

A. Non preemptive scheduling	B. Preemptive scheduling	C. All above	D. None of these

4. Paging _____?

A. Solves the external fragmentation problem	B. Solves the internal fragmentation problem	C. Allows modular programming	D. Allows structured programming

5. The operating system is a layer of software between _____ and _____?

A. Hardware, software	B. Kernel, hardware	C. DOS, Windows	D. None of the above

6. The banker's algorithm is used _____?

A. To prevent deadlock	B. To detect deadlock	C. To rectify a deadlock state	D. None of these

7. A critical section is a program segment _____?

A. Which has a high priority	B. Where code is shared by programs	C. Which forces deadlock	D. Where shared resources are accessed

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8. Time-sharing of resources by users is _____

A. Based on time slice	B. Based on input	C. Event driven	D. Operated by spooling

9. In UNIX which system call creates the new process_____.

A. Fork	B. New	C. Create	D. None of the above.

10. Bootstrap program is loaded at power-up _____.

A. Typically stored in ROM	B. Typically stored in RAM	C. Typically stored in Cache	D. Typically stored in Flash

11. The strategy of allowing processes that are logically runnable to be temporarily suspended is called _____ scheduling.

A. Preemptive	B. Non-preemptive	C. Shortest job first	D. First come first served

12. The memory allocation scheme subject to "external" fragmentation is _____

A. Segmentation	B. Swapping	C. Multiple contiguous fixed partitions	D. None of the above

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Government College University, Lahore.
Operating Systems (CS-2205)
Semester: VI Final 2017

Subjective Type

Total Time: 155 minutes
Total Marks: 48

Attempt any four questions. All questions carry equal marks. Please give precise and to the point answers to the attempted questions.

Q2.
(A) What is kernel panic? **(2)**
(B) What is preemptive and non-preemptive scheduling? **(2)**
(C) Define concurrency in multi-programming? **(2)**
(D) What is page fault? Explain the steps that are used to handle page fault? **(6)**

Q3.
(A) What is external and internal fragmentation? **(2)**
(B) What are the three requirements for the solution of critical section problem? **(3)**
(C) How page fault frequency can be used as a method of thrashing? **(3)**
(D) What are the differences between processes and threads. **(4)**

Q4.
(A) Is it possible to implement dual mode of operation at the software level? If Yes then how and if No then why not? **(2)**
(B) Why the idea of implementing page table as a set of dedicated registers is not used anymore? **(3)**
(C) What are the advantages and disadvantages of contiguous and non-contiguous memory allocation? **(5)**
(D) What is trap? **(2)**

Q5.
(A) Consider the following resource allocation graph.
P={P1,P2,P3,P4}, R={R1,R2,R3},E={R1→P1, P1→ R2, R2→P2, P2→R3, R3→P3,P3→R1, R1→P4}
1. Resource R1 has 2 instances
2. Resource R2 has 1 instance
3. Resource R3 has 1 instance
Draw the resource allocation graph and explain the possibility for a deadlock. **(6)**

(B) Assume that there are three resources, A, B, and C. There are 4 processes P0 to P3. At some time we have the following snapshot of the system. You have to create the need matrix and briefly describe why or why not is the system in a safe state? **(6)**

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	1	0	1	2	1	1	2	1	1
P1	2	1	2	5	4	4			
P2	3	0	0	3	1	1			
P3	1	0	1	1	1	1			

Q6.
(A) With reference to page replacement what is the significance of dirty bit? How does it effects the page fault? **(2)**
(B) Elaborate the Best-Fit, First-Fit and Worst-Fit algorithms **(3)**
(C) Briefly describe the different type of schedulers along with the differences between them. **(3)**
(D) Briefly explain the following terms **(4)**
Dispatcher, Starvation, Context Switch, Paging

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Roll No.

Government College University, Lahore

Operating Systems (CS-2205)

Semester: 4th **Session: 2012-16**

Objective Type

Final Examination 2014

Time Allowed: 20 Minutes **Max. Marks:** 14

Note: Cutting/Overwriting will be considered as wrong answer. This paper is closed {books + notes + neighbours}.

1. Which one of the following is not a valid state of a thread?

A. Running	B. Parsing	C. Ready	D. Blocked

2. Which one of the following is a synchronization tool

A. Thread	B. Pipe	C. Semaphore	D. Socket

3. Semaphores are used to solve the problem of _____.

A. Race condition	B. Process Synchronization	C. Both of above	D. None of the above.

4. The size of virtual memory depends on _____.

A. The size of the data bus	B. Size of main memory	C. The size of address bus	D. None of the above.

5. Suppose that a process is in 'BLOCKED' state waiting for some I/O service. When the service is completed, it goes to the _____.

A. RUNNING state	B. READY state	C. SUSPENDED state	D. TERMINATED state

6. Mapping of file is managed by

A. File Metadata	B. Page Table	C. Virtual Memory	D. File System

7. The dinning philosophers problem will occur in case of

A. 5 philosopher and 5 chopsticks	B. 4 philosopher and 5 chopsticks	C. 3 philosopher and 5 chopsticks	D. 6 philosopher and 5 chopsticks

8.To avoid the race condition, the number of processes that may be simultaneously inside their critical section is.

A. 8	B. 1	C. 16	D. 0

9. The strategy of allowing processes that are logically runnable to be temporarily suspended is called _____.

A. Preemptive	B. Non-preemptive	C. Shortest job first	D. First come first served

10.Fork is used to _____.

A. Dispatch a task	B. Create of a new job	C. Create of a new process	D. Increase priority of ta

11. Data cannot be written to secondary storage unless written within a _____.

A. File	B. Swap Space	C. Directory	D. Text Format

12. A system program that sets up an executable program in main memory ready for execution is _____.

A. Assembler	B. Linker	C. Loader	D. Compiler

13. Fragmentation of the file system_____.

A. Occurs only if the file system is used improperly	B. Can always be prevented	C. Can be temporarily removed by compaction	D. Is a characteristic of file systems

14. The memory allocation scheme subject to "external" fragmentation is _____

A. Segmentation	B. Swapping	C. Multiple contiguous fixed partitions	D. None of the above

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SUBJECTIVE QUESTION PAPER

EXAMINATION FINAL **2014** | SEMESTER: **IV**
SUBJECT: **BScs (Hons.)** | COURSE CODE: **CS-2205**

TITLE: **Operating System**

Time: Allowed: **155 minutes** | Max Marks: **56**

Note: Attempt any 4 questions. All Questions carry equal Marks. This paper is closed (books + notes + neighbours).

Q.2 (a): Briefly describe the services and functions provided by an operating system? (6)

Q.2 (b): Briefly describe following terms (8)
Starvation, System Call, Context Switch, Paging

Q.3 (a): Define deadlocks, what are different conditions of deadlocks? (7)

Q.3 (b): Consider the dining philosopher problem with n philosophers but with n + 1 forks, the extra fork is in the middle of the table and can be used by any philosopher (but only by one of them at a time). Is deadlock possible? Explain? (7)

Q.4 (a): Briefly discuss how a link can be established between more than two processes? (7)

Q.4 (b): Q.5 (b): Describe the difference between pre-emptive and non-pre-emptive scheduling algorithms. Which one is more suitable for a timesharing system? (7)

Q.5 (a): Draw a gantt chart and calculate the average waiting time for the following processes by using SJF, SRTF and Round Robin (time quantum = 2 ms) algorithm. (9)

Process Name	Arrival time	Burst Time
P_0	0	10
P_1	2	3
P_2	3	2
P_3	5	1

Q.5 (b): Briefly describe virtual memory and its working? (5)

Q.6 (a): What is a semaphore and what characteristics are of semaphores (7)

Q.6 (b): What is page fault? Explain the steps which are used to page fault handling? (7)

Best of Luck

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