

Assignment Operating System (OS)

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Marks 10

Instructions: Must be written in A4 paper with proper margin. Must be hand written; afterwards, take photo and make pdf file and upload to the TEAMS assignment submission section. You can use any resource i.e., books, slides, websites, YouTube, blogs etc. However, you must understand each and every word of your Assignment. While doing assignment if you cannot understand any topic do not hesitate to text me. (Total 9 Questions)

Deadline: 16th of August, 2021 (Fixed).

1. Develop a system using assembly language where the program will ask the number of user (1...N) first (input taken from the user). Afterward, the program will take individual marks of 5 subjects from the user and calculate grade for each of the users. 5 subjects are (OS, COA, CN, CAN, HCI). While calculating grade follow AIUBs grading system.

2. Suppose that you need to write an interactive menu as shown as below

Menu:

- 1) Print date and time
- 2) List all files in the current directory

Write a shell script for the above menu, user will execute the shell commands by choosing 1 and 2.

3. Write a shell script that sort a file content in ascending and descending order.

4. Define with example Critical section

5. Define with example Race condition

6. Describe different categories of Security breach

7. Define Deadlock and Starvation. What are the differences between these?

8. What are the methods to avoid and prevent deadlock situations? Briefly, discuss.

9. Consider the following system with 5 processes (P0, P1, P2 P3, P4) and 3 resource types A, B and C. The following snapshot of the system has been given.

Allocation				Need			Available		
Processes	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	4	3	2	3	0

P1	3	0	2	0	2	0			
P2	3	0	2	6	0	0			
P3	2	1	1	0	1	1			
P4	0	0	2	4	3	1			

a. Illustrate that the system is in a safe state by finding a safe process completion sequence.

b. If P0 requests (0,2,15), can the request be granted immediately? If yes, what will be the updated table?