CSE321
Take-Home Quiz 2
Total Marks: 15
Deadline: 7.9.24

Note: The deadline is fixed. It will not be extended. There will be no make-up of take-home quizzes. Please write the answers short and brief. Answers should not exceed more than 3/4 lines.

Answer all the questions below.

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1) When a process creates a new process using the fork() operation, which of the following states is shared between the parent process and the child Process? [2]
a. Stack
b. Heap
c. Shared memory segments

2) Explain the role of the init process on UNIX and Linux systems in regard to process termination. [2]

3) When a process is switched out of the CPU (e.g., during context switching), how does the PCB help the operating system manage the process? Why is this important? [3]

4) A user starts a program to download a file from the internet and then process that file. When the program starts, the process is created but not yet running. Once the download begins, the program needs to wait for the network to respond before it can continue. After the file is downloaded, the process starts processing the file. Finally, when the processing is complete, the program ends. [2]

Question:

Identify the state of the process at each stage of the scenario described above:

1. When the program is first started but hasn't begun execution.
2. While the program is downloading the file but waiting for the network to respond.
3. When the file is fully downloaded, and the program begins processing it.
4. After the program finishes processing the file.

5) State the difference between zombie process and orphan process. [2]

6) Imagine you are tasked with managing the scheduling of tasks in a shared computer lab used by students for various activities such as printing documents, compiling code, browsing the web, and running simulations. The lab operates on a First Come, First Serve (FCFS) scheduling algorithm, where processes are handled in the order they arrive. Considering the nature of the FCFS algorithm, discuss one potential disadvantage this scheduling method might cause. [2]

7) A company's server handles different tasks: real-time video conferencing, compiling large projects, and simple text editing. Currently, the server uses only FCFS scheduling algorithm, but users are experiencing delays, especially in video conferencing. Which strategy would better manage these tasks to ensure responsiveness for interactive tasks like video conferencing, and why? [2]