# CSE321 Take-Home Quiz 2

**Process**

1. Two processes (A and B) are distributed across multiple physical machines or networked systems. Which technique can be used to achieve inter-process communication in this scenario? Is it suitable for exchanging large amounts of data? Provide proper justification to support your answer.          **[2]**
   **Answer:** Message passing. Not suitable for exchanging large amounts of data.

2. A program has a process that will allow its child process to complete first. Which system call can be used in this scenario? Explain what may happen in absence of this system call.          **[2]**
   **Answer:** wait(). Cascading termination

3. John was studying system calls and found that the `fork` system call creates a child process. However, he observed that the child process executes the same instructions as the parent process but starts from the next instruction after the `fork`. Explain the reason behind this behavior.          **[2]**
   **Answer:** Program counter from PCB also gets copied from parent that indicates the next instruction to execute.

4. A process from its creation till its completion will go through various states. To enter different states, the process requires the decision of different types of scheduler. State the name of different schedulers for different process states with justification.          **[2]**
   **Answer:** new : long term scheduler, ready and running: short term scheduler

**CPU Scheduling**

5. A CPU-scheduling algorithm determines an order for the execution of its scheduled processes. Given **n** processes to be scheduled on one processor, how many different schedules are possible when the processes can't be interrupted? Give a formula in terms of **n**.      **[2]**
   **Answer:** n!

6. Consider a system implementing multilevel queue scheduling. What strategy can a computer user employ to maximize the amount of CPU time allocated to the user's process?          **[3]**
   **Answer:** Not utilizing full time quantum allocated, otherwise it's priority will be dropped and won't get maximum CPU time.

7. Imagine you are tasked with implementing a scheduling algorithm in an operating system for a computer lab used by students and faculty. The system experiences a dynamic workload throughout the day, with varying types of processes such as compiling code, running simulations, and web browsing. You selected SRTF(Shortest Remaining Time First) as the scheduling algorithm knowing that it provides lower waiting time than other algorithms you studied. Discuss the potential challenges you might encounter in implementing SRTF in this environment.      **[3]**

**Answer:** Processes with larger burst time have poor response time. Also, it's not always practical to know beforehand the burst time of the processes.