CSE321
Take-Home Quiz 1
Solution

Answer all the questions below.

Q1 [3 marks]: For attending an online lab class you have set an alarm by using the system default clock 10 minutes before the start time of the class. When the alarm turned on, you turned the alarm off and then joined the class using the zoom software. After joining class you are using notepad++ for taking notes. When the faculty provided some lab tasks to be done during the class you have executed vscode in order to do those tasks. Specify what types of software you have used here. Relate them with proper logic.

Solution: Application: zoom, notepad++, vscode (if it is used as text editor)
System: clock, vscode (if any extension is being used as compiler or interpreter for compiling codes within it)

Q2 [3 marks]: In order to take courses for upcoming semester students are required to complete the advising procedure. According to the procedure a student needs to request for his/her desired courses to the designated advisor. When an advisor receives an advising request from a student he/she adds courses according to the preference of the students if no anomalies occur. After adding courses the advisor approves the advising and it gets completed. After the completion of advising, the students gets registered to added courses and information of registered courses gets added to his/her dashboard.
Explain with proper reason which operation of OS is similar to the scenario described above and which portion of the scenario represents functions of system calls.

Solution: Dual mode. Advisors are working as system calls.

Q3 [3 marks]: In a thesis lab, a high performance PC is designated for doing research on parallel computing. In a particular semester three thesis groups registered for doing thesis on this domain. Therefore, lab authorities are required to allocate access to the high performance PC among registered groups. In order to ensure transparency, authorities allocated a 3 hour time cycle to each group on working days. Within that time if a group can finish their work then they have to leave the PC and the allocation will be given to any of the other groups immediately for the time cycle mentioned above. If any group cannot finish their work within their allocated time cycle then they have to save their progress and the allocation will be given to any of the other groups. That is how the allocation mechanism of the PC will be provided among three groups for the entire semester.
Explain with proper logic which OS structure is similar to the above mentioned scenario and what are advantages of the structure.

Solution: Multiprocessing/Time sharing system as the scenario is similar to rapid context switching.

Q4 [3 marks]: Devops is a modern software implementation philosophy. Conventional methods of implementing software support development team will only perform tasks related to development and operations team will only do tasks related to operations. But according to the Devops method both team will be merged into one team and all members will be involved in any activities regarding implementation of a software. A particular software company has 2 and 3 members in their operations and development teams respectively. They decided to shift to Devops mechanism for further activities. Therefore they merged their development and operation teams and both teams got involved processing all available activities.
Figure out which OS architecture is applicable to the scenario and explain functions of it.

Solution: Clustered system.

Q5 [3 marks]: In a doctor's chamber potential patients need to follow 2 steps in order to consult the doctor. First, they have to take a serial over the phone. If they get serials then the first 20 patients of the serial get called for the consultation. After getting called, patients need to maintain a queue of 5 pupils according to their serials and others need to wait. Once a patient gets called by the doctor, a patient from waiting can join in the queue according to the serial. Logically explain which functions from operating systems structure have similarities with the above scenario?

Solution: Job Scheduling: From 20 persons the first 5 are included in the queue for taking consultation and others need to wait until a slot becomes available in the queue.

CPU Scheduling: Patient gets called by the doctor from the queue.