Take-Home Quiz 1

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1. For the alarm, as i set it using the system default clock and while it is a part of the system but it still provides a specific functionality for the users which is basically time management so, we can say it is an application software. About the zoom software, it requires hardware access like webcam, microphone, etc. As it provides functionality to faciliate video conferencing and communicating online so, it is an application software, Notepad++ is also an application software as it allows us to edit text files. Basically, it is a text editor software that allows us to work with multiple open files in a single window making it an application software. Lastly, VScode is an (IDE) which is used for coding or software development making it an application software. Also, it allows users to work with multiple open files at ~~at~~ the same time in a single window.

2. This Scenario is similar to dual mode operation where advisors acts as kernel and Students are users.
The advisor is taking advising requests from the students which represents functions of System call. Therefore, the advisors or we can say the kernel executes the system call and returns the output which is similar to the advisors accepting student's advising and adding the courses they desire.

Requesting Course, Adding Courses by advisor, Approving advising these all acts as System Call in this Scenario.

3. This Scenario is similar to the time-sharing mechanism of an OS. In time-sharing mechanism, multiple processes gets access to the CPU/Processer for a fixed amount of time which is also known as round-robin scheduling. In the scenario each group is allocated a 3hours time cycle to use the thesis lab PC before the next group comes. Similarly, in OS time-sharing mechanism each process is given a fixed time slice to execute the process on the CPU.

According to the Scenario, if a group finishes their work within 3 hours, then they must leave and the next group is allocated. Similarly, in OS time-sharing mechanism, if a process is finished executing before or within time slice then the CPU switches to the next process immediately in the queue.

If a group cannot finish their work within 3 hours then, they have to save their progress and the allocation will be given to the next group. Similarly, in OS time-sharing mechanism, if a process has not completed execution within the time slice, the current state of the process is saved and is moved back to the ready queue and the next process in the queue gets access to the CPU for execution.

Advantages of this structure is, it ensures that all ~~groups~~ groups gets fair access to the PC and the PC doesn't stay idle. It Reduces the challenges for the lab authorities in managing and scheduling access to the PC for everyone and provides a simple and clear method for PC allocation.

4. ~~Monolithic~~ Monolithic Architecture is applicable for this scenario.

According to the scenario, the development and operations teams are merged into one single team and all members are involved in all activities related to software implementation. Similarly, in ~~OS~~ monolithic architecture, all the functions of the OS is integrated all together and therefore, all components can interact with one another directly without any restriction or separation of tasks.

According to the scenario both the operation and development tasks are handled by the combined team which improves collaboration, coordination and ~~sharing~~ shared responsibility. Similarly, in monolithic architecture as all functions are part of the same codebase and can be accessed and handled directly, it provides an efficient approach to system operations.

About the functions of monolithic architecture, Communication between all ~~components~~ Parts of the OS can happen without the need of a complex communication system. Since everything is integrated into one large program so, implementation is easier, avoiding any sort of communication between Processes. Any part of the OS can access hardware directly and handle basic tasks when needed.

5. The Provided Scenario is similar to Scheduling Queue in OS.

As first 20 Processes are selected for consultation, this part is similar to job queue where processes waits in the job queue before they are ready ~~on~~ to be executed and sent to ready queue.

The first 5 patients of the previously selected 20 patients are needed to follow another queue which is similar to ~~processes being~~ a certain number of processes are sent to ready queue and are ready to be executed by CPU.

The transition from 20 pathients queue to 5 Pathients queue is called Long term Scheduler in os language and 5 people queue to getting doctors consultation in short term scheduler in os language.