

1. I have used Applications software. As I have set an alarm by using the system default clock, I used zoom software, notepad++, vscode. On the other hand, Applications software comprises programs designed for an end user, such as word processors, database systems, and spreadsheet programs. Mainly, application software is a kind of software that performs specific functions for the end user by interacting directly with it. The sole purpose of application software is to aid the user in doing specified tasks. Web browsers like Firefox, and Google Chrome, as well as Microsoft Word and Excel, are examples of application software that is used on a personal computer or laptop.
  
2. Dual mode operation of the OS is similar to the scenario described in the question. In order to ensure the proper execution of the operating system, we must be able to distinguish between the execution of operating-system code and user-defined code. In Dual mode operation we have two separate modes of operation: user mode and kernel mode. A bit, called the mode bit, is added to the hardware of the computer to indicate the current mode: kernel (0) or user (1). With the mode bit, we can distinguish between a task that is executed on behalf of the operating system and one that is executed on behalf of the user. When the computer system is executing on behalf of a user application, the system is in user mode. However, when a user application requests a service from the operating system (via a system call), the system must transition from user to kernel mode to fulfill the request. On the other hand, When an advisor receives an advising request from a student he/she adds courses according to the preference of the students. After adding courses the advisor approves the advising and it gets completed. This portion of the scenario represents functions of system calls.

3. Time Sharing OS structure is similar to the scenario mentioned in the question. In time sharing, the CPU executes multiple jobs by switching among them. The main advantages of the structure is Switches occur so frequently that the users can interact with each program while it is running. Moreover, response time should be short in this structure. Again, it requires an interactive computer system, which provides direct communication between the user and the system.

4. Clustered OS architecture is applicable to the scenario mentioned in the question. As in a clustered system, which gathers together multiple CPUs. Clustered systems differ from the multiprocessor. In Clustered system they are composed of two or more individual system or nodes joined together. Each node may be a single processor system or a multicore system. CPUs are closely linked via a local-area network LAN or a faster interconnect, such as InfiniBand. Clustering is usually used to provide high-availability service that will continue even if one or more systems in the cluster fail. Since a cluster consists of several computer systems connected via a network, clusters can also be used to provide high-performance computing environments.

5. Process Scheduling from operating systems structure has similarities with the scenario mentioned in the question. The objective of multiprogramming is to have some process running at all times, to maximize CPU utilization. The objective of time sharing is to switch the CPU among processes so frequently that users can interact with each program while it is running. To meet these objectives, the process scheduler selects an available process (possibly from a set of several available processes) for program execution on the CPU. For a single-processor system, there will never be more than one

running process. If there are more processes, the rest will have to wait until the CPU is free and can be rescheduled. Moreover, in a multiprocessing system, from a hard-disk many processes can come to the RAM. But, as we know, CPU at a time execute only one process. So, process scheduling helps in this case to solve these kinds of problems.