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CSE381

HW1

Question1

1. Operating System as a Referee: Operating System allocates hardware resources to each user or application.
2. OS as an Illusionist: By virtualization of processor, memory, disk and etc. OS could let each application appear to own the entire computer.
3. OS as a Glue: Operating System provides common services that facilitate sharing among applications, the file written by an application could be read by another.

Question2

1. The operating system should not give the entire processor to each application until it no longer needs it. Since one program will occupy the entire processor, we need to let processor able to switch between different processes so that the operating system would be able to handle multiple programs at the same time. So if we give entire processor to an application until it no longer needs, we would not able to run multiple programs at the same time;

If there were multiple tasks, it should schedule first the task with least amount of work. Because it could reduce CPU’s waiting time and improve its efficiency.

1. Since the application is bug free, the operating system doesn’t need to isolate memory of each application. If the set of applications doesn’t fit, they can wait until enough memory is freed.
2. The operating system should allocate its disk space based on need. The first user shouldn’t acquire all of free space. Because it would lead to a situation that no other user able to use the computer.

Question5

1. Operating System kernel should limit application’s memory bound, prevent an application from access another application’s memory bound.
2. Memory-mapped devices should be used, so that the operating system could restrict each user’s authority to read and write in particular part of disk, and the user would not be permitted to access and corrupt other user’s files in disk.