

Tutorial 1

Question 1: Under what circumstances would a user be better off using a timesharing system rather than a PC or a single-user workstation?

Question 2: Describe some of the challenges of designing operating systems for mobile devices compared with designing operating systems for traditional PCs.

Question 3: Identify several advantages and several disadvantages of open-source operating systems. Include the types of people who would find each aspect to be an advantage or a disadvantage.

Question 4: What are the two separate modes of operation?

1-When there are few other users, the task is large, and the hardware is fast, time-sharing makes sense. The full power of the system can be brought to bear on the user's problem. The problem can be solved faster than on a personal computer. Another case occurs when lots of other users need resources at the same time. A personal computer is best when the job is small enough to be executed reasonably on it and when performance is sufficient to execute the program to the user's satisfaction.

2-

The greatest challenges in designing mobile operating systems include:

- * Less storage capacity means the operating system must manage memory carefully.
- * The operating system must also manage power consumption carefully.
- * Less processing power plus fewer processors mean the operating system must carefully apportion processors to applications.

4-

- * two separate modes of operation:
 - * user mode and
 - * kernel mode (also called supervisor mode, system mode, or privileged mode).
- * 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.

3-

- * Open source operating systems have the advantages of having many people working on them, many people debugging them, ease of access and distribution, and rapid update cycles. Further, for students and programmers, there is certainly an advantage to being able to view and modify the source code. Typically open source operating systems are free for some forms of use, usually just requiring payment for support services.
- * Commercial operating system companies usually do not like the competition that open source operating systems bring because these features are difficult to compete against. Some open source operating systems do not offer paid support programs. Some companies avoid open source projects because they need paid support, so that they have some entity to hold accountable if there is a problem or they need help fixing an issue. Finally, some complain that a lack of discipline in the coding of open source operating systems means that backward compatibility is lacking making upgrades difficult, and that the frequent release cycle exacerbates these issues by forcing users to upgrade frequently.