

Course Name: Operating Systems and System Programming
Course Code: 15B11CI412

Tutorial-1

Introduction to Operating System

Topics (covered): Layers of Computer system, Role of Operating Systems, Operating System components, Dual Mode of Operating System, System calls, Types of Operating System.

1. There are several design goals in building an operating system, for example, resource utilization, timeliness, robustness, and so on. Give an example of two design goals that may contradict one another.
2. What is the difference between kernel and user mode? Explain how having two distinct modes aids in designing an operating system.
3. Which of the following instructions should be allowed only in kernel mode? (a) Disable all interrupts. (b) Read the time-of-day clock. (c) Set the time-of-day clock. (d) Change the memory map.
4. What is a trap instruction? Explain its use in operating systems.
5. What type of multiplexing (time, space, or both) can be used for sharing the following resources: CPU, memory, disk, network card, printer, keyboard, and display? Give two real life scenarios for space and time multiplexing. (ex: Telephone at home is time multiplexing)
6. Suppose the library procedure is called read and the system call itself is called read. Is it essential that both of these have the same name? If not, which one is more important?
7. Please briefly discuss these 11 steps involved in making the system call read(fd, buffer, nbytes)
8. If you have to choose between Windows and Linux for current semester as the only OS, then which OS will you go for and give 5 reasons for the same.
9. Define the essential properties of the following types of operating systems:
 1. Batch
 2. Interactive
 3. Time sharing
 4. Real time
 5. Distributed
10. 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