

1. Book Answer: Hub, Bridge

Additional Information: hub is a basic connectivity device that operates at the Physical Layer, while a bridge is a more sophisticated device that operates at the Data Link Layer and helps manage traffic between different network segments. In modern networking, more advanced devices like switches and routers are commonly used instead of hubs and bridges.

1. Hub: A hub is a basic networking device that operates at the Physical Layer (Layer 1) of the OSI model. It is used to connect multiple devices in a local area network (LAN). Hubs broadcast data to all the devices connected to them, regardless of the intended recipient. This is known as a broadcast domain. Hubs are considered outdated and inefficient because they do not filter or manage data traffic. As a result, they lead to network congestion and collisions, especially in larger networks.

2. Bridge: A bridge is a networking device that operates at the Data Link Layer (Layer 2) of the OSI model. It connects and filters traffic between different network segments or LANs, creating separate collision domains. Unlike hubs, bridges are more intelligent and can analyze the MAC addresses of devices connected to them. They use this information to make forwarding decisions, reducing unnecessary traffic on the network. Bridges help improve network performance by dividing a larger network into smaller segments and preventing unnecessary traffic from crossing between them.

2. Book Answer:(a) hardware

Book Answer:(b) software

Book Answer:(c) an applet

Book Answer:(d) a sensor

Additional Information:

1. Hardware: Definition: Hardware refers to the physical components of a computer or electronic system. It includes devices that you can touch and see, such as the central processing unit (CPU), memory modules, storage devices (like hard drives or SSDs), input devices (keyboard, mouse), output devices (monitor, printer), and more. Role: Hardware provides the foundation for a computer system and enables the execution of software.

2. Software: Definition: Software is a set of instructions, programs, or data used to operate computers and execute specific tasks. It includes the operating system, applications, utilities, and other programs that enable the computer to perform various functions. Role: Software acts as an intermediary between the user and the hardware, facilitating communication and enabling users to interact with the computer.

3. Applet: Definition: An applet is a small application or software program designed to perform a specific function within a larger application or software environment. It is often used in the context of web development, where Java applets or other technologies enhance the functionality of a web page. Role: Applets provide specific features or interactive elements to enhance user experience, typically within a web browser.

4. Sensor: Definition: A sensor is a device that detects and measures physical properties or changes in the environment and converts this information into signals or data that can be interpreted or used by a computer or electronic system. Role: Sensors are essential in various applications, including IoT (Internet of Things), robotics, and environmental monitoring, where they gather data about temperature, pressure, light, motion, or other physical parameters.
