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Data com WK3

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1.Practice

A university campus implements a comprehensive networking system to provide reliable internet access for students, staff, and faculty. The network design combines both wired and wireless media to support diverse needs. Wired connections use Ethernet cables, mainly Cat6, to connect servers, administrative offices, and computer labs. This ensures high-speed, stable, and secure data transfer for critical tasks such as database management and research. Fiber optic cables link the main buildings, offering high bandwidth and low latency across long distances.

For mobility and accessibility, wireless media in the form of Wi-Fi is deployed across lecture halls, libraries, dormitories, and outdoor areas. Wireless access points are strategically placed to provide seamless coverage and support simultaneous connections. Students rely on Wi-Fi for online learning, streaming lectures, and collaboration tools. The integration of both wired and wireless media ensures flexibility, scalability, and efficiency, enabling the campus to meet modern IT demands effectively.

2. Fiber optic cable is a high-speed transmission medium widely used in IT networking to transfer data over long distances with minimal loss. It uses light signals instead of electrical signals, allowing faster speeds and greater bandwidth compared to copper cables. In IT, fiber optics play a key role in backbone connections for internet service providers, data centers, and enterprise networks, ensuring reliability and scalability. They are also less prone to electromagnetic interference, making them ideal for secure and stable communication. Overall, fiber optics support the growing demand for faster, more efficient, and high-capacity IT infrastructure.

3**. Using Packet Tracer to simulate a LAN with Cat6 cables helped me understand how wired networks are built and function. I connected PCs, switches, and a router using Cat6 cables, which provided reliable and high-speed connections in the simulation. The process showed me the importance of proper cabling and device configuration in ensuring smooth communication. I also learned how data flows across the LAN and how IP addressing enables devices to connect effectively. Overall, the exercise improved my practical networking skills, giving me confidence to design and troubleshoot small LANs in real IT environments**.

4. The diagram illustrates a small network that combines wired and wireless connections. In the setup, several desktop computers are connected to a switch using Ethernet (Cat6) cables, forming the wired Local Area Network (LAN). The switch links to a router, which provides access to external networks, including the internet. Wireless devices such as laptops, smartphones, and tablets connect to the network through a wireless access point integrated into the router. This hybrid design demonstrates how wired media offers speed and stability for stationary devices, while wireless access provides flexibility and mobility for users on the go.