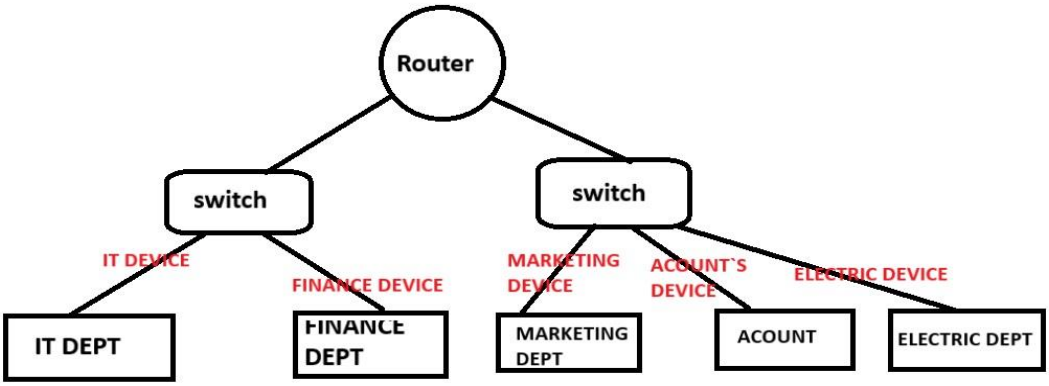
1.



2.

- IP subnetting is used to divide the network into distinct subnets for each department, improving organization, traffic management, and security.
  Subnets: Each department is allocated its own IP subnet to segregate traffic and reduce broadcast domains. For example:
  HR Department: 142.160.10.40/24
  Sales Department: 132.198.20.02/24
  Finance Department: 492.868.30.30/24
  IT Department: 172.164.50.01/24
  This segmentation limits network collisions and ensures each department operates on its own network, reducing unnecessary traffic between departments.
- **Routing**: In this design, static routing is used to manage communication between the subnets. The core router is manually configured with routing tables, directing traffic between the departmental subnets based on fixed routes.
  Static routes ensure that critical communications, such as those between the Finance and IT departments, are predefined and handled efficiently without relying on dynamic routing protocols.
  This method reduces complexity in smaller networks, where the topology is stable and doesn't frequently change.
- **How Communication Between Departments is Managed**

Inter-Departmental Communication: Communication between departments is managed through the core router, which handles data routing between the various subnets.

For example, if a computer in the HR Department (142.160.10.40/24) wants to communicate with a computer in the Sales Department (132.198.20.02/24), the data packet is sent to the router, which looks at its routing table and forwards the packet to the correct destination subnet.

Security Measures: Specific policies ensure that sensitive departments, such as Finance, have restricted access.

Access Control Lists (ACLs) on the router prevent unauthorized traffic from other departments to the Finance Department (492.868.30.30/24)

VLANs may also be used to further segregate department traffic within the same physical network while maintaining secure inter-department communication through the core router.