**COMPUTER NETWORKS LAB**

**FINAL PROJECT REPORT BY**

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**SUBMITTED TO**

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**DATE: 30 NOV 2024**

**TITLE: DEPARTMENTNET  
TOOL: CISCO PACKET TRACER**

**DepartmentNet**

**Final Project Report**

**1. Project Overview**

**Project Title:** DepartmentNet  
**Objective:**  
The objective of this project is to design a network architecture that represents the structure of different departments within a building. The network enables seamless communication and resource sharing between devices in various departments.

**2. Tools and Technologies Used**

* **Cisco Packet Tracer**: A simulation tool for designing and testing network topologies.
* **Hardware Simulations**:
  + PCs
  + Laptops
  + Printers
  + Modems
  + Switches
  + Routers

**3. Project Implementation**

**3.1 Network Design Steps**

1. **Department Layout:**
   * Each department in the building is represented as a distinct section in the network.
2. **Device Placement:**
   * PCs, laptops, and printers are allocated to each department as per their requirements.
   * Modems, switches, and routers are strategically positioned to ensure optimal connectivity.
3. **IP Addressing Scheme:**
   * Unique IP addresses are assigned to each device to avoid conflicts and facilitate smooth communication.
4. **Inter-Department Connectivity:**
   * Switches within departments connect the local devices, while routers enable inter-department communication.
5. **Simulating Network Behavior:**
   * Testing connectivity between devices using tools like *ping* and *traceroute*.
   * Verifying printer and internet access for all departments.

**4. Unique Features**

The **DepartmentNet** project stands out due to its ability to:

* Accurately represent the physical and logical network structure of multiple departments within a building.
* Serve as a foundation for real-time implementation by leveraging detailed planning and network optimization techniques.

**5. Real-World Applications**

The network design proposed in this project can be implemented in real-world scenarios to:

* Provide efficient communication between devices in a multi-department organization.
* Facilitate resource sharing, such as printers and internet access, across departments.
* Optimize the infrastructure of corporate offices, universities, and other multi-department institutions.

**6. Conclusion**

The **DepartmentNet** project successfully demonstrates the creation of a structured, efficient network for a multi-department building. By simulating the network in Cisco Packet Tracer, potential issues can be identified and resolved during the planning phase. This project highlights the importance of careful design and implementation for achieving reliable and scalable networks.