Summary Report

24UBC153
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The laboratory exercise involved the design and implementation of three network topologies in GNS3: a **Simple LAN**, a **Star Topology**, and a **Multi-Switch Mesh**.

1. **Simple LAN:**
   In this topology, two PCs were connected to a single switch. Appropriate IP addresses within the same subnet were assigned, and connectivity between the devices was successfully verified using the *ping* utility.

2. **Star Topology:**
   This setup consisted of four PCs connected to a central switch. After configuring the IP addresses, all devices were able to communicate seamlessly, confirming proper network operation.

3. **Multi-Switch Mesh Topology:**
   The final topology included three switches interconnected in a loop (SW1–SW2–SW3–SW1), with one PC connected to each switch. Once all PCs were assigned IP addresses within the same subnet, end-to-end connectivity was validated through ping tests. The Spanning Tree Protocol (STP) effectively managed the switching loop by blocking one redundant link, ensuring stable and efficient network performance.