Summary Report – Network Simulation Lab Assignment

This project focused on introducing fundamental network simulation skills using GNS3 on an Ubuntu environment. The objective was to understand basic LAN design concepts, create switch-based topologies, test connectivity, and document the results through a structured GitHub submission.

1. Environment Setup GNS3 was successfully installed on Ubuntu, with the local GNS3 server verified as active (green status indicator). The application launched without issues, confirming that the required environment for network simulation was correctly configured. A screenshot was captured as proof of installation and server readiness.

2. Network Topology Design & Testing Three switch-based network topologies were created as part of the assignment:

Topology 1 – Simple LAN A basic LAN consisting of two PCs connected through a single switch was built. Both PCs were assigned IP addresses from the same subnet. End-to-end communication was validated through successful ICMP ping tests, confirming proper switching and address configuration.

Topology 2 – Star Topology A star network was designed using four PCs connected to one central switch. Each device received an IP address within the same network range. Connectivity tests confirmed that all PCs were able to communicate with one another.

Topology 3 – Multi-Switch Mesh A mesh-style network with three interconnected switches (SW1–SW2–SW3–SW1) was created, with one PC connected to each switch. Successful ping results confirmed full communication across all switches.

3. Project Export Each topology was saved as an individual GNS3 project and exported as a Portable Project.

4. GitHub Submission A public GitHub repository was created and included project folders, screenshots, and this summary report.

Conclusion This assignment strengthened skills in network design, simulation, and documentation. All tasks were completed successfully.