CO515-2024 : Advances in Computer Networks: Selected Topics

Lab Goals

- Understand and implement Software-Defined Networking (SDN) concepts.
- Design custom network topologies.
- Explore advanced networking protocols and performance analysis tools.

- Setting Up the Lab Environment

    - Ensure Mininet is installed and operational.
    - Introduce additional tools and controllers (e.g., Ryu, POX) required for the lab.

- Software-Defined Networking (SDN) with OpenFlow
    - Controller Setup: Set up an SDN controller (like Ryu) and connect it to Mininet.
    - Custom Topologies: Create a custom network topology with multiple switches and hosts. For example.

```bash
sudo mn --custom mytopology.py --controller=remote --switch ovsk
```

Implementing OpenFlow Rules: Write simple OpenFlow rules to control packet flow through the network.

Tasks:

1. Design a Multi-Switch Topology: Create a more complex topology with multiple switches and hosts.
2. Experiment with Different Link Types: Use different bandwidth and latency settings to simulate real-world network conditions.
3. Test Network Performance: Use tools like iperf and Wireshark to measure network performance and analyse packet flow.