COMPUTER NETWORKS LAB
ITL355: SPRING 2023
Report: Semester Project Submission 1

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Network Simulator - Physical and Data link layer

We have developed the first two layer of network simulator i.e., Physical Layer and Data link layer.

- **Language Used:** Entire code has been written in **Python** and **Socket.**

- **IDE Used:** We have implemented and compiled the code on **VS Code.**

- **Libraries Used:**
  - dash
  - dash_core_components
  - dash_html_components
  - network
  - plotly.graph_objs
  - pandas
  - colour
  - datetime

- textwrap
- socket
- threading
- time
- math
- random

Objectives Completed

1. Developed functionalities at the Physical Layer

- Generated End Devices and Hubs
- Established connections between them to form a network topology
- Enabled data transmission and reception
- Displayed the topology of the network visually

2. Developed functionalities at the Data Link Layer

- Built Layer 2 devices such as Bridge and Switch
- Implemented address learning when using Switch
- Applied at least one Access Control Protocol, CDMA
- Implemented three Flow Control Protocols for noisy channels: Stop and Wait, Go Back N, and Selective Repeat
- Calculated the number of Broadcast and Collision domains present in the network

References

- https://piazza.com/class_profile/get_resource/lemb8epwmnz3wd/lfkr8a2khqx1x0
- https://piazza.com/class_profile/get_resource/lemb8epwmnz3wd/leqzw7703si27a
- https://www.geeksforgeeks.org/python-basics/
- https://www.geeksforgeeks.org/socket-programming-python/