CSCI 4211: Introduction to Computer Networks

Spring 2024

PROGRAMMING PROJECT 3: SDN and Mininet

Note: The use of chatGPT and similar bots is strictly prohibited for this project.

1. Overview

Virtual networks provide a good framework for testing and experimenting with networking environments in a safe and configurable way. Additionally, Software Defined Networks ("SDNs") provide an added level of easier network management for both real and simulated environments through centralized configuration and monitoring. In this project, you will learn how to create a virtual network on your local machine with Mininet, evaluate its performance, and build SDN controller logic to install flow rules with OpenFlow. For this project, you are allowed to work independently or in groups of 2.

Note: This project and related topics were discussed in Lecture 19.

In this project, you will:

- Have hands-on experience using Mininet and SDN controllers
- Learn how to measure latency and throughput in the network
- Build a custom virtual network using Mininet
- Design and implement an Ethernet-based self-learning algorithm using an SDN controller

The project is divided into three phases with a separate deadline and deliverable for each phase. Here is the overview of each phase: