CS 549: Performance Analysis of Computer Networks
Lab Assignment 1

Assigned: Feb 6, 2025   *Due*: Feb 15, 2025

Submit a report in answering the questions in each part. Your answers must include the associated calculations, comparison tables, plots and inferences.

1. Design experiments to use `wget` to measure network throughput. Consider the following factors: file size, download speed limit (a `wget` option), number of concurrent file downloads running (write a script that spawns the desired number of concurrent downloads), type of access link, time of day. Use three types of experiment design:

   - Simple design/one factor at a time
   - Full factorial design
   - Fractional factorial design

   For each design, show tables indicating the choice of factors and levels. The files to be downloaded are available here:

   1B `https://cloud.iitmandi.ac.in/f/104e18c7689843d38646/?dl=1`
   1kB `https://cloud.iitmandi.ac.in/f/34f236050c354ac995dc/?dl=1`
   10kB `https://cloud.iitmandi.ac.in/f/f2136456bcf6439eaf18/?dl=1`
   100kB `https://cloud.iitmandi.ac.in/f/c3b76d27af45462db019/?dl=1`
   500kB `https://cloud.iitmandi.ac.in/f/3c2970f86ea8449c84d1/?dl=1`
   1MB `https://cloud.iitmandi.ac.in/f/dcd4883d914a44fb9850/?dl=1`
   10MB `https://cloud.iitmandi.ac.in/f/390c9e71032d4f30a6ca/?dl=1`
   100MB `https://cloud.iitmandi.ac.in/f/4b2c32ec021e4de4a710/?dl=1`
   500MB `https://cloud.iitmandi.ac.in/f/bf9f34fc8eec43ee991e/?dl=1`

   Conduct the experiments and plot the following:

   (a) Observed throughput as a function of the most influential factor
   (b) Time taken for whole experiment as a experiment design chosen

   Remember to include all details of your experiment, including system and OS specifications.