## Programming Assignment 2

# File download with parallel TCP connections using HTTP Range Requests

1.  (30 Points) Write a client program to download a single file as multiple chunks (smaller unit) using sockets programming. The client program should do the following steps
    a.  It should take the URL for the file to be downloaded and number of parallel connections (N) to be used from the command line.
    b.  The client program should create http headers. Do not use any HTTP package/API.
    c.  Get the file size from the server using HTTP HEAD request.
    d.  When the server responds with total file size, create N parallel TCP sockets to the server and request specific chunk using HTTP Range Request. For instance say file size is 1GB and number of parallel connection is 10, then each stream should query for a chunk size of 100MB.
    e.  Combine the received chunks and create the original file.
    f.  Verify that the received file is not corrupted using checksum of the actual file.
2.  (10 Points) Analyse the benefits of using parallel connections by observing the following.
    a.  Time to download with number of parallel TCP connections for downloading the file. Use sufficient number of connections to have a meaningful result.

b. Instantaneous throughput for each stream.

c. Any other metrics.

3. (5 Points) Assignment Report - Provide a complete report on the implementation, studies performed, and inferences made.

4. (5 Points) Viva during evaluation.

## Check Web sources for more information

Submission Guidelines: Provide the following in a single zip file named as

<your roll no>_<assignment2>.zip

1. Assignment Report with screenshots showing the working of your code.
2. All source codes and help file to run your code.

Note: Plagiarism check will be done on your submitted code. The evaluation will be done offline by the TAs on a designated time slot in the lab.