Chet Koziol, Trevor Hecht, & Kurt Madland
CS 176B - Almeroth
March 4th, 2018

Final Project Deliverable B

ABSTRACT: Our original project idea was to create an online network speed test tool to help a user calculate their current internet access speeds, as well as provide other utilities to inform them about what negative factors might be inhibiting their current speeds, and providing information about steps they can take to reduce the effects of those negative factors. This is still our project idea and we've taken several steps to make our networking tool a reality. We've started to design our site, and have the ping and download functionalities working.

INTRODUCTION: Both upload and download speeds are of critical importance to both desktop and mobile users alike today. Most users, while unaware of most other internal performance metrics of their device, are acutely aware of their connection speeds, or are at least are aware of when their connection speeds are faltering. So, we propose to develop a free online network speed testing tool for users to easily view their device's connection speeds and to provide other analysis of the device's network activity in order to offer suggestions on how to improve connection speed. To accomplish this goal, we are designing, and will potentially host, a website with latency, download, and upload speed testing tool and other utilities. Other potential utilities could include a scan of the device's network load to show which processes are hogging network speeds, or added webpages of information to provide the user with general information of why their network speeds might be slowed and what they can do to fix it.

METHODOLOGY: In order to build the network speed test, we are using javascript methods embedded into an HTML webpage to upload and download images from a remote server to calculate download speed. We've started by setting up the website, locally hosted on Chet's computer, and created buttons for testing download speed and latency. We created a website image repository from which to download images for calculating download speeds (https://internetspeedtest176b.wordpress.com/image-repository/). We also have javascript code to download an image and calculate the download speed using the information about the image size and download duration. Our current download speed tool works by simply calculating the download size and dividing it by the download time. We've also written javascript code to ping the serve. We've used the pings and averaged them to calculate a tentative latency value. We've embedded all of the javascript code so far into a simple HTML webpage that we will eventually host online. In addition, we've added a few simple descriptive and formatting elements to the webpage to make it a little more aesthetically pleasing and easy to use. Currently out site is barebones, just with buttons and text, but this will be cleaned up by our final project.

We want to improve on what we have so far in a number of ways. We plan to enhance our download speed test to download several images off of our remote server to get a more aggregate download speed, rather than a single image. We'd also like to present the download speed in a more intuitive and user-friendly manner, maybe using some sort of visual speedometer. We want to see if we can have our server and webpage remotely/professionally hosted, so that we won't have to rely on the webpage only working while Chet's laptop is hosting the webpage. We also need to add an upload speed test. We also aren't sure how we are going to present our speeds in a visually appealing way (like a speedometer). Further, we want to add additional pages to our website with researched information about the causes of network delay, as well as some simple solutions the user can access to analyze or improve their network connection.

Our download test works by downloading an image from the image server, and timing how long it takes to complete.Then we divide the size of the file by the time, giving us the speed. To improve on accuracy we will add more downloads and average them. Our ping test works similarly, pinging the same server and timing the response. For this we do the test 5 times, and average the results.

RESULTS: So far, we've successfully implemented our latency (ping) tests and download speed test. Our original results varied slightly, but after averaging several downloads to calculate the download and latency speeds our results are very consistent. We want to research ways to improve our download speeds. Our results will be more complete after we implement our upload speeds and provide a visualization for our speed calculations. Once all of our speed tests are implemented, we will evaluate their performance against popular online speed tests from companies like Google, etc.

COMMENTS: As of now we are hosting our site from a laptop, but we would like to move this to a real hosting platformplatform, so it will be available 24/7, not only when the laptop is running the server. Also, we have the site that we use to ping/download/upload hosted at: (https://internetspeedtest176b.wordpress.com/image-repository/).

We faced quite a few challenges setting up different libraries, and had to change the technology we used multiple times due to issues with dependencies. Now that we have everything set up though it should be much easier to implement and clean up the rest of the project.