Homework 3: Webpage Load Time Analysis

1.Ans

The best way to capture performance information from the chrome web developer tools is by navigating to each web resource page corresponding Timing tab.

- Timing tab and waterfall provides information regarding time spent for queueing, DNS lookup, Request sent, Waiting(TTFB), Content Download, Receiving Push, Reading Push
- Summary Panel by DevTools provides DOMContentLoaded and load times of the wepage
- We can analyse the scripts in a webpage by navigating to the Preview tab so that we can check whether that script is delaying page load and not necessary for wepage loading.
- Enable screenshots option helps us to clearly identify which Request took more time to load.
- We can also simulate fast 3G and slow 2G to correctly analyse the load time.

Non-Networking components

Unoptimized Images:

- Request takes more time for downloading huge web resources like JPEGG images.
- We can reduce its size by converting JPEG images to SVG components.

More number of Http Requests:

- Browser makes Individual Http request for loading css image, so more Https requests are used for loading CSS images
- We can reduce number of requests by combining related images into small number of css sprites.

Render blocking scripts:

- Some scripts may take huge load time and are not necessary for webpage load. These scripts cause web browser to stop rendering and execute that script immediately
- We can Reduce this by making such scripts asynchronous.

Not enabling compression:

- Huge HTTP pages take more time to download thereby increasing webpage load time
- We can reduce this by compressing these HTTP pages.

Networking components

Distance between server and client :

- If the server is more distant from the requesting host then the HTTP request has to route through many networks which results delay in web page load time

- Solution: By using content distribution networks(CDN), cached versions of website content are stored in geographically distributed points of presence (PoPs). Each PoP has a number of caching servers responsible for expedient content delivery to clients within its proximity.

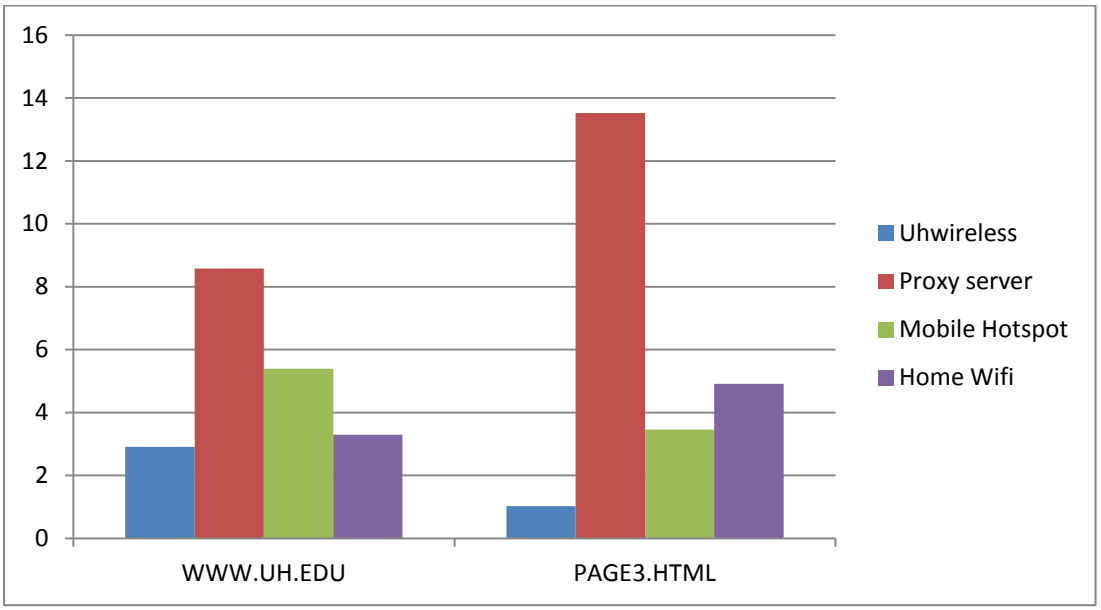
Loading webpage with proxy:

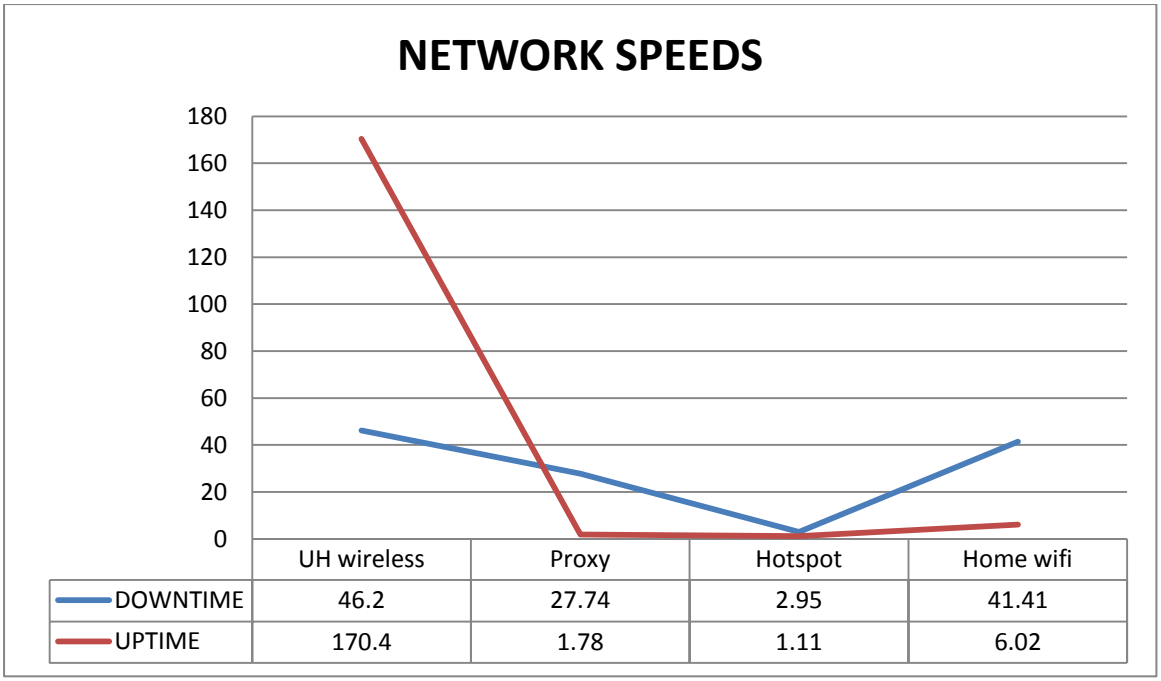
- If using HTTP proxy the web traffic has to pass through the proxy so it takes more time for web page loading
- we can reduce delay by avoiding this.

Not using web caching:

- If we dont use cache request has again go to origin server increasing load time.
- Solution: Using web caching.

2) **COMPARISON OF PAGE LOAD TIMES**





	UH wireless	Proxy	Hotspot	Home wifi
DOWNTIME	46.2	27.74	2.95	41.41
UPTIME	170.4	1.78	1.11	6.02

OBSERVATIONS:

1.Webpage load time is least in case of using UH wireless because of factors like close proximity of servers and highest downtime and uptime speeds

2.Remote HTTP Proxy and mobile hotspot took more load time because

-In case of HTTP proxy, web traffic has to pass through the proxy therefore it causes delay to process the request.

-Mobile Hot spot packets comes from network service provider so it takes more time than others.

3.Home wifi has second highest Downtime, UPtimes

3. Describe at least one surprising thing you discovered while doing this homework.

Ans)

- I discovered webpage load time depends not just on network but also on components like css, javascripts and that we can compress html page for faster processing of Requests.

- Another interesting thing is about Content management systems like WordPress which have plugins that will cache the latest version of your pages and display it to your users so that the browser isn't forced to go dynamically generate that page every single time.