

# BITS F364 Assignment 2: Website Usability Testing - Part A

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## Abstract

This report will be structured to include a few unique notes and modifications we made to Part A of the Assignment in order to better test the website and gain a more holistic scoring mechanism for websites. Further on, the report will include a tabular representation of our observations and certain salient factors we noticed while conducting this Assignment. Lastly, we will attempt to justify the ranking of these websites and explain why they performed the way they did and subsequently explain their usability.

## Points to Note

- The Assignment was done with the browser being Mozilla Firefox as it allowed certain additional methods to get past SSL errors and iframe switching.
- It was seen that in most websites - multiple links were repeatedly referenced and had the same load times. Those have been discarded in the Excel File that has the data - however, the exact number of links have been mentioned in this report which includes all repeated links.
- It was found that certain websites had very large pdf linkages - despite those working, they either took inordinate amounts of time to load. Given that most downloadable documents depend entirely upon speed and space of the testing device, in an effort to not disadvantage a particular website unfairly - those have not been tested for speed. However, they are represented down below.
- Similarly, no files that are automatically downloaded upon the clicking of a link (.exe's, .apk's, .mpeg's, .docx's etc) have been tested for speed or link activity.
- Lastly, no href elements that link to the same page in such a manner that makes link time testing obsolete have been tested - this includes mailto: extensions (which operate differently on each system and open up the default Mail client) and javascript:void(0) usages.

## Observations

Website	Downloadables [1]	Repeated Links [2]	Tested Links [3]	Total Links [1]+[2]+[3]
BITS Pilani	36	371	88	495
Edu India	44	34	269	347
ISRO	9	22	72	105
NREGA	28	3	93	124
USA Gov	0	254	231	485

Table 1: Table for Link Counts

The order of the website scores is given in the table below.

- Governmental links often had more broken links or redirected links. They often have website links which are either deprecated or have their purpose shifted to other places (For example - india.gov.in is now the central government website while india.gov (which most websites still have residual links to is now deprecated and give a 404 error). This is greatly concerning as a number of people who visit this website would subsequently not know where to go if they need a particular service and would be stuck on dead links.
- The Edu India website linked to a number of college home page websites which had a dramatically negative effective on the average link load time. We feel this can be explained by the fact that the back-end structures on these websites are often not well developed. Moreover, those websites are often hosted on out-dated, low-cost servers and do not have user experience as their primary concern.

Rank	Website	Website Score
1	ISRO	0.014
2	USA Gov	0.033
3	BITS Pilani	0.069
4	NREGA	0.198
5	Edu India	0.527

Table 2: Website Score

- Secondly, we feel that these flaws are often not pointed out or addressed bureaucratically. Very few people visit college websites in India and fewer complain in an effort to make them faster.
- Links in the NREGA and Edu Gov website were often heavy on the multimedia elements which increased load times exponentially. On the converse, websites like ISRO and USA Gov were much more data-driven in the way they approached links and had fast load times for their .aspx files.
- The code we used took a long time to run on the Edu Gov website - which indicates that using that website would be difficult for users who are used to seeing instant or quick web loads.
- The BITS Pilani website had no broken links and had a moderately decent link load time - which bodes well for the net usability of the website.
- The NREGA website had a pop-up come up at every refresh of the page which had to be closed programmatically. This would cause some frustration to novice users
- This code cannot check for how well the links were located and how intuitive their usage and redirection is as this is a subjective matter - but on cursory glances, the ISRO and USA Gov website were well labelled and spaced to allow for intuitive and discoverable access. However, the NREGA website was cluttered and was hard to find.
- On a final observation - we agree with the scores given out to rate the ISRO and the USA Gov website as being the most usable and most user-friendly, whereas the NREGA and the Edu India are in severe need of updation of the dead/redirected links and the back-end servers. Often, these web links timed out which would be a great deal of frustration to a user as the great wait is often non-descript and frustrating to deal with. It would require Government intervention to repair these websites and make them more accessible to users like poor Farmers and Students (the most obvious users of that website).
- It makes sense that the USA Gov and the ISRO Website are well developed because the stakeholders that use those websites often demand the highest levels of User Experience and would hence constantly work towards upgrading and updating those websites and removing redundant linkages.

## Methodology

1. The code was run in Python using the Selenium library and the geckodriver WebDriver to facilitate scraping the web page for all links.
2. The webpages were run and the web links were scraped. Firstly, all internal links that redirected to the same page or a different section of the exact same page were discarded as we don't think they paint an accurate picture of what a 'link load time' represents. Secondly, all javascript:void(0)'s, mailto:'s and tel's were discarded as they often depend upon system specific usage and call system clients for their usage, Thirdly, all downloadable media including pdf's and the like were discarded (but mentioned above in the report) in an attempt to get a fair understanding of what the links were like and not what downloadable content there was on the webpage.
3. The links were run and the status code that each of them returned was gathered - a max of 2 redirects was allowed before the link status code was considered. A status code in the 2xx and the 3xx series was considered to be an alive link whereas 4xx (specifically 404 and 408) were considered dead links.
4. The front-end load time was calculated as being the time from the first byte being loaded to the last byte being loaded and the page becoming interactable. This was measured in milliseconds using an inbuilt Driver function.
5. The back-end load time was calculated as being the time from clicking upon the link and the server registering the link click to the first byte being loaded for the new page. This was then summed up with the front-end load time to calculate the net time from click to interactable.
6. Subsequently, the Excel sheet was created programmatically with the average being calculated and the website score was generated,

Through this Assignment, we managed to score 5 different websites and scrape through them to find the links they redirect to, the time those links take to load and whether they load at all.