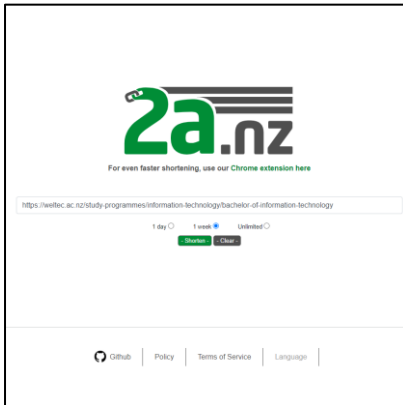


2a.nz URL Shortener

By: Lewi Hardy, Nilesh Kishore and Moucheng Mao

Advisor: Drew Duncan

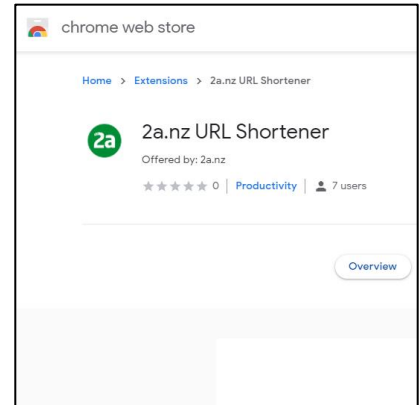
Client: Project Team



2a.nz URL Shortener homepage



Shortened URL overview page



Developed Chrome browser extension

INTRODUCTION

The 2a.nz URL Shortener is an advanced web tool that is used for the shortening of long URLs. Our website consists of a clean user interface targeted at users of all skill levels.

A key difference that sets ours apart from others in the market, is that we provide accurate data, useful detailed graphs, all 100% free and with no user sign up. Our generated URLs are also different in a sense that to increase readability we have excluded similar characters that are often difficult to read.

Using our site, a user would copy a URL that they intend to shorten, navigate to 2a.nz and paste the long URL to shorten. Alternatively, the user can use our Chrome extension to shorten from the page they are currently on. After that an overview page is visible with a shareable QR code, as well as a detailed statistics page which displays visual graphs and detailed user device and location information.

DEVELOPMENT

The skills each team member gained from our studies at WeITec assisted with all aspects of the project. The team initially used a waterfall methodology, but transitioned to an agile methodology when Covid-19 forced students to work from home. Starting with waterfall had a significant benefit, which was a large effort being placed onto planning and system design, so minimal changes were made throughout the project.

Our lightweight but powerful web application was developed using the Python programming language. The team used Amazon Web Services (AWS) to host the CentOS server with a number of key applications installed such as; MariaDB, Redis and Nginx.

Implemented into the project are a number of complex Python libraries which assist in the visualisation and processing of large amounts of data displayed on the statistics page. Also, an API was used to associate a user's IP address with a precise location.

To assist the database and to improve performance by providing a caching system, the team have configured their service to use the open source Redis. Secondly the Tornado web framework was used, as it is capable of handling a large number of concurrent connections, addressing the C10k problem.

CONCLUSION

The team added some features to their project that made a significant improvement as a way to process and display 'big data' using more sophisticated graphical technologies.

The 2a.nz URL Shortener was completed and is now in the public domain.

In the long-term further development has been discussed and more features planned to be added in the future.