World Population Statistics

By

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Submitted to
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Software Engineering Group Report

CMP020N204S

Declaration

I hereby certify that this report constitutes my own work, that where the language of others is used, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of others.

I declare that this report describes the original work that has not been previously presented for the award of any other degree of any other institution.

Sharath Kiritharan

Date: 25/04/2024

Signed

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1. Introduction

I have been tasked to design and implement a new system to allow easy access to population information curated by my hiring organization. They have provided me with an SQL database to work from.

Aims

The aim of this project is to create a user interface to interact with a database that stores information about the world population. Users should be able to sort through data by categories, and these reports should be provided quickly. The design of the website should be tidy, and be straightforward for users unfamiliar with the system.

Objectives

In order to achieve the aims, objectives will have to be met, and stuck to, including:

- Meet each deadline
- Create a user friendly interface
- Make use of Docker, Pug and Node.js
- Be able to edit data in the database
- Be able to report any issues found in the website

Legal, Social, Ethical and Professional Considerations

A code of conduct was written for the initial members of the group, covering professional considerations and expectations, as well as social and legal aspects of the project.

Background

The project would be suitable for a BSc Computer Science student, as it includes elements of planning, project management, and programming (and ideally team collaboration), allowing for a student to develop their ability in all these aspects. This would likely be used in the future of one's career.

2. Literature or Technology Review

List of software / packages used:

- Visual Studio Code - Code editor used
- CircleCl - Unit testing
- MySQL - Database language
- Pug - Used as per client requirement
- Node.js - Used as per client requirement
- Express.js - Used as per client requirement
- Docker - Used as per client requirement
- Git - Used for updating project on GitHub
- Zube - Used for user stories and development

Design or Methodology

The methodology I decided to go with was the 'Agile Software Development Life Cycle' in which a feature is designed, then implemented, then tested, before being added to the main version of the project.

Development was split into 2 parts, the users experience of the site, and the back end to tie it all together. The front end of the site will provide information about the two clients (fictional) of the site, as well as provide a link to the database viewer. It also provides a method to report bugs.
The back end of the site allows for the database viewer to work, and allows for all the pages to link together. Ideally, it would also provide user authentication, but this couldn't be completed in the timeframe.

Alternative Approaches

I would definitely consider using a different way of rendering the pages, preferably on the clients side, since the more users active on the site would eventually begin to slow down the system. One way this could be done is by using a different javascript library, such as React.

Implementation or Results

The entirety of the project can be found on GitHub: https://github.com/sharKiritharan/SE-CW
The performance of the website feels fast, though using Docker to boot can occasionally take some time, and that may require some optimisation. Times were not measured, and if done from the start, proper optimisation routes across the website could have been made. The times for the bug reporting page of the site depends on a different service, which tends to be slow, and an alternative might have to be found.

Evaluation

Most project goals were met, though not to the degree I would have liked them to be. The project could have been more complete, with functional login systems, and user management, but the core values of the system are present. That's not to say I'm happy with the end result of the project, but unplanned events led to less hours spent on development time, as well as other drawbacks.

Conclusion

Reflection

The project was an interesting insight into how a career path in software engineering might look like, with planning, time management, development and testing taking place throughout the project.
I felt that my version control could have been improved upon, since I had nobody else to report my work to, I kept all my work stored locally, and never felt the need to use Git to update my GitHub page, unless I was required to at code reviews. My time could have also been spent better, a lot of my time was spent on designing the page, and making many iterations that didn't make the final cut.
I also would have done research into other websites providing a similar service, and taken aspects of each of them in order to better improve my own page.

Future Work

If I were to continue work on this project, I'd definitely look into making the login system, and working on encrypting it. This is something I wanted to do initially, but due to time constraints, I was unable to. I'd also look into working with others, and splitting the overall workload. I would also look into commenting on my code more, so that future work can be carried out sooner. Another thing I'd like to try is have my database auto-update with the most recent version possible, so that users are given more accurate information.

3. References

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[4]MySQL, "MySQL :: MySQL Documentation," ***Mysql.com*****, 2019.** **https://dev.mysql.com/doc/**

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