

GROUP REPORT

By

ADNAN BIJU: BIJ21539464

JAKHONGIR ALIKULOV: ALI21547686

SYED ABDUL RAFAY SALEEM: SAL21533673

MUHAMMAD ANAS: KIL21535967

Software Engineering

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.

MUHAMMAD ANAS KILIYAMPARAMBIL

SYED ABDUL RAFEY SALEEM

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1.

Introduction

As a team we have been assigned to create an application stage by stage, by making the website we encountered many difficulties also made a lot of progress as a group project. In this report we are going through the progress we made to completeness of our website.

Research Question or Problem

"How can we create a system that allows simple access to population data and helps the production of comprehensive population reports for different geographical levels?"

The company wants us to come up with and implement a system that not only makes population data easier to acquire but also gives customers the ability to create detailed reports that are suited to various geographic levels. By answering this question, we hope to give our company an important resource for well-informed planning, resource allocation, and decision-making based on solid population data.

Aims

The aim of this project is to develop a system that helps an organization quickly access population data and generate detailed reports. Rather than spending a lot of time searching for data and creating reports by hand, the organization will have a system that does it all automatically. This will make it easier for them to make smart decisions and plans using accurate population information. Ultimately, our goal is not only to meet the organization's immediate needs but also to support their broader goal of using data to make better decisions and achieve success.

Objectives

To make our population website easy to use and secure, we have a plan. First, we'll design it so anyone can navigate it easily. Then, we'll set up a safe place to store all the population data. We'll also make sure the website can get data from other places quickly. Next, we'll create special ways to analyse the data and make reports. It's important to keep people's information private, so we'll follow rules to protect it. We'll test the website with real users to make sure it's easy for them to use. And we'll teach our staff how to use the website well. By doing all this, we'll have a website that helps our organization and respects people's privacy.

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Usability and accessibility are closely related ideas. The first significant correlation is that better usability for all users is nearly always a direct result of greater accessibility for users with impairments. Simplify has always been the first rule in user interface design. [1]

Legal, Social, Ethical and Professional Considerations

Before starting our project, we need to think about some important things related to laws, how people in society might feel, what's right and wrong, and how to act professionally. First, we must follow laws about keeping people's information safe. We also need to be careful with things like using content from other sources without permission. Making sure everyone, including people with disabilities, can use our website is important. We want our website to help everyone and respect their privacy. Ethically, we must ask people if we can use their information and be clear about how we'll use it. We'll also make sure to keep their information safe and handle it honestly. Professionally, we'll act in a way that's fair and follows the rules of our industry. If we needed special permission for ethical reasons, we would have asked and made sure to protect everyone involved.

Computer Ethics (CE) originates from practical concerns regarding the impact of Information and Communication Technologies (ICT) on contemporary society. The rapid advancements of the digital revolution have brought about unforeseen challenges, outpacing the development of ethical, theoretical, and legal frameworks. Scholars like Bynum (1998, 2000) and Johnson (2000) have provided comprehensive insights into these issues, emphasizing the necessity for ongoing ethical deliberation and regulatory measures in the digital era. [2]

For several reasons, this topic is excellent for an MSc project. Creating a new method for reporting population data is a difficult task. This calls for the use of technical abilities such as database and software development, as well as extensive knowledge of demography and data analysis.

It's an opportunity to experiment and carry out study. Anyone can experiment with various approaches to optimise the system, such as examining other systems, interacting with users, and experimenting with various data visualisation techniques.

It is relevant to everyday life. Precise demographic data is useful for many decision-making processes, including policy formulation, urban planning, and healthcare. Through the development of an intuitive system with high-quality data, students may significantly contribute to issue solving and improved decision making.

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overview

Our team worked together on different stages to create the population website. We started by learning why it's important to have easy access to demographic data and what others have done. Then, we set goals like finishing on time, making users happy, being fair, and keeping data safe. We also looked at the rules and values that guide our work, like being honest and following the law. Each part of our project was carefully planned, from making a structure to building the final website. We faced challenges along the way, but we learned a lot and improved as we went. Finally, we wrapped up by talking about why our project matters and what we learned for the future.

Technology Review

our technology choices were made after careful consideration of the project requirements, aiming to ensure scalability, performance, maintainability, and ease of deployment.

In our project, we carefully selected the most suitable technologies for our needs. We chose PUG as the templating engine for our web front-end, Node.js for the web back-end due to its scalability, and Express.js for handling HTTP requests. We opted for a database for data storage and Git for version control, hosting our project on GitHub for collaboration. Finally, Docker was chosen for deployment to ensure consistency and streamline the process.

JavaScript is the driving force behind this amazing transition from the static, read-only web to the highly dynamic online of today. JavaScript defines an application's functionality, whereas HTML specifies its content and CSS its appearance and feel. The web is dynamic and engaging because of it. JavaScript is the strong lord of the web because it can manipulate both the display and content elements of HTML and CSS.

JavaScript is the industry leader in the web development space thanks to its extensive library and powerful framework selection, which streamline and simplify the web development process. JavaScript is widely used on the internet for both client-side and server-side reasoning; it can handle it all. [3]

Design

Upon completing the setup of our agile team and carefully planning the architecture of our project, we smoothly transitioned into the actual development phase of our website.

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User Interface:

Before starting development, we began by creating rough sketches for our webpages, which we quickly uploaded on GitHub. We divided our webpage into sections like the header, body, and footer, and chose a side navigation bar design to make browsing easier.

We designed two important pages:

Reports: Made to pull variable data, like the top 'n' cities in a country, where users could input their preferences.

Facts Page: Designed to display fixed data, like the distribution of global language speakers, without needing user input.

Additionally, we added an 'About Us' page to introduce our team and their roles. We also included dedicated pages for user authentication, such as 'Login' and 'Signup,' which were easily accessible from the Home page.

To share our design ideas effectively, we started with rough paper sketches, and then refined them using Balsamiq wireframes to create an initial draft of our User Interface designs.

Front End Development:

In the third phase of our project, we aimed to create a seamless, static website design for GloboPedia. Using PUG, CSS, and JavaScript in Visual Studio Code, we carefully executed our vision. Our focus was on creating a sidebar that smoothly transitions when hovered over, achieved through detailed CSS coding.

Additionally, we added JavaScript functions to improve user experience, including validation checks on the login page to prevent submission with empty fields.

Back End Development:

With our frontend designs finalized, we shifted our attention to the backend infrastructure. We used the Express framework on Node.js to meticulously build our backend code. Connecting to a MySQL database, we efficiently handled data storage and retrieval, executing queries within the Node.js environment using the MySQL driver.

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Implementation or Results

To improve decision-making in a variety of fields, including public policy, urban planning, and healthcare, the project intends to provide simple access to population data and complete demographic reports. Data analysis algorithms, front-end and back-end development, database architecture, and data retrieval methods will all be used to accomplish this. Users' experience will be improved overall by the user-friendly interface that was created for the web front-end utilising PUG. It will guarantee smooth navigation and interaction for users. Sensitive information will be protected, and legal compliance will be ensured by putting in place standards for data privacy and security. Furthermore, automation will boost productivity and save time for users doing demographic research and analysis by automating activities related to data retrieval, analysis, and reporting.

The project will entail building a safe database for effective population data storage. We'll create the back-end logic to process requests and provide population reports using Node.js and Express.js. Data retrieval technologies will be integrated to guarantee current and accurate information from outside sources. Algorithms for data analysis will also be used to create charts, find patterns, and compute population percentages. Extensive testing will guarantee cross-device capability, and Docker container deployment will provide consistency. Lastly, assistance and training will be provided to users to ensure efficient use of the programme.

Conclusion

To wrap it up, the process of creating the population website has been both gratifying and difficult. Our team has successfully navigated through many stages of development, overcoming challenges and achieving noteworthy progress along the way, thanks to meticulous preparation, teamwork, and devotion. We have tackled significant research, concerns and goals to develop a system that makes demographic data easily accessible and for the creation of thorough reports at various geographic levels.

Our decision-making process has been influenced by our dedication to usability, accessibility, and ethical concerns, ensuring that the finished product satisfies user demands and

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regulatory criteria. Through the utilisation of suitable technologies and methods, we have developed and executed a resilient system that furnishes precise and current population data while also augmenting decision-making procedures across several domains including public policy, urban planning, and healthcare.

We understand the value of innovation and ongoing development as we look forward to the future. We are enthusiastic about the potential influence of our initiative on tackling social concerns and promoting informed decision-making as we consider our accomplishments and lessons gained. We are in a good position to continue serving the requirements of our organisation and society at large by improving and growing our population website now that we have a strong base in place.

References

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