Website for Analyzing World Population

**Data Populus**



DATA POPULUS

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# Introduction

Research Question or Problem that will be Addressed

## Aims

The main aim of this collaborative project is to create a website with excellent data analytics tools and revolutionary algorithms which provides reliable reports on the population.

Another goal for this website was to help users find data quickly and easily.

The design of the webpage should be with a simple layout so consumers can grasp what they're reading. Such that user can have a clear picture of what they are looking for.

The website has been designed keeping the students in mind. Which means students can use this website for free for their analysis and research without having to pay a subscription fee. Basically, making this website more accessible to individuals that would make financial gains from the website.

## Objectives

One of the objectives was to keep the website clean and easy to use. In order to achieve this as a team we tested a few of our designs and kept the one we all agreed was the best to use.

We wanted our website to be as user-friendly, as possible, so that contents available are clear and understandable for the end-user. Users are able to use various filters, to see the results of the search in a specific order.

Another objective was to make the website not overly complicated so that it would do its job, but also, the code for it wouldn’t be that much hard to understand. In order to achieve that, we only used the most necessary methods, listed in the specification.

## Legal, Social, Ethical and Professional Considerations

All applicable legal and ethical principles, including confidentiality of data laws and regulations, must be followed by the website.The possible impact of population expansion on vulnerable or marginalized communities, such as women and children, as well as the influence on global inequality and social justice, are also social factors. The use of population reduction tactics like contraception and abortion, in addition to the ethical consequences of technical solutions to population increase, may be ethical issues. Professional concerns may include the necessity for reliable and impartial data, as well as the significance of providing complicated material in a clear and accessible style.

## Report overview

In this report, we will go through the project introduction, the tools we utilized, how we handled the project, and how we functioned as a team. In the next sections of the report, we will explain our team's technology and how it influenced our project. The report will next go into how we developed the project. Finally, this report will go through how we collaborated as a team and what findings we reached.

# Technology Review

## Technology Review

The task requirement specifies a few firm specifications for the project

This list of requirements includes:

* Using a MySQL database
* Using Express.js for backend code
* Using Pug for frontend code

Apart from these criteria, we were allowed to choose any other tools or packages that would assist us in completing the project.

On top of the requirements, we used the following extra tools and libraries:

* Circle ci
* Jest
* Nodemon

### Circle Ci

CCircleCI is a cloud-based continuous development and continual delivery (CI/CD) platform that automates software application development, testing, and deployment. By automating the software development process, it enables developers to deploy code updates to production in a timely and efficient manner.

### Jest

Jest, a JavaScript testing tool developed on the foundation of Jasmine. With it having an emphasis on simplicity and support for big web applications. It is compatible with Babel, TypeScript, Node.js, React, Angular, Vue.js, and Svelte applications.

# Design

## Design

The overall design we had was to have everything to be its own page and the layout be super simplistic with that but there was a huge issue with this type of page due to this being heavy on resources but also would take so much time to develop each page and process that it would be simpler to just create a whole new layout that would do everything this would do but in a more simplistic way than creating whole pages for just simple filters.

This was the 2nd design it had a decent homepage layout and gave an opportunity for a lot of ideas but the overall design we found was very resource heavy and time constraining since it would require multiple pages for each option this idea was a step closer to an optimal design but we thought it would be better to be using fewer pages and focus on just giving the user the main information than making a site that just goes for looks over capability.

This was the design we felt was the most fitting to what we wanted it did change a lot overall but that was fine since the design wasn't finalized it was more of a guide to help create a layout of what we wanted the page to achieve this was an important step to ensure the page was as easy to use and quick to navigate as possible and because of that little changes was made as the page was created.

## Alternative Approaches

Due to the tech stack requirements, there were some concrete design choices that we could not change. Using Express and Pug implies a server-side rendered approach to the website. An alternative approach would be to use a different javascript library for rendering the pages, specifically a client-side focused one. Libraries that allow this and make the developer experience much better are Svelte/SvelteKit, React and Vue. Although they require a bit more learning to get started, the developer experience is worth it. Things like fetching data client-side, transforming that data or working with DOM elements through JavaScript are greatly improved in comparison to vanilla JavaScript.

A big choice that was completely up to us was picking the way of working with the MySQL database which is required for the project. We picked Prisma, because it ensures that our queries are secure and performant, and even more importantly - written automatically based on our database. Thanks to Prisma we had more time to focus on the functionality of the website, rather than debugging and writing queries, which can get very complex with nested relational operations. Using Prisma meant added complexity to other scenarios, such as unit testing. While it took us a fair amount of time to figure out unit testing with Prisma, it didn’t require much additional work in comparison to writing unit tests for a standard NodeJS application.

# Implementation or Results

## Evaluation

In this foreseeable evaluation of the group project, we can say that overall, the team's work ethics were impressive, with a strong dedication to backend development and coding from Manav and Mehraj. They played a significant role in pushing the team forward. Specifically, the effectiveness of the team was greatly dependent on effective communication. To guarantee that everyone was on the same page and that assignments were finished on time, the members were able to effectively communicate their thoughts and progress. Awaiz and Neel were also a valuable member who completed their tasks diligently, while they both were instrumental in setting up Praj. The team's strength lay in having members with specific skill sets for different tasks. The group shown a willingness to work together and support one another when necessary. This promoted a cooperative and uplifting team dynamic, which was necessary for them to succeed. Manav and Mehraj were always willing to teach and guide team members who were lacking in certain areas. Despite challenges such as medical issues and unforeseen events, the team remained focused on achieving their goals. At last, the team's versatility was another asset. They were adaptable enough to deal with unforeseen developments and difficulties by modifying their strategies and plans as necessary. In summary, the team worked well together, and their combined efforts ensured that they achieved their objectives.

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# Conclusion

## Reflection

This project has been a bumpy ride for all our group members. Certainly! In this project, we learned a lot about teamwork and the importance of communication in the IT industry. We realized that listening to and considering the needs of others is essential for a successful project. We discovered how crucial it is to be adaptable and flexible because projects often encounter unforeseen difficulties. In our instance, unforeseen delays and modifications to the project specifications necessitated adjusting our plans. We also learned that being organized and having clear objectives is crucial for meeting goals on time. The importance of receiving constructive criticism is a lesson we also learned. We were able to find areas for improvement and modify our work by giving comments to one another. We understood that a diverse team can contribute special viewpoints and ideas that eventually improve the final product. While we encountered some challenges with organization and communication, we were able to work together as a team to complete the project with a satisfying result. We also concluded that it is critical to recognize and reward tiny victories along the way because doing so can inspire the team and maintain interest in the endeavour. Looking back, we would prioritize better organization and communication, including setting clear meeting rules and ensuring everyone knows what tasks they are responsible for. Ultimately, this project highlighted the importance of effective communication for successful teamwork in the IT industry.

## Future Work

In the future, our team needs to improve its project management by having a dedicated person responsible for managing tasks with Clearer goals. It's important to have clear and achievable goals for each sprint or phase of the project. This can help us stay focused and motivated and make it easier to prioritize tasks and make progress. Also, better task prioritization, sometimes we struggle with deciding which tasks to prioritize or how to allocate our resources effectively. It would be helpful to have a system in place for evaluating and prioritizing tasks based on their importance, urgency, and feasibility. We should have done more detailed planning like our team could benefit from more detailed planning, including creating timelines, breaking down tasks into smaller steps, and estimating the time and resources required for each task. This can help us anticipate potential challenges and adjust our plans accordingly. We could have improved communication even more by using enhanced strategies to ensure that everyone is aware of their responsibilities and the project's progress. We could establish regular check-ins, status updates, and progress reports to keep everyone on the same page. In terms of areas for improvement, the team could have benefited from having more structured meetings or checkpoints to ensure that everyone was making progress and that issues were being addressed in a timely manner. Additionally, while the team members had specific skill sets, there may have been some overlap or gaps in their abilities. It may have been beneficial to have more cross-training or knowledge-sharing to ensure that the team was well-rounded and able to tackle a variety of tasks. Also, solution would be to implement a rule that tasks must be completed by the sprint deadline to prevent last-minute rush and improve the quality of work.

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