Design Document

In this document I will tackle a couple of architecture constraints questions and design decisions surrounding the Realty Hub project. The questions are as follows:

1. Why am I using Spring Boot for the backend of the website?
2. Why am I using React for the front-end development?
3. Why am I using MySQL for the database management?
4. Why am I using the CI/CD deployment method?

After extensive research, I have come to the following conclusions for these questions.

1. For the first question, java Spring Boot offers a rapid development due to its pre-built modules which reduce the boilerplate code that needs to be written. It also manages the dependencies of your application, so you don't have to. It automatically detects the dependencies that your application needs and downloads them for you. Spring Boot has a convention-over-configuration approach, which means that it automatically configures many aspects of your application based on sensible defaults. This makes it easy to get started with Spring Boot without having to spend too much time on configuration. The community for this framework is large and active which can provide support and share their knowledge. This means that if I have a problem or need help, I can easily find answers and resources online.
2. React is a popular JavaScript library for building user interfaces (UIs) and front-end web applications. The reasons why I choose to use React are the declarative approach to building user interfaces, which means that developers can describe the desired state of the UI and React takes care of updating the UI when the state changes. This approach makes it easier to build complex UIs and reduces the amount of code needed to manage the state. Its component-based architecture, which allows developers to build reusable UI elements and compose them into larger UIs is another reason. This approach makes it easier to manage and maintain the code, and enables faster development and deployment of new features. React also uses a virtual DOM (Document Object Model) to efficiently update the UI when the state changes. Instead of directly manipulating the DOM, React updates a lightweight representation of the DOM, compares it with the previous representation, and only updates the necessary parts of the real DOM. This approach reduces the amount of DOM manipulation needed, which improves performance and speed.
3. One main reason of choosing MySQL its performance, MySQL is optimized for performance and can handle large numbers of queries and transactions simultaneously. It is also designed to minimize data redundancy and improve data integrity, which improves overall performance. Its relational data management is also amongst the best, it provides a reliable and efficient way to store and manage structured data using a relational database model. This makes it ideal for managing data that is organized into tables with defined relationships between them. And similar to the java Spring Boot, it has an active and large community.
4. Continuous Integration and Continuous Deployment automates many of the tasks involved in deploying software, such as building and testing code, deploying applications to servers, and running integration tests. This allows teams to deploy new features and bug fixes more quickly and with greater confidence. CI/CD also promotes a culture of continuous improvement, where teams can learn from their mistakes and use data and feedback to improve their processes and products. By constantly iterating and improving, teams can deliver better software over time. Since this is a one man project, I still benefit from these aspects even without a team of developers.