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Implementing a REST API for a Description of all Countries in the World Using Vue.js to Define the User Interface

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Abstract

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Chapter 1

Introduction

In the world today, having facts at your fingertips is very useful and important. With search engines like Google, life has been made easier as we do not have to visit libraries or spend money on books to get the most basic facts or knowledge. We now have all the information in the world in one place, and it is easy to gain access to it by just typing in a keyword or two and we have what we want.

What this application will do is to take this functionality further by putting all the countries in the world and their basic information such as their capital, population, continent, etc. in one place. Just like you would have in google, you could just go to the search box and type the name of any country in the world and you get information about that country that you're looking for.

As Technology is being incorporated in our everyday lives and things are being made easier each day it shouldn't stop us from still looking for ways to improve on these technologies to further make things easier in order to keep the world moving forward.

1.1 Aims and Objectives

By having a new interactive system that consists of a layout that displays all the countries in the world, the system can help users who just need quick and simple information about any country. It can also be used by students for assignments related to the subject and it can also be a fun way to learn about different countries

in the world.

Thus, the application aims to produce a simple, interesting, and easy to use application that the user can refer to and rely on at anytime to give them the basic facts about any country in the world.

The objectives for developing the Rest Countries Application are as follows:

- To design a simple system and interface that can easily be viewed by any user to search for any country in the world and view simple information about the country that was searched for.
- To develop a system that is accessible anywhere and on any device

1.2 Features of the System

The project is intended to produce an interactive system so that the user can feel interested to use the system. This this is achieved by implementing interactivity especially in the design of the system, a Graphical User Interface (GUI), and portability.

1.2.1 Interactivity

The definition of interaction is quite broad. (**aoki2000taxonomy**) stated that interactivity of a medium refers to a characteristic of communication settings a medium can create that allows users to interact.

Throughout the process of interaction design, the developer must be aware of key aspects in their design that influence emotional response in target users. The need for products to convey positive emotions and avoid negative ones is critical to any product success. These aspects include positive, negative, motivational, learning, creative, social and persuasive influences. A method that can be used to convey such aspects is the use of expressive interfaces. (**kamari2011interactive**)

In software, the use of of dynamic icons, animations and sound can help communicate a state of operation which in turn will create a sense of interactivity. Interface aspects such as fonts, colour palette, and graphical layouts can also influence an interface's perceived effectiveness.

1.2.2 Graphical User Interface

A graphical user interface (GUI) is a type of user interface item that allows people to interact with programs in more ways than typing. A GUI offers graphical icons, and visual indicators, as opposed to text-based interfaces, typed command labels or text navigation to fully represent the information and actions available to a user. The actions are usually performed through direct manipulation of the graphical elements.

There are several principles that need to be considered when dealing with a GUI.

- Layout
  The interface should be a series of areas on the screen that are used consistently for different purposes.

- Content Awareness
  Users should always be aware of where they are in the system and what information is being displayed.

- Aesthetic
  Interface should be functional and inviting to users through careful use of white space, colours, and fonts. In this project for example, there is an option for the user to change the colour theme from light mode to dark mode and vice versa which makes the user feel like they are in control.

- User Experience
  The interface should be built in such a way that it is both easy to use and easy to learn. Novice users or infrequent users of software will prefer ease of learning and frequent users will prefer ease of use.

- Consistency
  Consistency in interface design enables users to predict what will happen before they perform a function. It is one of the important elements in ease of learning, ease of use, and aesthetic.

1.2.3 Responsiveness

The system is a full web application and this enables the system to be viewed anywhere no matter the device and the design is also fully responsive so the layout is still engaging whether the application is viewed on a small device or a very large device like a television.

Chapter 2

Methodology

The 'Rest Countries' is implemented using the waterfall model of system development life cycle as the project methodology. This methodology is selected because of its advantage which allows the requirements to be specified at the start of the project and for proper documentation.

The Waterfall Methodology is a linear approach to software development. It is also known as the 'Traditional Approach' because it is time-tested and easy to understand.(**adenowo2013software**). The waterfall methodology breaks up the software development projects into steps: planning and analysis (Requirement Analysis), design and implementation, testing, system deployment, and maintenance.

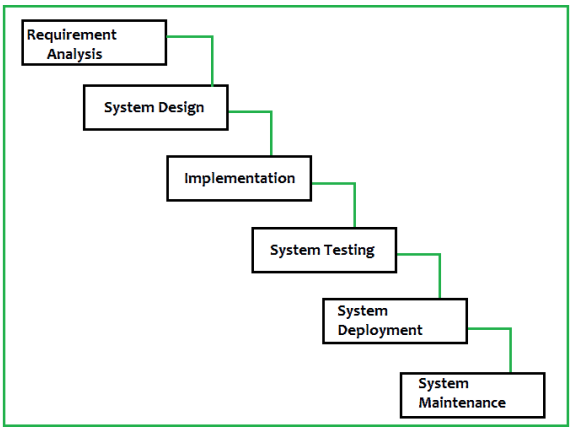

Figure 2.1: Waterfall Methodology

2.1 Project Activities

2.1.1 Requirement Analysis

In this phase, all the possible requirements of the system such as functional requirements, programming tools to be used, feasibility, and scope are captured and documented. The overall project is intended to come out with an interactive system that lets the user search for any country in the world and get information about that country.

At the beginning of the requirements analysis phase, the first thing that has been discussed is the programming tool that will be used which is Vue.js for the client-side, Node js with Express for the server-side and MongoDb for the database.

2.1.2 Design and Implementation

In the design phase, the actual database or file structure, user interface, system inputs and outputs is designed. Thereafter, the actual developement of the system takes place. A basic unit test is also conducted to verify that each component meets its requirement before handing the developed code over to the testing phase.

2.1.3 Testing

In this phase the system integration is tested regarding quality and functional aspects. In this case, the system will be tested by different users on their devices to make sure everything is working as it should. Furthermore, any response will be taken into consideration to improve the system in future.

2.1.4 System Deployment

In this phase when the application has been fully tested, the whole system will be transferred from development mode to build mode. The system will then be brought into shippable state. The database will be set up on MongoDb Atlas and the application itself will be deployed to Heroku.

2.1.5 Maintenance

After the product has been released, there might still be some problems in the user environment. Fixing those issues will require regular maintenance and patches to be released.