Shashona Robinson

Project Two

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Reed Perkins

**Introduction**

This application is an exceptional system that successfully fulfills all the client's requested requirements. It was crafted using Python 3 in Jupyter Notebook, making it compatible for execution within Jupyter Notebook.

The application comprises two integral modules: the backend, serving as a crucial link between the front end and the database. This component effectively connects and retrieves data from the designated database.

Utilizing a NoSQL database, specifically MongoDB, sets this application apart from traditional relational or structured query language-based databases. MongoDB offers distinct advantages such as:

- Efficiently handling large volumes of data at high speeds.

- Enabling easy schema and field updates.

- Being developer-friendly.

- Leveraging the full potential of cloud resources.

The project itself is a straightforward application designed to provide users with data that meets specific criteria. Users can customize the data they view, as the application filters information based on commands sent to the server.

**About the Project:**

The image below illustrates the filtering window used to refine data. By selecting a radio button, users can tailor the displayed data to include only animals within their specified category.

Image\_1

A screenshot of a computer

Description automatically generated

Additionally, we have graphs and geocharts positioned at the bottom of the interface, depicting data related to the selected animal from the table.

A screenshot of a computer

Description automatically generated

The table exclusively displays animals belonging to the previously selected category. This feature is crucial, as it empowers users to focus on the specific animals they are interested in, rather than having to sift through a table containing all the data from the database.

Furthermore, we offer a geo chart, a web-based map that highlights the company's location and provides essential details about the selected animal. This map serves as a navigational tool, making it invaluable for users seeking to pinpoint the geographic location of an animal.A screenshot of a map

Description automatically generated

The final section presented is a visual representation of the chosen data. This feature is significant because it offers a user-friendly and efficient means of comprehending the selected data briefly.A screenshot of a computer

Description automatically generated

**Steps followed.**

1. All the necessary materials are already preloaded on the server, eliminating the need for installation. However, new users will need to install Jupiter Notebook and MongoDB to get started.

2. The connection file is a crucial component that establishes a connection to the database and enhances data retrieval. This file is essential for linking the new application to the database.

3. Additionally, I've developed an application to generate data tables, charts, and maps.

**About Dash Library**

The Dash library is a user-friendly tool with extensive online documentation, making it easy to learn and reducing the complexity of library usage. Dash offers a wide range of resources for data representation, data visualization, and user input capture.

Moreover, the rendered components can be readily styled using CSS, enhancing their visual appeal.

One of the challenges I encountered in this project is the handling of errors. Unlike some other programming languages, I have not yet discovered a straightforward way to capture exceptions. When it comes to displaying graphs, it can be challenging to present errors on the screen for easy correction when they occur.