Geomatic

TECHNICAL ASSESSMENT

20/06/2024

Develop a web application using the ArcGIS API that allows users to create, modify, and delete geometries on an interactive map. The application should load and display the provided data. Users should be able to add markers or shapes, perform queries and filters, and see the results update both on the map and in a synchronized dashboard with charts.

Provided Data:

You will be provided with GeoJSON files containing the following data:

Provinces of Morocco
Regions of Morocco
Transport stations (bus stops, taxi stands, etc.)

Features:

Create a web application that integrates with the ArcGIS API to provide the following functionalities:

- **Interactive Map:**
  - Display a map with the ability to choose different basemaps (e.g., streets, satellite, topographic).
- **Geometry Creation and Modification:**
  - Provide tools for creating, modifying, and deleting geometries (points, lines, polygons) on the map.
- **Cartography Tools:**
  - Include tools for selecting objects on the map, displaying a pop-up window with the object's attributes.
  - Enable panning and zooming functionality.
- **Attribute and Geometry Modification:**
  - Allow users to modify both the geometry and attributes of existing objects.
- **Layer Management:**
  - Allow users to view layers they have created, displaying the name of the object type and the color of the symbol.
  - Enable users to toggle the visibility of layers.

- **Data Visualization:**
  - Create a chart (e.g., bar chart, pie chart) that visualizes data from the map.Ensure that applying queries and filters updates both the map and the charts simultaneously.

Filters & queries:

- **Filter by Region or Province:**
  - Display only the transport stations within a selected region or province.
  - Example: "Show all bus stops in the Rabat-Salé-Kénitra region."

- **Search by Proximity:**
  - Search for transport stations within a certain radius from a specified location.
  - Example: "Find all taxi stands within 1 km of the city center of Tangier."

- **Display Features in a User-Defined Area:**
  - Show all transport stations that fall within a user-drawn polygon on the map.
  - Example: "Display all transport stations within the user-defined area in Casablanca."

- **Show Data Attributes:**
  - Display attributes such as the type and capacity of transport stations for selected features.
  - Example: "Show the types and capacities of all bus stops in the Marrakech-Safi region."

Tools:

You can use any front-end framework such as React, Angular, or Vue.js, and the ArcGIS API. If necessary, you can implement a backend using any preferred framework or another appropriate technology to handle data requests, queries, and user input. The objective is to demonstrate your ability to search for and integrate open-source geospatial data, implement data synchronization, and provide a user-friendly interface for data interaction.

Evaluation Criteria:

- **Functionality:** Meets the requirements and provides a working application.
- **Code Quality:** Well-structured, readable, and maintainable code.
- **Technical Skills:** Proficiency in frontend and backend technologies, and GIS tools.
- **Problem-Solving:** Effectively finds and integrates open-source data, handles user input.
- **Documentation:** Clear instructions for setup and usage.

Submission Guidelines:

Please submit your completed project by providing a link to a Git repository containing your code. The repository should include a README file with detailed instructions for setting up and running the application. In the README, please explain the technologies you used, your approach to solving the problem, and any assumptions you made. Ensure all dependencies are listed and can be installed using a package manager (e.g., npm, yarn). Your submission should demonstrate the functionality, code quality, and problem-solving skills as outlined in the evaluation criteria.