

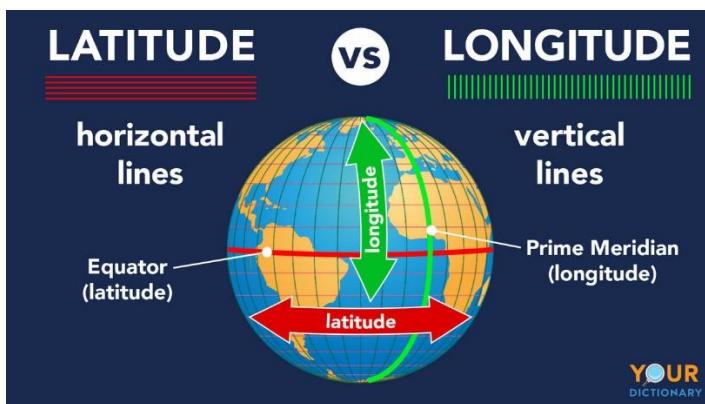
1-What is GIS?

Geographic Information System: is a system designed to capture, store, analyze, and manage data that has a geographic location attached to it. Using tools that connect data to a map, integrating location data with type of descriptive information.

2-What are latitude & longitude?

Latitude and Longitude are the coordinate system used to pinpoint any specific location on Earth.

- **Latitude:** from -90° South to $+90^{\circ}$ North.
- **Longitude:** from -180° West to $+180^{\circ}$ East.



3-Difference between point, line, and polygon:

- **Point:** It represents a specific location defined by a single coordinate pair (**Latitude**, **Longitude**).
- **Line:** It represents path defined by a sequence of connected points.
- **Polygon:** It represents boundaries defined by a series of lines that close back on themselves, “enclosed area”.

4-How backend APIs support map applications?

Backend APIs act as the bridge between the raw data and the visual map.

1. **Storage:** The backend stores the raw coordinates (Latitude, Longitude).
2. **Transformation:** When the frontend requests data, the backend transforms this raw data into a standard format like **GeoJSON**.
3. **Delivery:** The API delivers this structured data via HTTP.
4. **Rendering:** The frontend map library (Mapbox GL JS) consumes this API response and knows exactly how to render the markers without needing to know anything about the database logic.