Guidelines for the Field Project on Geodatabase Creation for a Village

Objective:
To create a comprehensive geodatabase for a village by collecting, processing, and organizing spatial and non-spatial data using GIS tools.

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1. Project Overview:

This field project aims to enable students to understand the process of collecting geographic data and managing it using GIS software. Students will create a geodatabase that includes various physical, socio-economic, and environmental attributes of the village.

2. Key Components of the Project:

1. **Village Survey and Data Collection:**

   o **Base Map Creation:** Obtain or generate a base map of the village using satellite imagery or topographical maps.

   o **Physical Features:** Capture features like roads, water bodies, land use, elevation, and settlement patterns.

   o **Socio-Economic Data:** Collect data on population, housing, agriculture, occupation, public utilities, etc., through field surveys or census data.

   o **Environmental Data:** Identify and record natural resources, vegetation cover, soil types, and climate conditions.

2. **Tools & Software:**

   o **GIS Software:** Use ArcGIS, QGIS, or any other GIS software for spatial data processing.

   o **Survey Tools:** GPS devices, mobile applications, or drones for precise data collection.

   o **Field Survey Forms:** Create structured forms for collecting demographic, agricultural, and socio-economic data from local inhabitants.

3. Data Collection Methodology:

- **Geographic Data Collection:**

  o Mark the coordinates of important features like houses, schools, roads, and water sources using GPS.

  o Create shape files for different categories like land use, infrastructure, and natural resources.

- **Non-Spatial Data Collection:**

  o Conduct interviews or use government records to gather socio-economic data.

  o Organize data in attribute tables with clear and consistent naming conventions.

4. Geodatabase Structure:

- **Feature Classes:** Organize data into layers such as:

    o **Land Use:** Agricultural land, residential areas, commercial zones, etc.

    o **Infrastructure:** Roads, public buildings, utilities, etc.

    o **Natural Resources:** Water bodies, forests, soil types, etc.

- **Tables for Non-Spatial Data:**

    o **Population data:** Age, gender, education, occupation, etc.

    o **Agricultural data:** Crop types, irrigation facilities, land ownership, etc.

    o **Utilities:** Availability of electricity, water, sanitation, etc.

5. Data Validation & Quality Control:

- **Accuracy Checks:** Cross-check the collected data with satellite images or existing maps for validation.

- **Error Detection:** Ensure no missing attributes or incorrect coordinates.

- **Data Consistency:** Standardize units, terms, and formats across datasets.

6. Data Processing & Analysis:

- **Digitization of Features:** Convert field data into digital layers (shapefiles, rasters).

- **Overlay Analysis:** Identify relationships between different layers (e.g., proximity of infrastructure to agricultural areas).

- **Statistical Analysis:** Use statistical tools to analyze socio-economic data and generate insights (e.g., SPSS).

7. Reporting & Presentation:

- **Final Report:**

    o Include an introduction, methodology, results, and conclusion.

    o Describe the process of data collection, database creation, and analysis.

- **Maps and Visuals:**

    o Present key spatial data using thematic maps (e.g., land use maps, demographic distribution maps).

    o Use tables and charts to summarize non-spatial data.

- **Project Presentation:**

    o Prepare a PowerPoint presentation or a poster with maps, data, and findings.

    o Highlight important insights and provide recommendations for village development.

8. Submission Guidelines:

- **Geodatabase Files:** Submit the final geodatabase (including all shapefiles, rasters, and attribute tables).

- **Report:** A detailed written report in PDF format.

- **Maps & Visuals:** High-resolution images of maps created.

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9. Evaluation Criteria:

- **Data Accuracy (30%):** Precision in data collection, correct use of coordinates, and attribute data.

- **Geodatabase Structure (25%):** Organization and completeness of the geodatabase.

- **Analysis (20%):** Ability to analyze spatial and non-spatial data and derive meaningful conclusions.

- **Presentation (15%):** Clarity and creativity in the maps and report.

- **Fieldwork (10%):** Participation and effort in field data collection.

Timeline:

- **Week 1:** Introduction and orientation.

- **Week 2-3:** Field data collection.

- **Week 4:** Data processing and geodatabase creation.

- **Week 5:** Report writing and map creation.

- **Week 6:** Submission and presentation.

This project will provide practical experience in geodatabase creation and the application of GIS in real-world contexts.