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Group 1 – Historical Land Use Change

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OBJECTIVES

Investigate land use changes over the last 50 years in a rural area transitioning to urban. Focus on agricultural land, forested areas, and urban development. The final output should be a comprehensive report that includes a methodology section, descriptions of the database schema and spatial queries used, and an analysis of the findings. Maps and visualizations created with QGIS should be used to illustrate historical land use change.

ASSIGNMENTS

Complete the following assignments. Deliverables will include pushing to your public GitHub and updating the README at every step.

Groups will decide whether one person will control the repository with the other two members cloning to their own profiles, or whether all members will publish duplicate repositories directly from their own machine.

Group 2 Assignment 1 – Data Acquisition, Processing, & Database Setup

1. **Find and Process Geospatial Data**
    - Obtain historical and current land use data, including maps and satellite images.
    - The data should include different land use categories and their spatial extent.

2. **Set Up Database Schema**
    - Create a schema that can store land use data across different years.
    - Attributes might include land use type, year, area, and location.

3. **Pre-process the data in QGIS**
    - Process the data in QGIS to align different datasets temporally and spatially.

Group 2 Assignment 2 – Import Spatial Data & Normalize Tables

Import it into PostgreSQL tables/schema created in Assignment 1.
Normalize your tables (1NF up to possibly 4NF, depending on your data).

Group 2 Assignment 3 - Spatial Queries & Presentation

Conduct spatial analyses to identify:

- Trends in land use change over time.
- The rate of urban expansion into rural areas.
- Loss of agricultural land and forests due to urbanization.