An-Najah National University

Computer Science Apprenticeship by the Faculty of Engineering

School Site Selection Report

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Introduction

In this assignment, the goal is to find new areas that are suitable for building a new school using spatial data analysis. The analysis is performed using SQL in PostGIS, and the final results are visualized in QGIS.

Data Used

The following spatial layers were used in this project:

- **Landuse: contains land parcels with different land use types and area information.**
- **Buildings: represents existing buildings.**
- **Roads: represents the road network.**

All layers were stored in a PostgreSQL database with PostGIS enabled.

Selection Criteria

The suitable sites for building a new school were selected based on the following criteria:

a. Land use type
Only parcels with land use types:

- **Unused**
- **Agricultural lands**
- **Commercial lands**

were considered.

b. Area condition
The land parcel area must be equal to or greater than 5000 m^2.

c. No buildings condition
The selected land parcels must not intersect with any existing buildings.

d. Accessibility condition
The selected areas must be within 25 meters of the nearest road.

Methodology

1. **All spatial layers were imported into PostGIS.**
2. **SQL queries were written using PostGIS spatial functions:**
    - **Attribute filtering for land use type and area.**
    - `ST_Intersects` **was used to exclude parcels containing buildings.**
    - `ST_DWithin` **was used to select parcels within 25 meters from roads.**
3. **The final result was saved as a view in PostGIS.**
4. **The result view was loaded into QGIS and visualized together with roads and buildings layers.**

Results

After applying all selection criteria, 7 suitable land parcels were identified as potential locations for building a new school. These parcels satisfy all the required conditions and are properly distributed near roads with no existing buildings on them.

Conclusion

This project demonstrates how PostGIS and SQL can be used effectively for spatial site selection problems. The integration with QGIS allows clear visualization of the results and supports better decision-making. The same approach can be applied to other site selection tasks by modifying the selection criteria.