



Final Project

The final project for this course offers an opportunity to expand on the work you've developed in the weekly exercises. This is a chance to approach the material in a collaborative and open-ended way, building on your skills and creativity.

OBJECTIVES

You will demonstrate your ability to understand, design, code, integrate, and document computing procedures for the three core types of GIS functionality covered in this course: the preparation, processing, and presentation of geographic data, with a focus on raster data.

To achieve this, you will build a raster-based GIS and create a comprehensive user manual to accompany it.

COLLABORATION

This is a group project. The class will be divided into teams of approximately four students (with some groups possibly having one more or one fewer member).

TASKS

The project is organized into three primary tasks.

1. Implement a GIS software application

The specific tasks include

- Decide which data formats will be supported, which algorithms will be implemented, and how these data and algorithms will be accessed by the user.
- Modify or extend the algorithms that have been implemented in the exercises.
- Implement algorithms that have not been developed in the exercises (though they may have been discussed in class).
- Integrate all data structures and algorithms into a system, and provide it with a user-friendly interface.

You may need to use commercial GIS software (e.g., ArcGIS) to prepare sample data or visualize output. As you've experienced in the lab, having a mechanism to couple your GIS system with others (e.g., through file exchanges) is highly beneficial.

NOTE: If you encounter any problems, reach out to the teaching staff promptly. Avoid getting stuck—early assistance can save time and ensure progress

2. Write a user's manual

The manual should describe at least:

- What formats of data can be read and saved.
- What tools (or algorithms) are available and what they do.
- How the tools have been implemented (e.g., with pseudo-code for their associated algorithms).
- How the tools are organized, invoked, and controlled. Illustrate their usage with pictures of the associated graphical user interface elements.

NOTE: You are allowed to use or adapt code written by others, provided it is not illegal to do so. However, you must clearly document the sources of any borrowed code and explain how it has been used. Transparency is essential—failure to comply will result in serious consequences.

3. Prepare an oral presentation

All groups will present their GIS applications in a professional manner during the final presentation sessions on **December 13, 2024**. Each presentation should last approximately 30 minutes, including time for questions and discussions. The presentation should begin with a brief description of the system, preferably supported by slides, and include a live demonstration of how the system works. Deliver your presentation **AS IF YOU WERE SALESPEOPLE** showcasing a product, with enthusiasm and professionalism.

NOTE: Attendance at the presentation session is mandatory unless you have received **prior** approval from the instructor for an absence due to a valid reason.

SUBMISSION

Submit the following documents by uploading them to CANVAS no later than **December 20, 2024**:

- The user manual for the system in PDF format.
- An executable JAR file for the system.
- All relevant source code, compressed into a single ZIP file.
- All presentation slides.

GRADING

Successful completion of both the final project and all laboratory exercises is **mandatory** to pass the course. The final project will only be evaluated if all required materials are submitted by the deadline and the oral presentation is delivered on the specified date.