ISA

Geographic Information Systems 2025/2026

Lesson 16 - Assignment description and discussion

LISBOA | UNIVERSIDADE DE LISBOA INSTITUTO SUPERIOR DE AGRONOMIA

Evaluation

Components:

- **Assignment** (40%) - individual or group (2 people)
  - GIS project
  - Report
  - Pdf files with diagrams
  - Minimum grade: 10

  Mandatory

  - Other option: *practical exam*

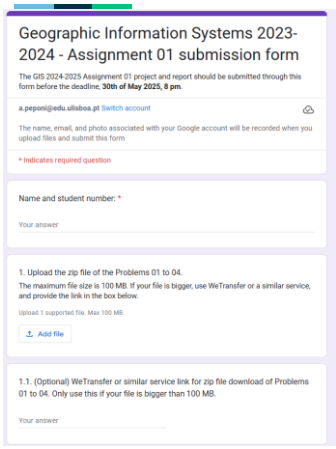
- **Exam** (60%)
  - Minimum grade: 8

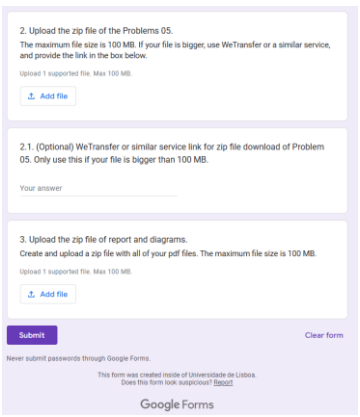
Assignment

Context

- The deadline is **12th of December 2025, 1pm**
- It counts **8/20 (maximum)** of the final grade
- The work will be done and discussed **individually**.
- The assignment is structured into **5 problems**.
- Each student will be assigned a number. This information will also be sent via email.
- In Problem 02, each region is identified by a number in the StudentGroup attribute of the EditingZones layer; students will address the polygon that matches their assigned number.
- The work should **be submitted** before the deadline through the form https://forms.gle/14sMLB8PN4EzLYG77

Google form





Evaluation of the assignment

- Correctness of solutions and answers – **50%**
- Methods used in problem solving – **20%**
- Clarity and critical view of the report – **20%**
- Coherence of the overall work – **10%**

Deliverables

- A zip file of the main project directory (Problems 01 to 04) and another zip file of the additional project directory (Problem 05) containing:
  - The **project file** containing all the output and relevant intermediary layers (legends and labels when required and/or appropriate) QGIS Project **(.qgz),** ArcGIS project File **(.aprx)**
  - The subdirectories **DataIn** and **DataOut**
  - All the **final data sets** that answer the questions, and all the relevant **initial intermediary data sets, along with their metadata,** used to reach the final answers
  - For problem 01, **do not include** the original DEM downloaded file

Deliverables

- A report (pdf file format):
  - **3** pages (**maximum)**
  - Font 12 and single-line spacing paragraphs
  - **2cm margins**
  - You need to explain the **adopted solution for every question (references to diagrams are allowed and strongly recommended)** and the **main theoretical, conceptual**, and **technical issues** underlying the choice of that solution.
  - For the implemented processes to solve the problems, include in the report only the **details that are impossible to be represented in diagrams**.
  - **Do not include** in the report details related to **map legends and/or labels.**
- **pdf files** (as many as needed) containing the **diagrams** that represent the implemented solutions when required (**use in diagrams the names of the layers included in the zip file**).

Assignment- Input data

- The zip file Assignment2025.zip is available at FENIX assignment page, which contains:
  - Territory.gpkg (geoPackage format) including the spatial data sets:
    - River
    - GwPollVulnRegion
    - SoilType
  - Parcels2024.gpkg (geoPackage format) including the spatial data sets:
    - Cadastre
    - EditingZones
    - SoilUse
  - Owners.xls
  - TableSoilUse.xls

Assignment- Goals

- **Problem 01** - The general goal is to determine the regions vulnerable to the flood risk due to river overflow during the rainy season and classify them as high-moderate-low risk.
- **Problem 02** - The general goal is to create a new gds representing the parcels, classified by their soil use. (Each student will use only one region/polygon based on their assigned number.)
- **Problem 03** - The general goal is to create a unique gds that includes all parcels in the region delimited by gds Cadastre and those created in Problem 02 assigning the soil use and ownership.
- **Problem 04** - The general goal is to create one gds representing the relative index of susceptibility to groundwater pollution of the region represented in the gds named GwPollVulnRegion.
- **Problem 05** - Here, you will need to be proactive. You will need to identify a problem that should be answered through a spatial analysis, following given steps.

Assignment- Implementation

- **Problem 01- 04:** You will be provided with specific requirements and steps to follow to reach the solutions to these problems.

- **Problem 05**: You will be provided with steps to guide you in defining and answering your question/problem. The solution to your problem **should require spatial analysis**, and **not simply the spatial representation** of a factor.

  Examples of questions:
  - Which municipalities in Portugal have grown regarding the area of cultivated vineyards?
    - data source: Instituto Nacional de Estatístca, www.ine.pt
    - You can search for equivalent data in the portal of statistics office of your country
  - Which countries have the highest production of cereals globally, and how does this reflect in their Gross Domestic Product?
    - data source: FAOSTAT
  - Which cities in Europe have the highest concentration of particles PM10 in the atmosphere, causing health risks?
    - data source: EEA

Assignment- general tips

- Ensure that your GIS project opens correctly in a different computer that the one were it was created.
- Use meaningful names for files and attributes, and add a description in the metadata. Names like Layer1, Layer2, ..., are not meaningful.
- Use appropriate symbology for the representation of the spatial information
- In diagrammatic representation:
  - Be consistent in the symbology of representations of datasets or operations
  - Include only what is needed
  - Be explicit, do not leave items or other things for interpretation

Assignment- report tips

- Explain your general strategy and decisions to find a solution to the problem. You can provide a **list of steps**, breaking down your problem
- Provide a **brief analysis of the results** of the respective problem.
- If several solutions are possible (tools, analysis paths), **explain your choices**
- **Do not repeat information that is available elsewhere**, either on the data, the GIS project, or diagrams of operations. The only exception is if that information was determinant for your choices
- If specific questions are asked in the respective assignment problem, provide the response in the report
- If **external data sources** were accessed or used, **always cite them** in a correct format.
- **No need to cite the provided data** with the assignment.

Credits

The structure and content of the course, including most of the slides and exercises was developed by Professor Graça Abrantes (SIG 2021_2022) and Professor Rui Figueira (SIG 2023_2024)