

AYTS 5001 - Programming for Analytics

Lab 5: Working with Files and APIs (Graded)

Estimated Duration: 2 hours

Total Marks: 6 (graded)

Learning Objectives

- Practice reading and writing files (text and CSV)
- Use the requests module to retrieve JSON data from an API
- Transform and merge file data with API data
- Write structured outputs to files and handle errors gracefully

Instructions

Complete the following graded task in a Jupyter Notebook. This lab is worth 6 marks. Use functions, loops, and error handling where appropriate. Submit your notebook to GitHub.

Graded Task: API & File Integration (6 Marks)

You are given a text file called `grades.txt`, where each line contains a student name and their grade.

Your task is to enhance the data by calling an API and then save multiple output files.

1. Read the `grades.txt` file and parse each line into a dictionary with keys: name and grade. (1 mark)
2. Use the `https://api.agify.io?name=FIRSTNAME` API to estimate the age of each student. (1 mark)
 - Extract only the first name for the API query
 - Add the predicted age as a new field
3. Calculate the average grade. For each student, add a new field: status = 'Over' if grade >= avg, else 'Under'. (1 mark)
4. Save all students with ages and statuses into a JSON file called `students_enriched.json`. (1 mark)
5. Write a CSV file called `passing_students.csv` with only students who passed. Include name, grade, and age. (1 mark)
6. Wrap all file and API operations in try/except blocks to handle missing files or API failures. (1 mark)

Submission

Demonstrate your completed notebook to the instructor. Push it to your GitHub repository as instructed.