**Edu-Predict Project**

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* **E-Project** **Synopsis**
* **Introduction**
* Education is one of the most critical foundations of human development, and predicting student performance has become an essential task for improving learning outcomes. The **EduPredict – Student Performance Prediction** project is designed to analyze educational data and predict the academic performance of students using **Machine Learning techniques**.
* In this project, different attributes such as demographic information, classroom participation (raised hands, discussions, resource visits), parental involvement, attendance, and previous academic records are collected and processed. By applying various machine learning algorithms, the system is able to classify students into categories such as **High, Middle, or Low performance**.
* The main objective of EduPredict is to assist **teachers, parents, and educational institutions** in identifying at-risk students at an early stage. This allows timely intervention, personalized learning support, and effective resource allocation to improve academic results. The project also provides insights into the most influential factors affecting student performance, enabling data-driven decision-making in the education sector.
* By combining **data analytics, visualization, and predictive modeling**, EduPredict demonstrates how Artificial Intelligence and Big Data can be effectively applied in the field of education to enhance both teaching and learning experiences.

**Hardware/ Software Requirements**

**Hardware**

* A minimum computer system that will help you access all the tools in the courses is a Pentium 166 or better
* 64 Megabytes of RAM or better

**Software**

* Vs Code
* **Objective**

The main objective of this project is to **analyze student academic data and predict their performance using machine learning techniques**. By applying data preprocessing, statistical analysis, and predictive modeling, the system aims to identify the factors that affect student outcomes and classify them into performance categories (such as pass/fail or high/low performance). This helps educators, institutions, and students themselves to take **early corrective actions, improve learning outcomes, and enhance decision-making in the education system**.

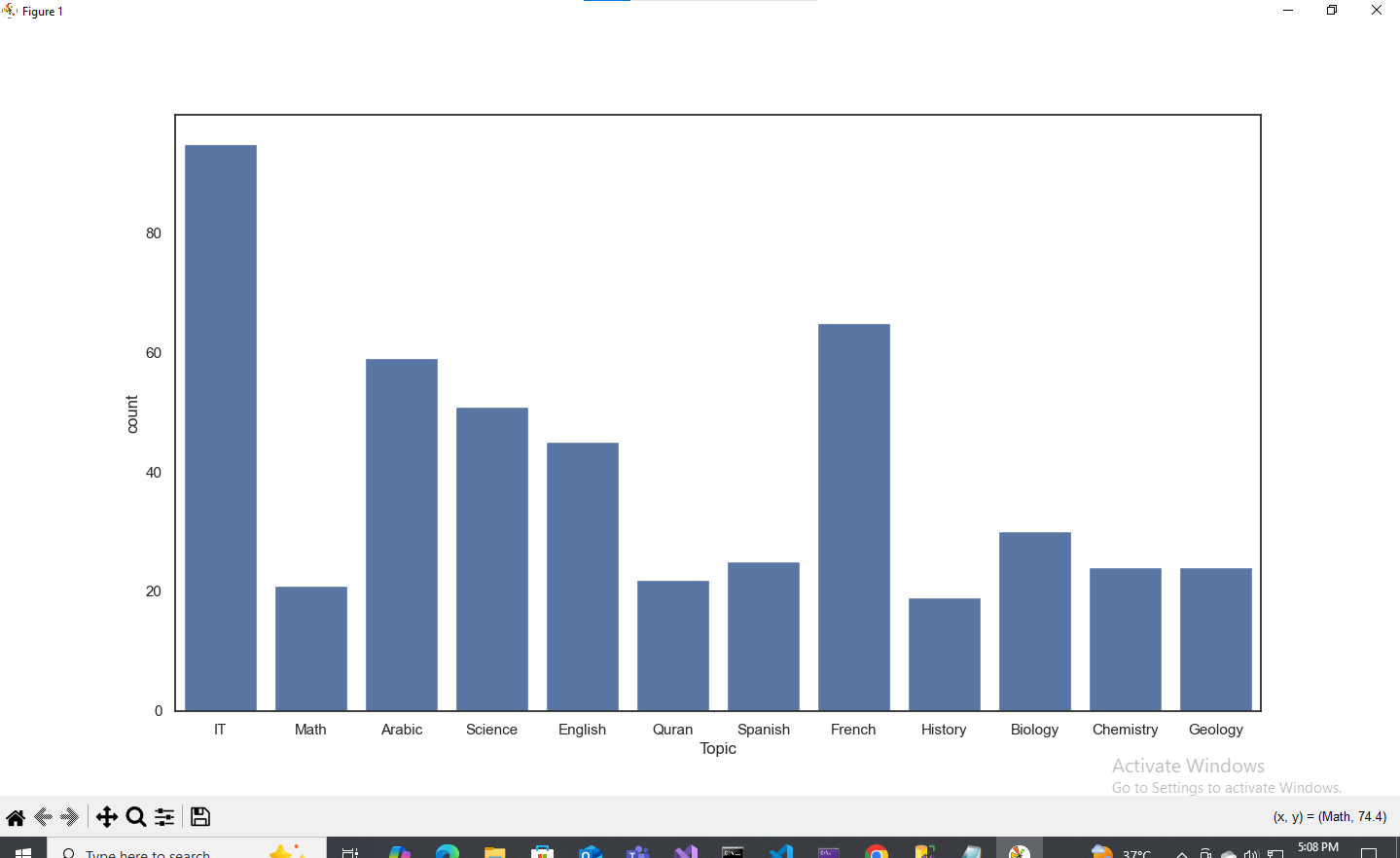
**So what is this eProject?**

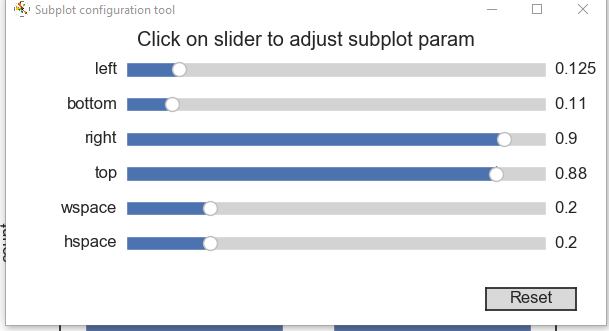
This project is a **machine learning–based educational tool** that predicts how well a student will perform based on their academic and personal data (such as study hours, attendance, previous grades, family background, etc.).

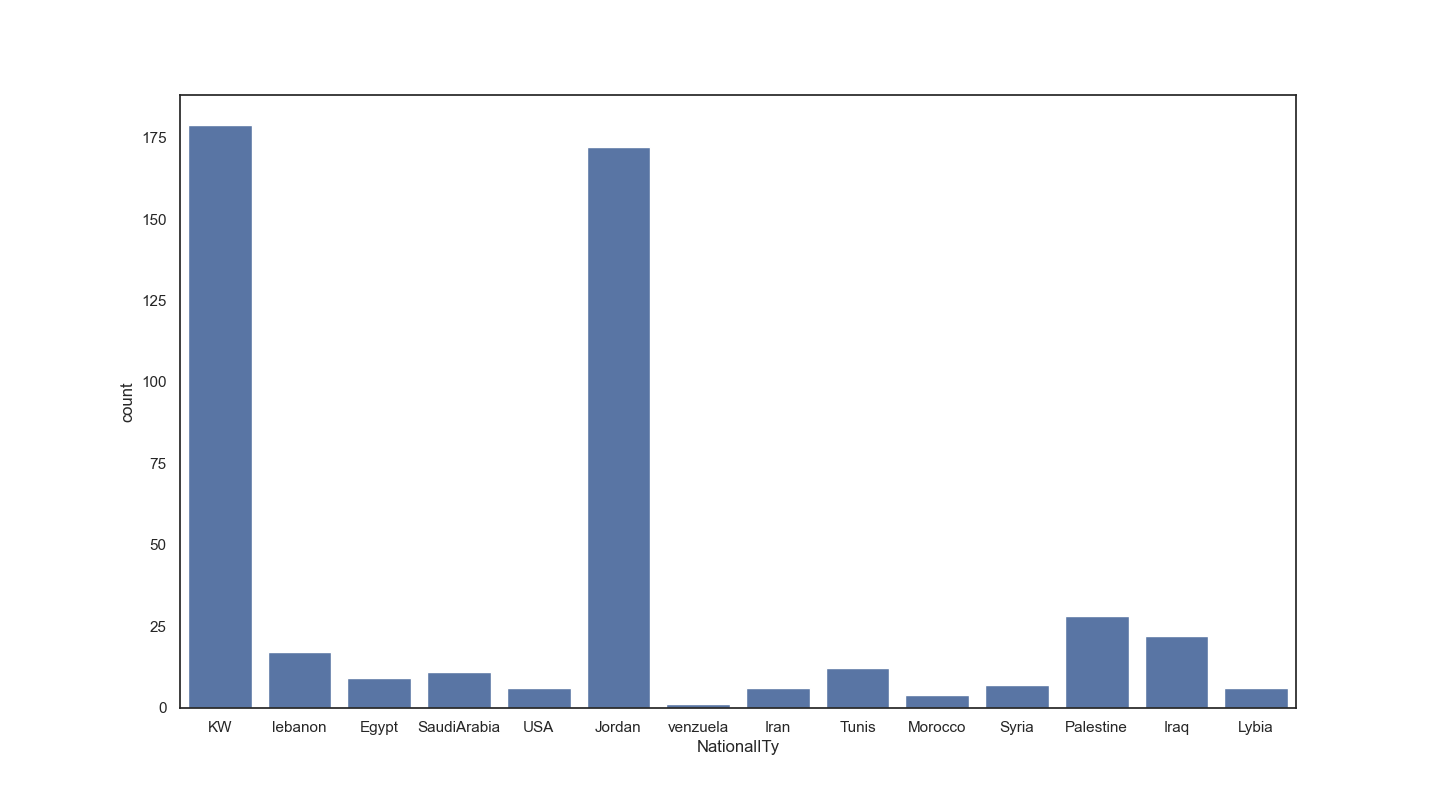
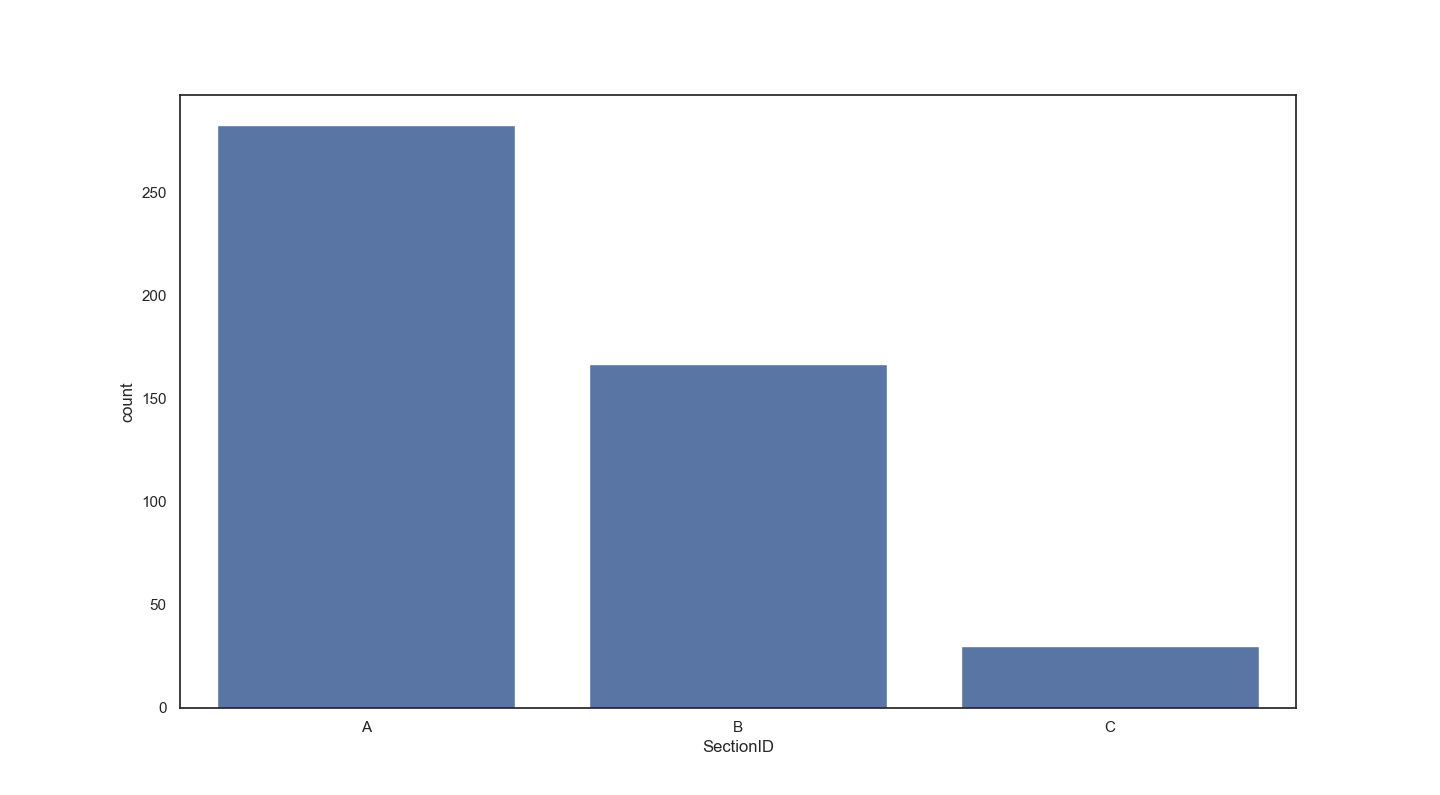
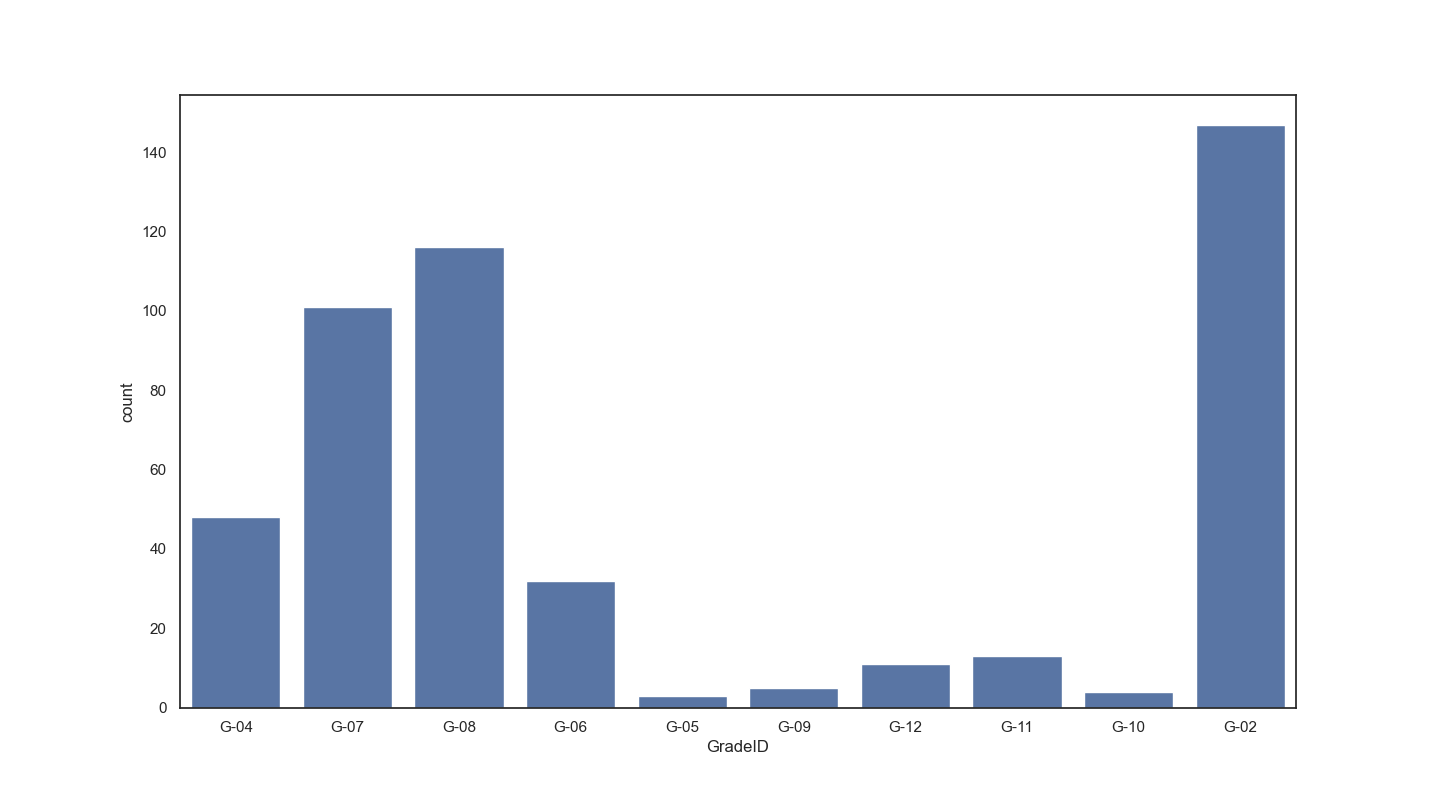
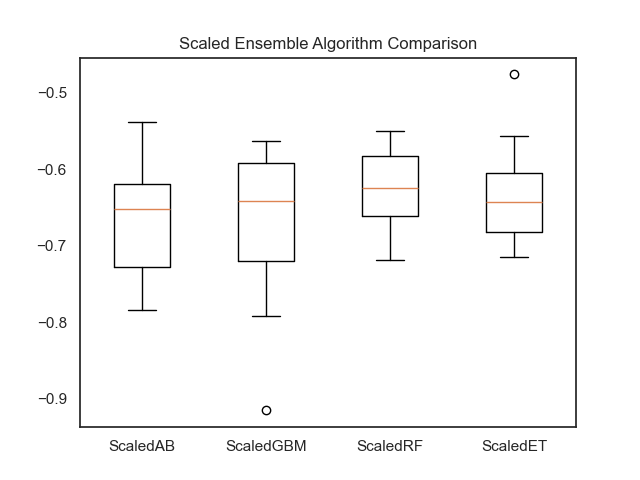
* It **uses a dataset** of student records.
* The data is **preprocessed and analyzed** using Python libraries.
* A **machine learning model (from scikit-learn)** is trained to classify students into categories like *good performance, average performance, or poor performance*.
* Finally, a **Tkinter GUI interface** is provided where users (teachers or students) can input student details and get an instant **prediction of academic performance**.
* **Technology Used**

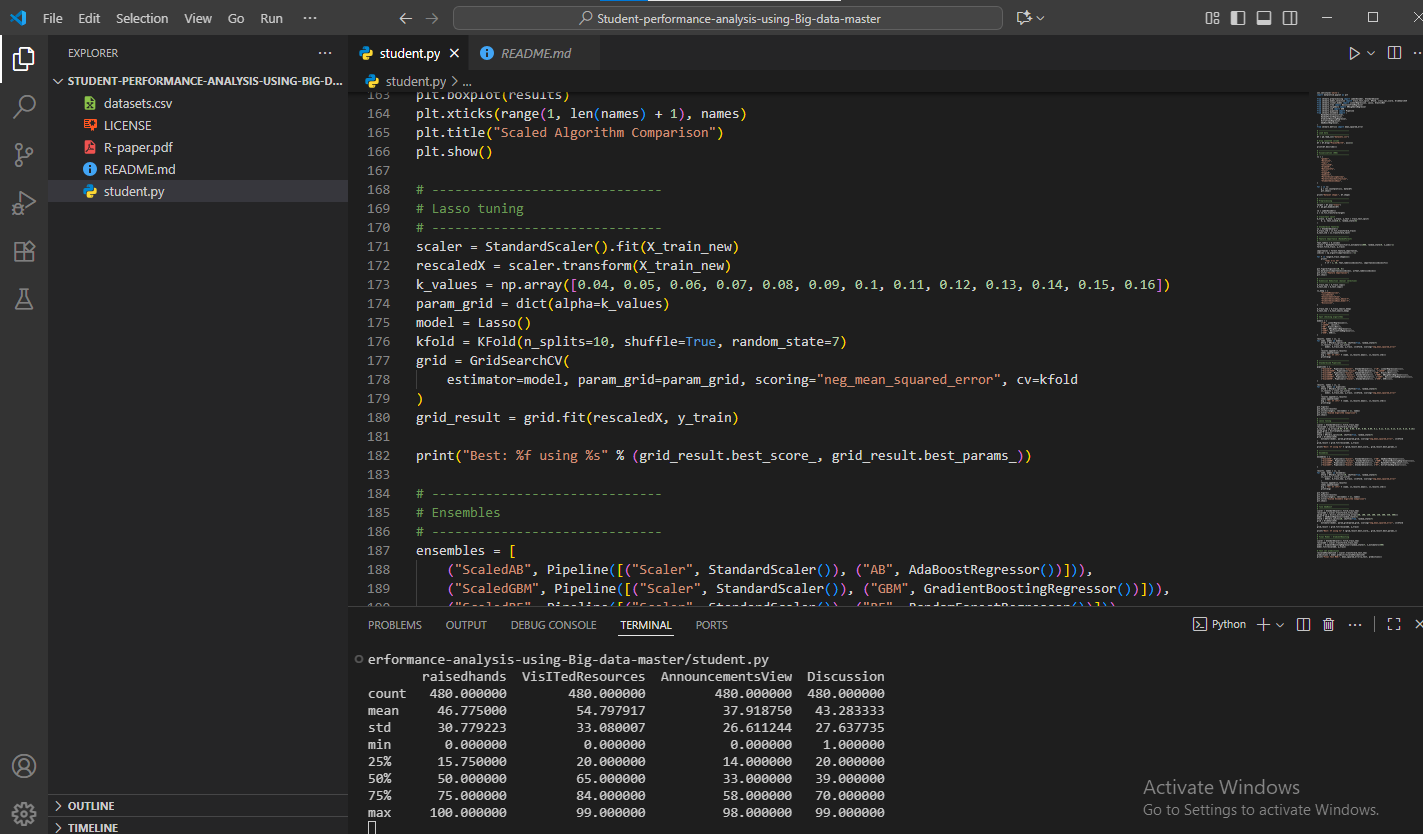
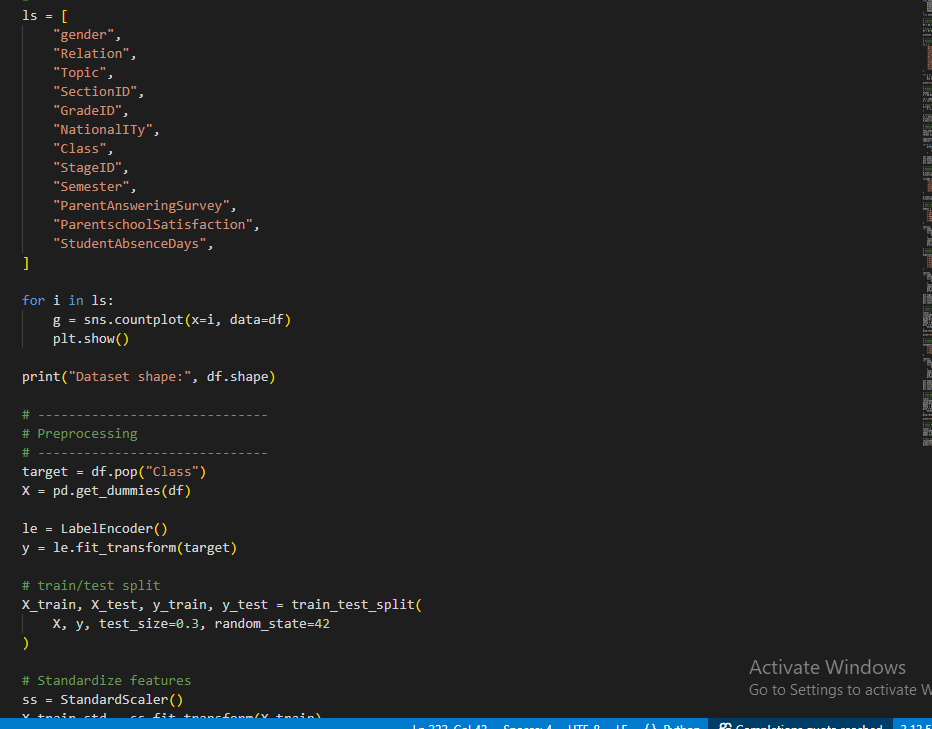
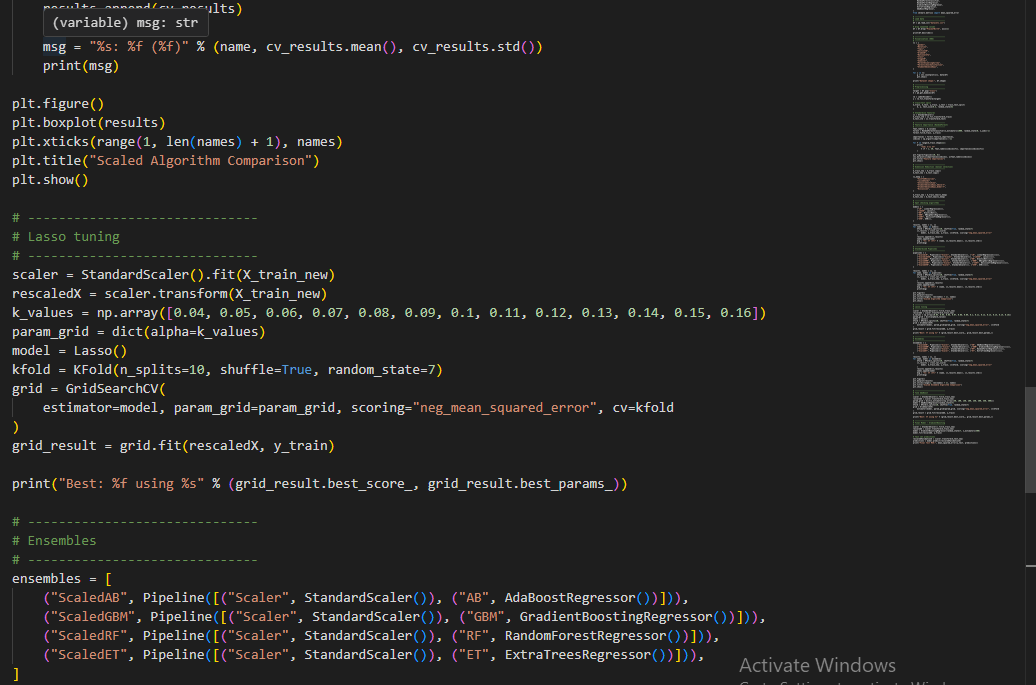
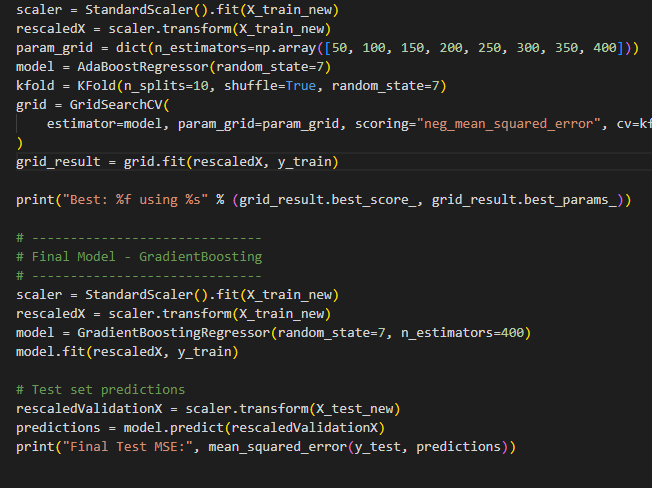
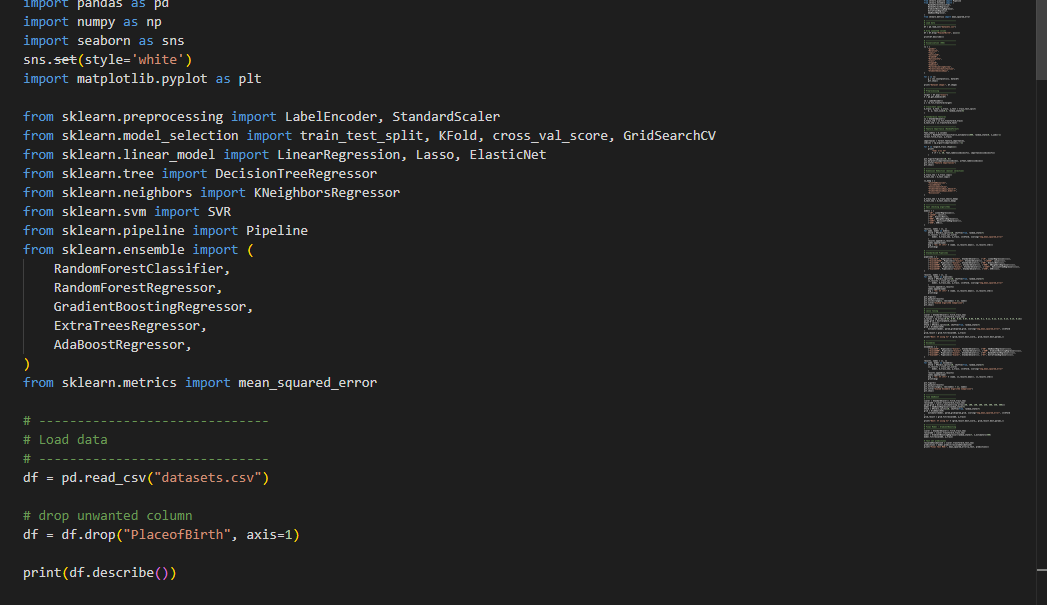
In order to meet the requirements of our project we have used the following underlying technologies.

* **Python** – Core programming language of the project.
* **NumPy** – For numerical computations and array operations.
* **Pandas** – For data preprocessing, cleaning, and analysis.
* **Matplotlib / Seaborn** – For data visualization and statistical graphs.
* **Scikit-learn (sklearn)** – For building and training Machine Learning models.
* **Pickle / Joblib** – For saving and loading trained ML models.
* **Tkinter** – For building the graphical user interface (GUI).

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