Description

This code creates a database which holds the information of students and their, ID, name, age, GPA, and major. It can add students to the database, find students via their ID's, and gather students info based on their major. All this data is stored and saved in a .mat file named "students.mat" which can be loaded back into the code to retrieve data from. The final output of the code will be three histograms, GPA Distribution, Average GPA by Major, and Age Distribution.

Instructions

The user should have MATLAB installed and acquire the three needed scripts: "Student.m", "StudentDatabase.m", and "main.m". Ensure each script is named appropriately or else the code will not run. Open the scripts and run "main.m" this will initialize the code from the other scripts and complete all tasks as mentioned above. The final outcome of the code should be the three histogram figures mentioned above and information displayed about the students from database.

Visualizations
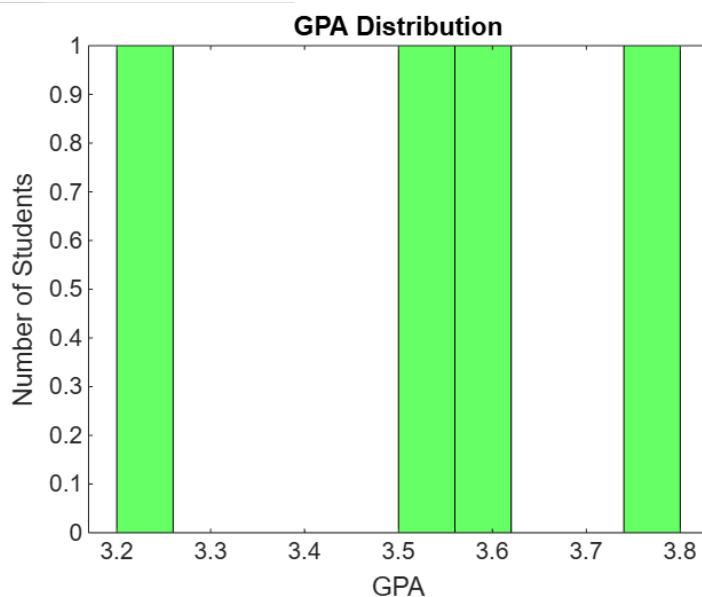
The three figures mentioned above should appear as such:
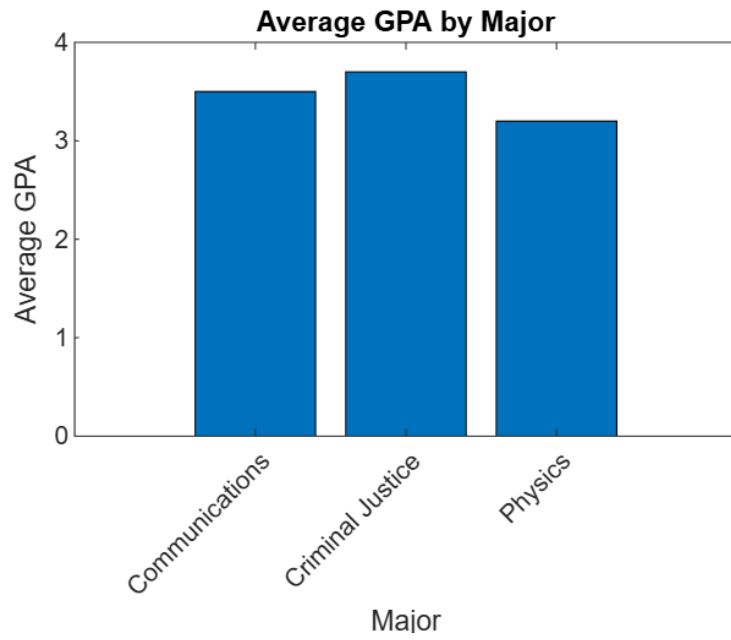

Figure 1 "GPA Distribution"
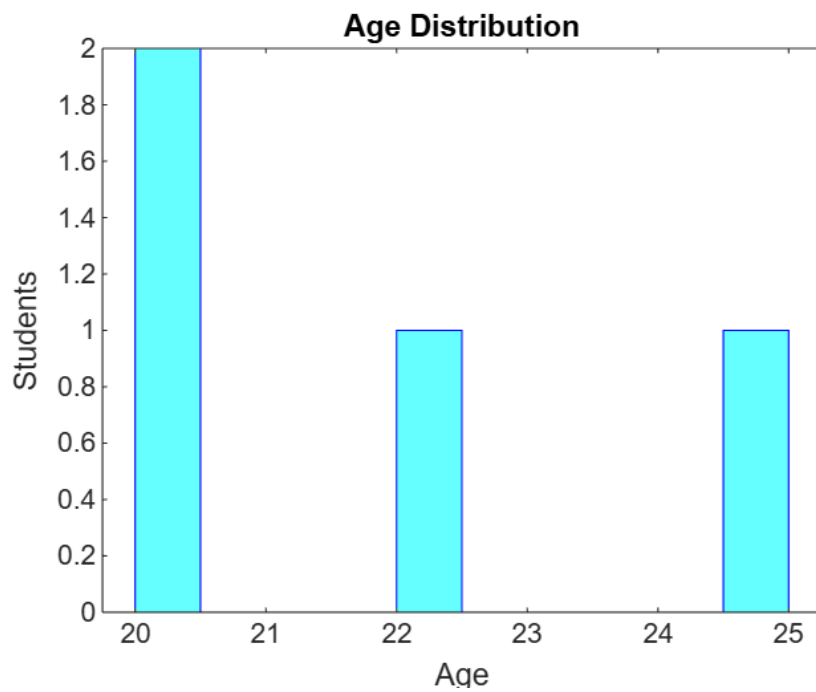
Figure 2 "Average GPA by Major"

Figure 3 "Age Distribution"

Features

The features implemented in this code are divided by the scripts they are found in and listed as such.

"Student.m"

- The Student class
- Properties: ID, Name, Age, GPA
- Methods: "displayInfo" and "updateGPA"

"StudentDatabase.m"

- The StudentDatabase class
- Properties: students
- Methods: "StudentDatabase", "addStudent", "findStudentByID", "getStudentsByMajor", "saveToFile", and "loadFromFile".

"Main.m"

- Calls and uses the classes, properties, and methods created in the other two scripts
- Adds premade students to the database
- Saves and loads the data from the "students.mat" file
- Finds a student from their ID
- Creates the histograms and generates them into figures