Name: Ethan Warminsky

Course: CS01104

Instructor: Taha Bouhsine

Date Due: Nov 13, 2024

Student Database Midterm

Implementation

This code is a culmination of lessons learned throughout the MATLAB/coding portion of the CS01104 class. From the first lessons of cells and arrays, to the complex structures and object-oriented programming ideas learned, this code utilizes them and many more to create an intuitive student database. This student database, currently represented with six students, allows any user to input new students into the database, where the code will then use their personal details (GPA, Age, Major, Name, etc.) to generate graphics that represent those in the database. Administrators, researchers, and even fellow students can utilize this program to visualize data, to allow them to make meaningful, and data-driven conclusions about their peers or students. Overall, it will prove to be a helpful tool when it comes to personal data management, data recording, and when seeking to make data-driven observations.

Instructions for Running

When it comes to running this database code, it is critical to ensure that all files are properly formatted and downloaded into MATLAB. Ensure all naming conventions (if changed) are valid, and all updated or added members in the database follow the proper formatting. Once this is done, execute the main script to run the code, and be patient while the graphics populate the screen. If the graphics are not suitable, they can be directly manipulated when viewing, or manipulated in the code. The code itself will end when all graphics are created, and all other functions are executed.

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Implemented Features

In addition to the functions already witnessed in the presentation of the program's graphics, there are also many other features that allow for this code to be highly functional and user-friendly. These critical features are listed below:

- Constructor
- Methods
- Save and Load Databases
- Create and Initialize Databases
- Custom Color Schemes

The nature of MATLAB allows for many of these features to be expanded upon in the software, where the databases and values can be easily stored, and graphics can be easily generated. One's GPA and information can be updated and searched at any time, and this allows for total observation and analysis of one's student profile.

Visualizations

Below are the three graphics generated by the program. They consist of: GPA Distribution, Average GPA by Major, and Age Distribution. Each of these graphics uses the data supplied in the database to create easy-to-read graphics that represent each person. The personal characteristics of each person can be manually entered, and these characteristics are what can then be applied to the graphics.

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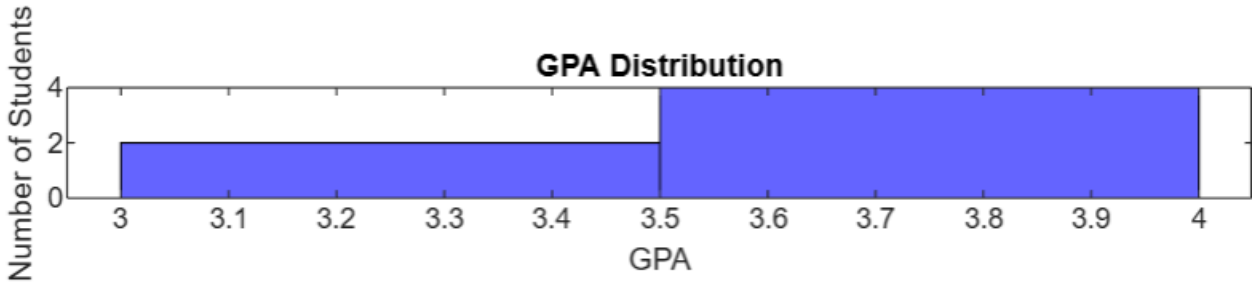
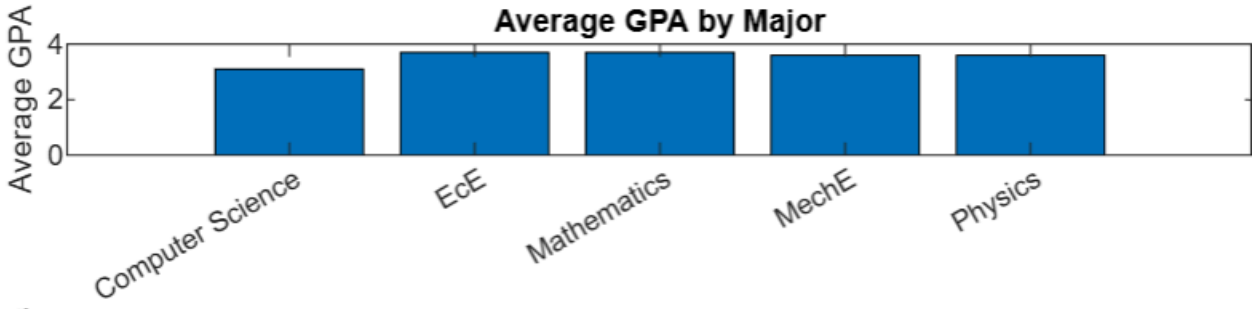


Here, the data about the six students currently in the database can be seen on a scale of GPA Distribution. In this format, it is very easy to see that there are two students below or at a 3.5, and four students at or above a 3.5. This allows the user to make fast conclusions about the performance of the students in the database, and can help influence future decisions.



Here, the data about the six students currently in the database can be seen in the Average GPA by Major. While the database is still relatively small, with only two students taking the same major, when more are added, the data will help reveal how well or poorly the students in each are performing. This will allow for conclusions to be made about the different majors, and is in a very easy format to understand.

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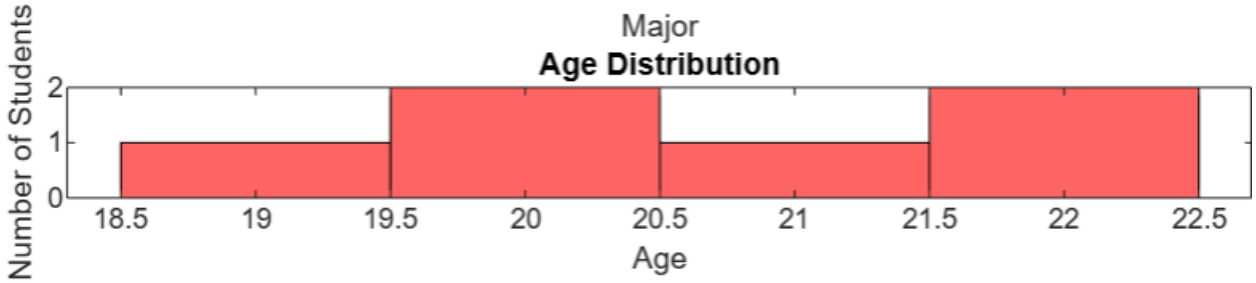

Here, the data about the six students currently in the database can be seen in Age Distribution. While there are not many students presently in the database, this graphic allows users to easily see the age of their students, and make conclusions about overall trends.

Please contact ethan.warminsky@gmail.com with any questions, and enjoy!