Title of my dashboard:

- Zewail City University Administration

All available information that will be provided by your client:

- The dataset includes information about students, such as their
- 1- ID
- 2- name
- 3- phone
- 4- address
- 5- birth date
- 6- gender
- 7- email
- 8- major
- 9- faculty name.

Required questions that your dashboard should answer:

1. How is the student population distributed across different majors?
2. What is the gender distribution among the students? 3. How many students are enrolled in each faculty?
4. What is the overall distribution of students based on their major?

[b] For each chart in the dashboard:

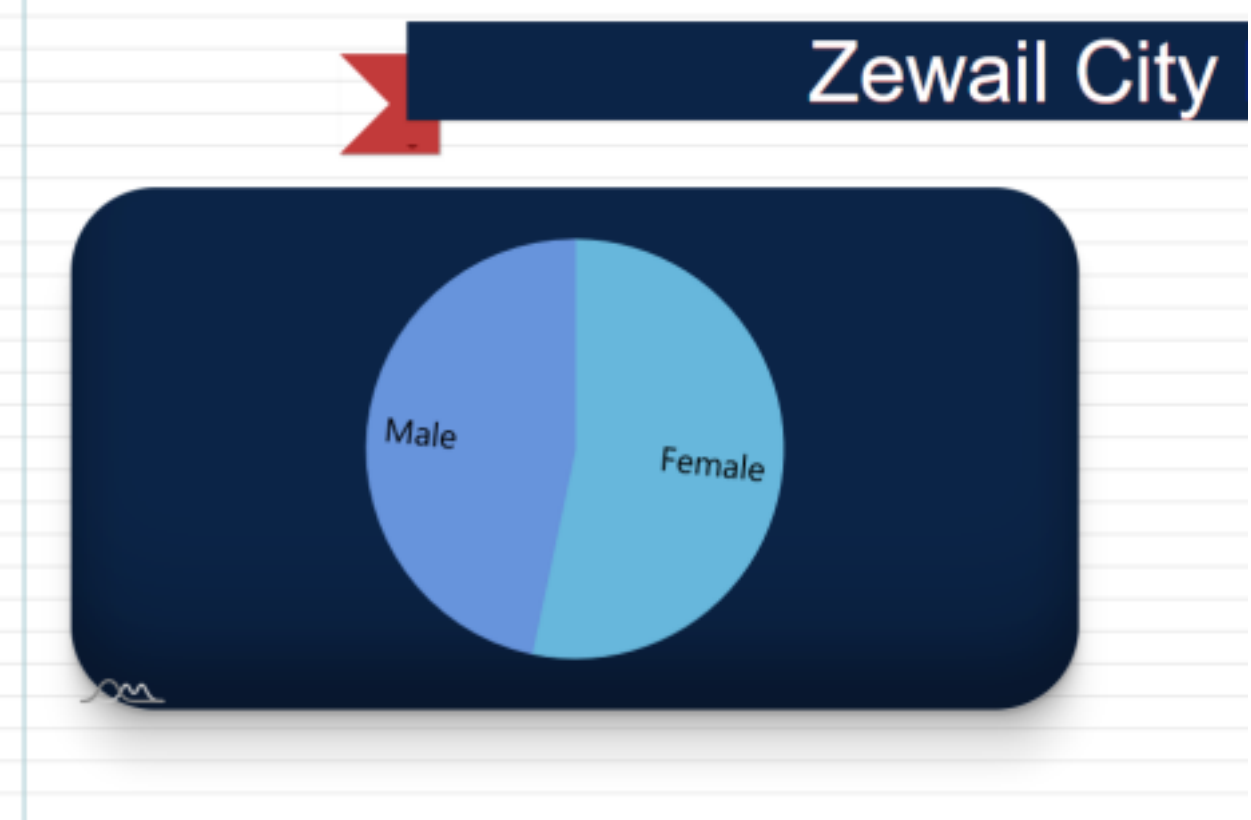
1. Pie Chart for Gender:

- **Chart Type:** Pie Chart
- **Title:** Gender Distribution
- **Colors:** Two contrasting colors for Male and Female (e.g., light blue
- for Male, Blue for Female)
- **Legend:** Displayed to show the mapping of colors to genders
- **Questions it Answers:**
    - What is the percentage distribution of Male and Female

students?

- **How it Shows Up:**
  - Always visible on the dashboard.
- **Why this Chart Type:**
  - Pie charts are effective for showing the proportional distribution of categories, making it suitable for showcasing the gender distribution.

- **Figure 1:**

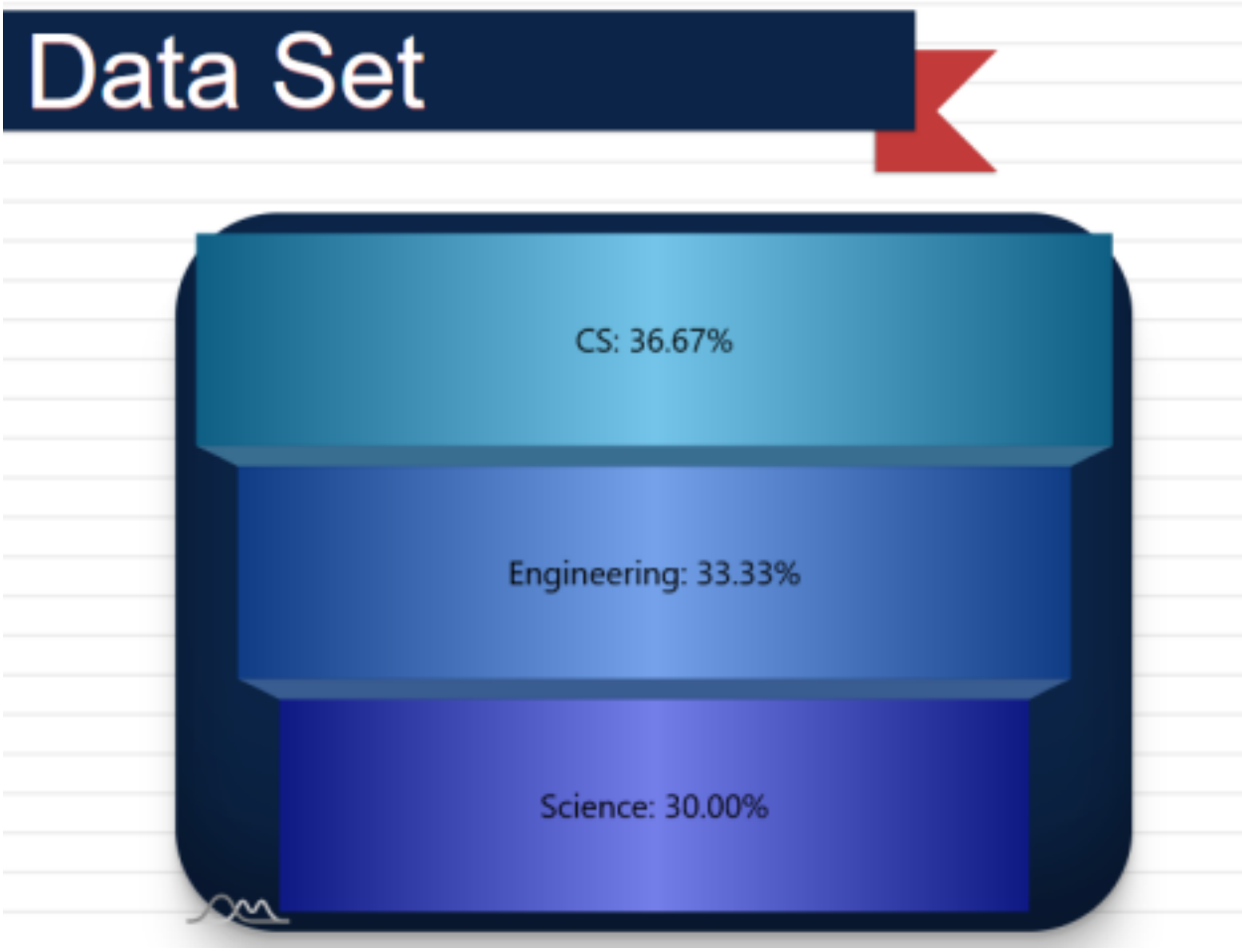


2. Funnel Chart for Faculty Name:

- **Chart Type:** Funnel Chart
- **Title:** Student Enrollment by Faculty
- **Colors:** Various colors for each faculty
- **Legend:** Displayed to show the mapping of colors to faculties
- **Questions it Answers:**
  - How does the enrollment vary across different faculties?
- **How it Shows Up:**
  - Always visible on the dashboard.
- **Why this Chart Type:**

- Funnel charts are suitable for displaying stages in a process, making them effective for visualizing the sequential distribution of students across faculties.

Figure 2:

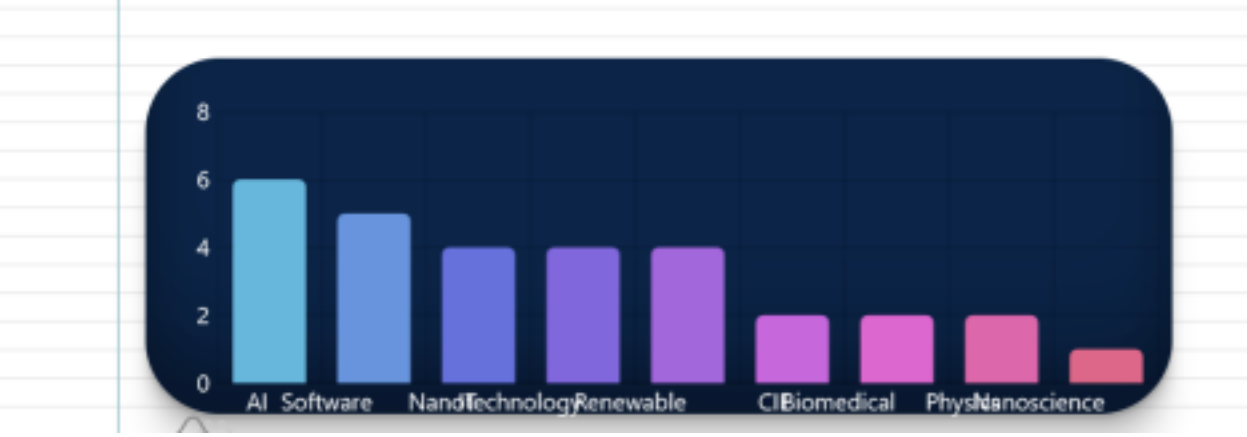


3. Bar Chart for Major:

- **Chart Type:** Bar Chart
- **Title:** Student Distribution by Major
- **Colors:** Different colors for each major
- **Legend:** Displayed to show the mapping of colors to majors
- **Questions it Answers:**
  - How many students are there in each major?
- **How it Shows Up:**
  - Always visible on the dashboard.
- **Why this Chart Type:**
  - Bar charts are excellent for comparing quantities across categories, making them suitable for visualizing the distribution

of students across majors.

- **Figure 3:**



4. Bullet Graph for Major:

Chart Type: Bullet Graph

Title: Distribution of Grades

Colors: Use distinct colors for each grade category (A, B, C).
Y-Axis: Grade Letter (A, B, C)

X-Axis: Number of Students

Legend: Displayed to show the mapping of colors to grade letters.

Questions it Answers:

- How is the distribution of grades among the students?

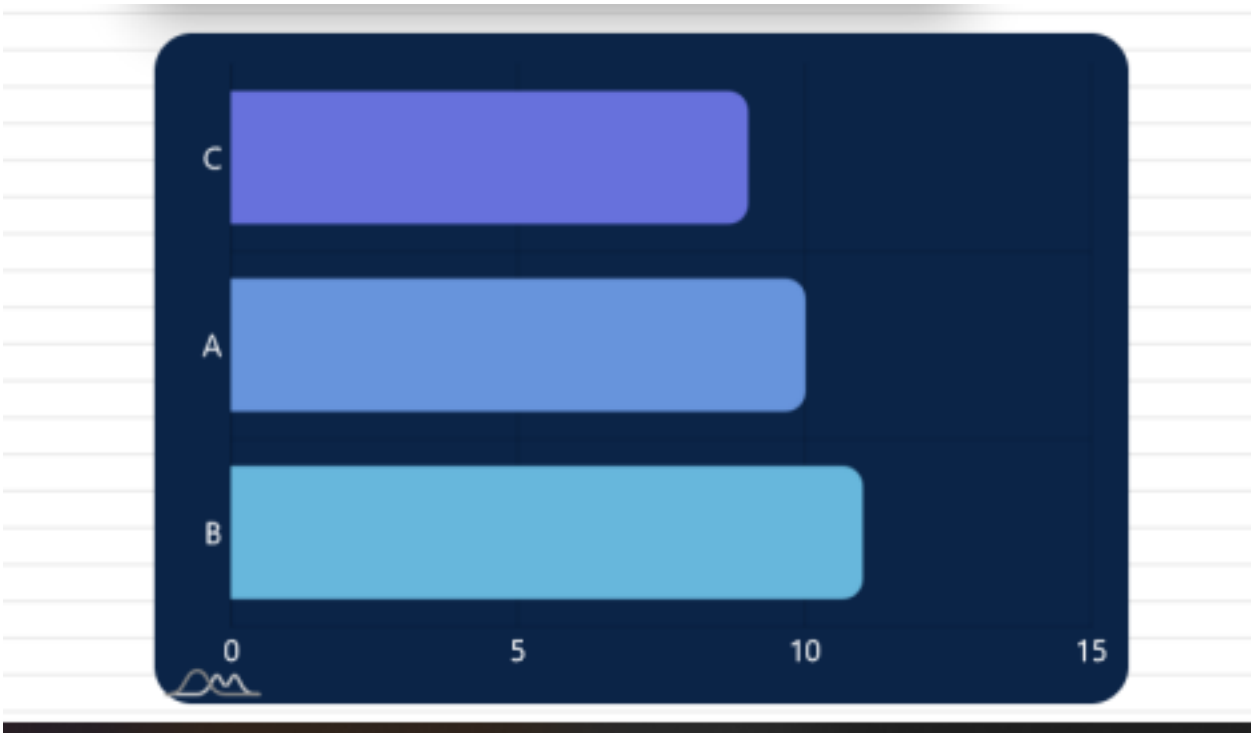
How it Shows Up:

- Always visible on the dashboard.

Why this Chart Type:

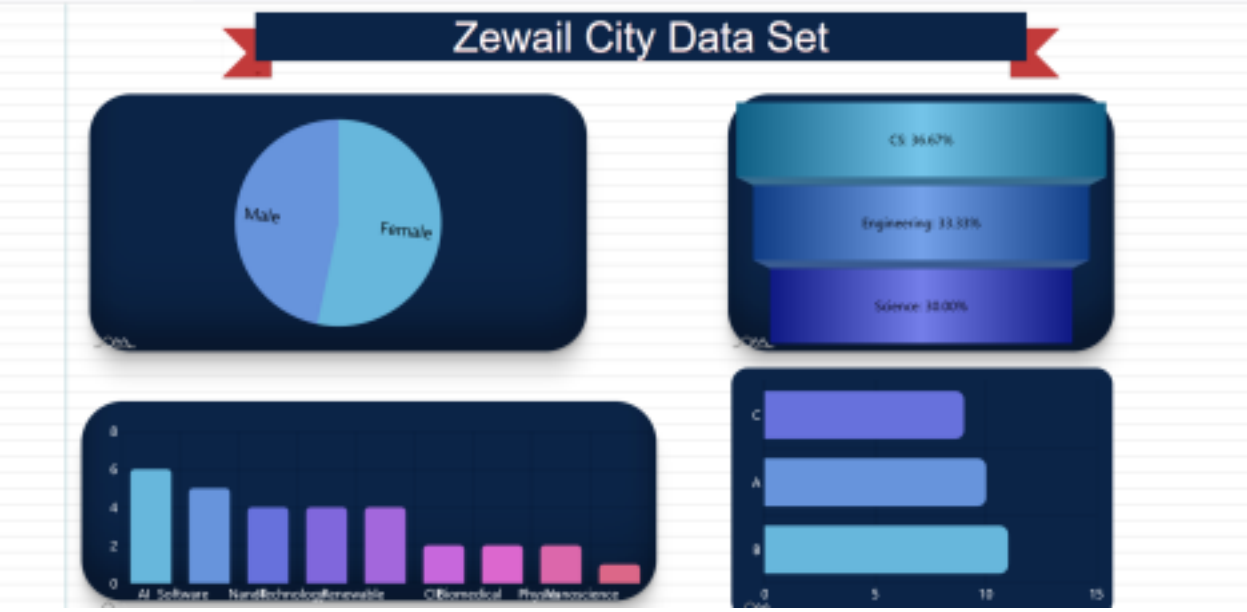
- A horizontal bar chart is chosen for its ability to effectively display the distribution of categorical data (grades) with a clear comparison between different Majors.

Figure 4:

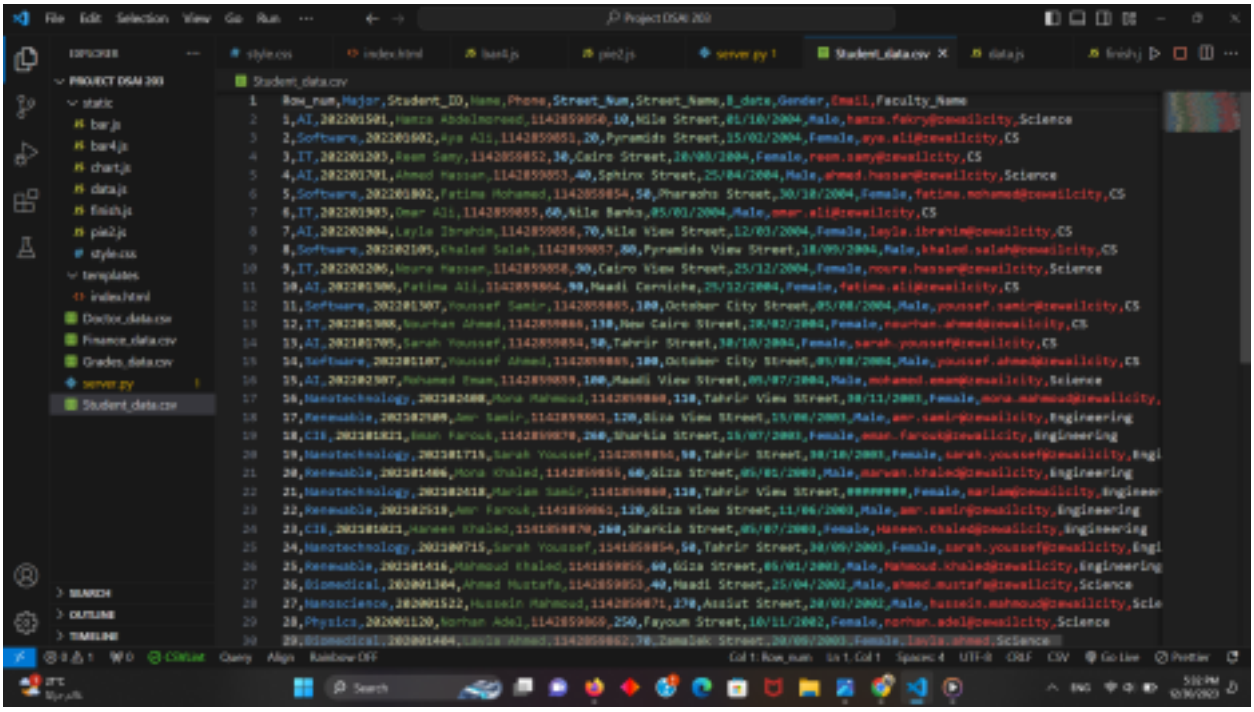


• Snapshot of complete Layout

• Source code of the dashboard (with comments)



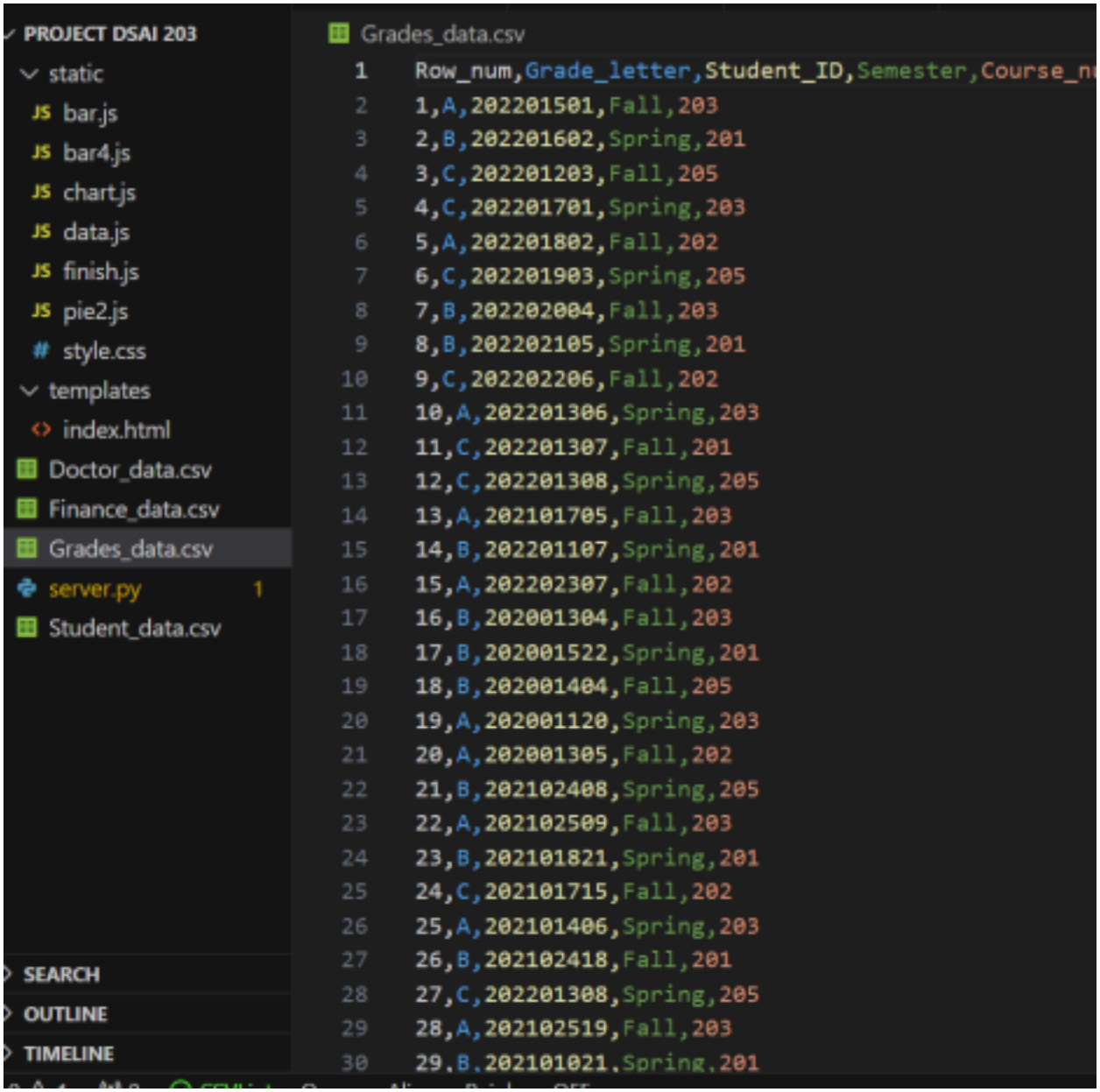
- Snapshot of the provided data (as tables)



style.css | index.html | Doctor_data.csv | bar4.js | pie2.js | server.py 1 | Student_data.csv

Doctor_data.csv

```
Row_num,Doctor_ID,Name,phone_number,Office_location,Office_hours,Course,Address,Email
1,10001,'Dr. Maher','890','Academic','9 AM - 5 PM','Circuits','123 Main St','dr.maher@zewailcity'
2,10002,'Dr. Khalid','210','Academic','10 AM - 6 PM','Visualization','456 Elm St','dr.khalid@zewailcity'
3,10003,'Dr. Yousry','333','Academic','8 AM - 4 PM','Database','789 Oak St','dr.yousry@zewailcity'
4,10004,'Dr. Mayda','555','Academic','11 AM - 7 PM','Datastructure','101 Pine St','dr.mayda@zewailcity'
5,10005,'Dr. Doaa','577','Academic','7 AM - 3 PM','OOP','202 Cedar St','dr.doaa@zewailcity'
6,10006,'Dr. Ashraf','891','Academic','9 AM - 5 PM','Network','123 Main St','dr.Ashraf@zewailcity'
7,10007,'Dr. Hatem','210','Academic','10 AM - 6 PM','Visualization','456 Elm St','dr.Hatem@zewailcity'
8,10008,'Dr. Azza','303','Academic','8 AM - 4 PM','Database','789 Oak St','dr.Azza@zewailcity'
9,10009,'Dr. Hadidy','550','Academic','11 AM - 7 PM','Datastructure','101 Pine St','dr.mayda@zewailcity'
10,10010,'Dr. Waleed','840','Academic','9 AM - 5 PM','Probability','123 Main St','dr.Waleed@zewailcity'
11,10011,'Dr. Mahmoud','210','Academic','10 AM - 6 PM','DATA','456 Elm St','dr.Mahmoud@zewailcity'
12,10012,'Dr. Ehab','333','Academic','8 AM - 4 PM','Cloud','789 Oak St','dr.Ehab@zewailcity'
13,10013,'Dr. Sabah','555','Academic','11 AM - 7 PM','Reasoning','101 Pine St','dr.Sabah@zewailcity'
14,10014,'Dr. Shref','577','Academic','7 AM - 3 PM','Ethics','202 Cedar St','dr.Shref@zewailcity'
15,10015,'Dr. Mahdy','891','Academic','9 AM - 5 PM','Logic','123 Main St','dr.Mahdy@zewailcity'
16,10016,'Dr. Anas','210','Academic','10 AM - 6 PM','Programming','456 Elm St','dr.Anas@zewailcity'
17,10017,'Dr. Ahmed','303','Academic','8 AM - 4 PM','Acquisition','789 Oak St','dr.Ahmed@zewailcity'
18,10018,'Dr. Amr','550','Academic','11 AM - 7 PM','Physics','101 Pine St','dr.Amr@zewailcity'
```


PROJECT DSAI 203
static
bar.js
bar4.js
chart.js
data.js
finish.js
pie2.js
style.css
templates
index.html
Doctor_data.csv
Finance_data.csv
Grades_data.csv
server.py 1
Student_data.csv
SEARCH
OUTLINE
TIMELINE
Grades_data.csv
Row_num,Grade_letter,Student_ID,Semester,Course_n
1,A,202201501,Fall,203
2,B,202201602,Spring,201
3,C,202201203,Fall,205
4,C,202201701,Spring,203
5,A,202201802,Fall,202
6,C,202201903,Spring,205
7,B,202202004,Fall,203
8,B,202202105,Spring,201
9,C,202202206,Fall,202
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11,C,202201307,Fall,201
12,C,202201308,Spring,205
13,A,202101705,Fall,203
14,B,202201107,Spring,201
15,A,202202307,Fall,202
16,B,202001304,Fall,203
17,B,202001522,Spring,201
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19,A,202001120,Spring,203
20,A,202001305,Fall,202
21,B,202102408,Spring,205
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25,A,202101406,Spring,203
26,B,202102418,Fall,201
27,C,202201308,Spring,205
28,A,202102519,Fall,203
29,B,202101021,Spring,201

• Suggested future work:

The dataset provides information on students, majors, and academic records, including grades and courses. Future work could involve data cleaning, exploratory data analysis, and temporal analysis to uncover trends and patterns. Gender-based and faculty-specific analyzes could shed light on academic performance variations. Geospatial analysis using street information may reveal distribution patterns, while predictive modeling could be employed to forecast future academic outcomes and identify potential dropouts. Attention to data privacy and security is essential, and the dataset offers diverse opportunities for insights into student dynamics and performance.

[c] Explain the following for the Dashboard Layout:

Why selecting these positions for each chart, title, buttons, etc.:

- Place the pie chart for gender prominently at the top to highlight the gender distribution, as it is a key metric.
- Position the funnel chart for faculty enrollment beneath, emphasizing the breakdown of students in each faculty.
- Place the bar chart for major at the bottom to showcase the distribution of students across different majors.
- Add an overall title at the top of the dashboard for context.

Points that may be criticized in your design layout:

Color Choices:

- **Contrasting Colors:** Used to differentiate categories (e.g., gender, faculties, majors, grades).
- **Reasoning:** Improves visual appeal and helps users easily distinguish between different data points.

- **Logical Aggregation of Relevant Information:**
- **Argument:** Aggregating related information, such as gender and faculty, helps users mentally categorize the data and place it in context. This grouping aligns with the mental models users may have about student demographics and academic divisions.
- **Enhancing Comparative Analysis:**
- **Argument:** Placing a bullet graph for grades next to a bar chart for majors encourages users to make direct comparisons. This layout facilitates a deeper analysis of how grade distributions vary within each major, promoting a more nuanced exploration of the data.
- In summary, the chosen layout emphasizes logical grouping and encourages users to perform comparative analyses, providing a comprehensive and insightful exploration of student data. ●