جامعة مصر للمعلوماتية
EGYPT UNIVERSITY OF INFORMATICS

Egypt University of Informatics
Computer and Information Systems
Data Analysis Course

Survey on Student Performance in Data Structures Course

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Introduction

Welcome to our survey report on student performance in the Data Structures course at EUI University! This report aims to explore the factors that influence student success in this challenging course. We will analyze variables such as attendance, final exam scores, coursework scores, gender, final exam night studying hours, and exam night sleeping hours to uncover insights into the correlation between these factors and academic performance.

Research Question

What factors contribute to student performance in the Data Structures course at EUI University?

Population of Interest:

Students enrolled in the Data Structures course at EUI University.

Sampling Method:

A simple random sampling method was used in this survey, where students were randomly selected from the entire population of EUI University. While this approach ensures that every student has an equal chance of being selected and allows for more generalizable results.

Bias Identification:

I have taken steps to identify and minimize potential sources of bias this survey.

Selection Bias: If the survey is only distributed to certain groups of students (e.g., high achievers or those with strong opinions), the results may not be representative of the entire student population.

Response Bias: This occurs when respondents provide inaccurate or misleading information. For example, students may overstate their attendance or studying hours to appear more diligent.

Question Wording Bias: The way questions are phrased can influence how respondents answer. For example, asking, "How many classes did you attend?" may yield different results than asking, "Did you attend all classes?"

To minimize bias:

Random Sampling: I have used random sampling to ensure that every student has an equal chance of being selected, reducing selection bias.

Anonymity: I have ensured that responses are anonymous to encourage honest answers and reduce social desirability bias.

Question Design: I have used clear and unbiased language in my questions to avoid leading or loaded questions that could introduce response bias.

Pilot Testing: Before distributing the survey, I pilot tested it with a small group of students to identify and correct any potential issues with question wording or design.

Survey Questions:

1. *How many classes have you attended out of the total number of classes held for the Data Structures course?*
2. *What was your final exam score in the Data Structures course?*
3. *What was your coursework score in the Data Structures course?*
4. *What is your gender?*

5. *How many hours did you study for the final exam on the night before the exam?*
6. *How many hours did you sleep on the night before the final exam?*

[Online survey link]

Number of samples collected: 40.

Analysis:

Descriptive statistics:

➔ Final Exam Score

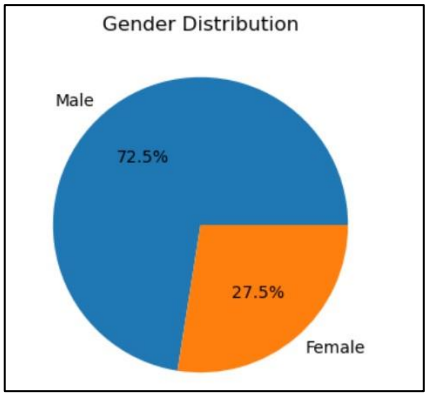
```
Mean: 20.175
Median: 20.5
Mode: 0
Standard Deviation: 12.078562276474242
```

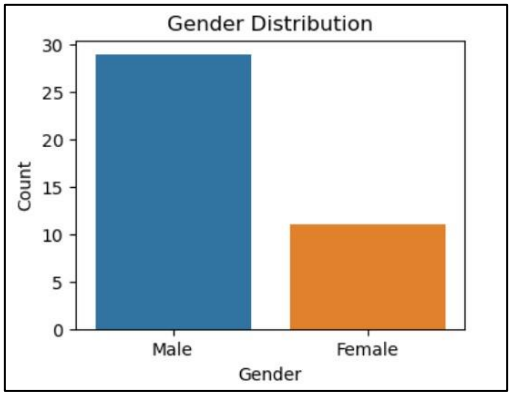
➔ Coursework Score

```
Mean: 30.325
Median: 31.0
Mode: 10
Standard Deviation: 18.003400675912204
```

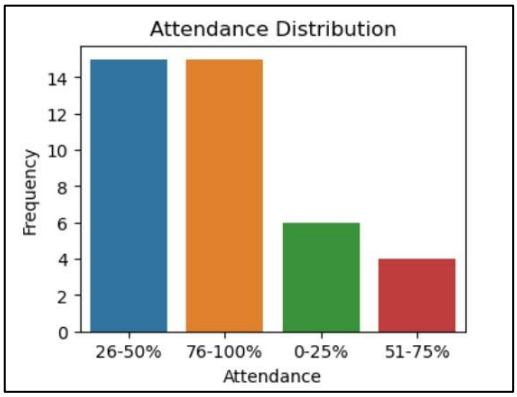
Visual Representations:

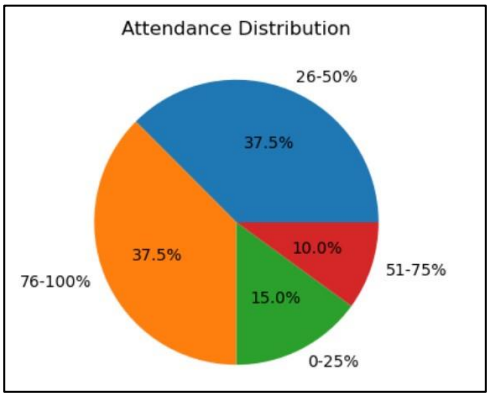
1. Gender Distribution:





2. Attendance Distribution:





3. Frequency Tables for categorical variables:

col_0	Gender
Gender	
Female	11
Male	29

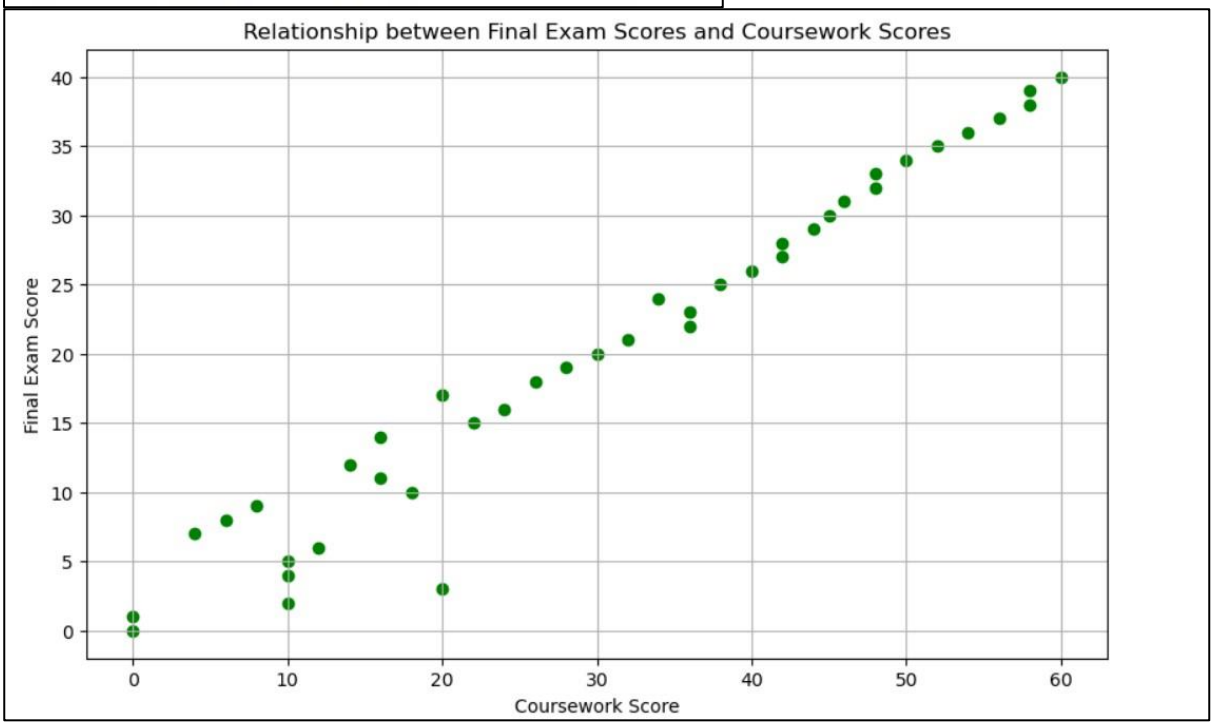
col_0	Exam Night Sleeping Hours
Sleeping_Hours	
4-6 hours	9
6-8 hours	24
Less than 4 hours	1
More than 8 hours	6

col_0	Exam Night Studing Hours
Studing_Hours	
1-2 hours	7
3-4 hours	6
Less than 1 hour	12
More than 4 hours	15

col_0	Attendance Persentage
Attendance	
0-25%	6
26-50%	15
51-75%	4
76-100%	15

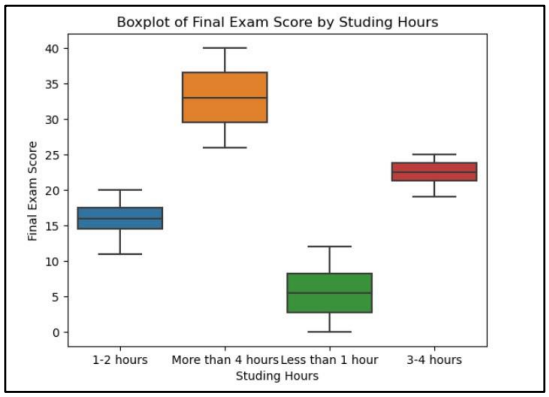
4. Relation between Final Exam Score and Coursework Score:

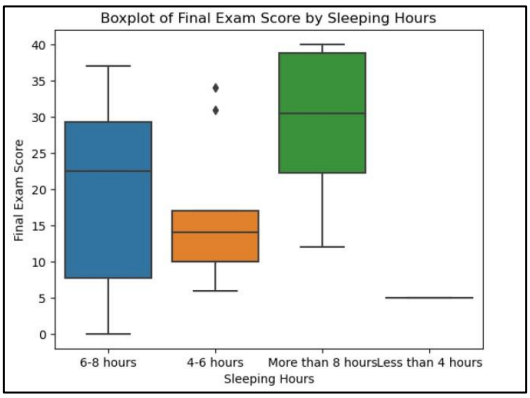
	Final_Score	Coursework_Score
Final_Score	1.00000	0.97889
Coursework_Score	0.97889	1.00000



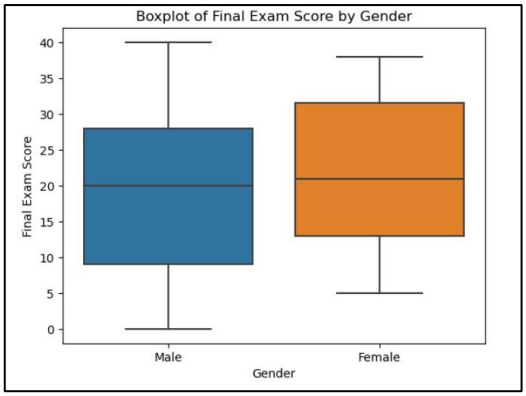
It appears that there is a positive linear correlation between the course work score and the Final exam score.

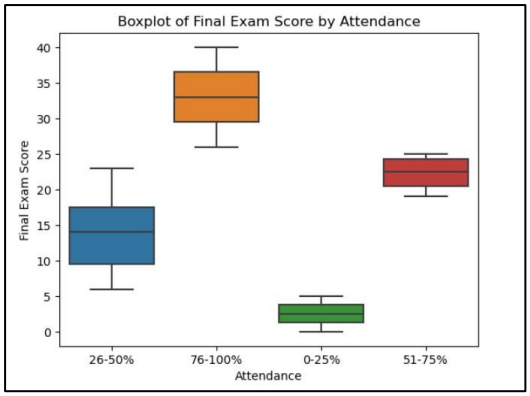
5. Boxplot of Final Exam with Categorical Variables:





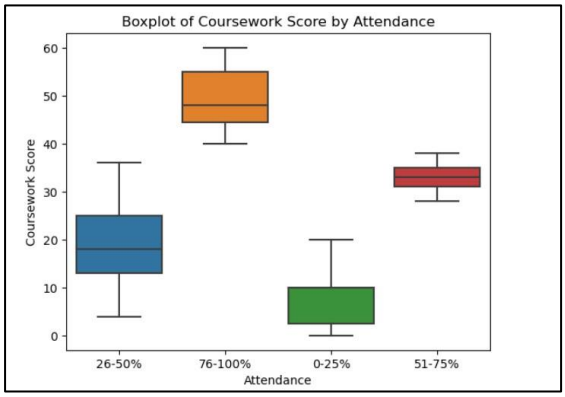
It appears that students who dedicate more than 4 hours to studying for the Data Structures exam the night before tending to achieve high scores on the final exam.

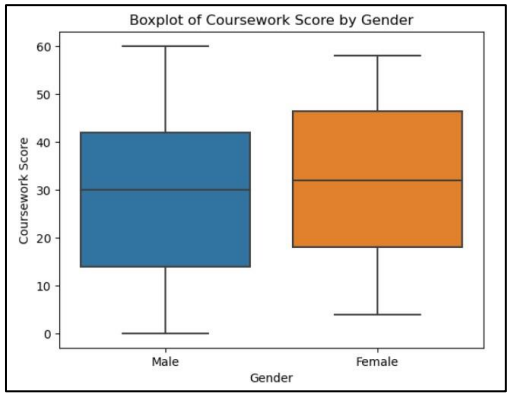




Students who attend more than 75% of the Data Structures classes tend to achieve high marks on the final exam.

6. Boxplot of Coursework Exam with Categorical Variables:





Students who attend more than 75% of the Data Structures classes tend to achieve high marks on the Coursework Score.

Conclusion:

Our analysis of student performance in the Data Structures course at EUI University indicates a positive correlation between attendance, study habits, and academic performance. Students who attended more than 75% of classes and dedicated more than 4 hours to studying the night before the exam tended to achieve high marks on both the Coursework Score and the Final Exam Score. These findings suggest that attendance and study habits are important factors influencing student success in this course.

Potential issues:

Potential issues in the survey design include selection bias, response bias, question wording bias.