



Project Proposal

Analysis of the Performance of Bangladeshi Students

Abstract

This project investigates the factors influencing academic performance among students in Bangladesh. Leveraging Python and data analysis libraries, we aim to uncover trends related to demographics, family background, and educational resources. The study will provide actionable insights to enhance educational outcomes while honing our technical and analytical skills.

Group Information

Group Number: 16

IDs: 2204044, 2204045, 2204046

Title

Analysis of the Performance of Bangladeshi Students

Introduction

Education is the cornerstone of societal progress, and understanding the factors that shape student performance is vital for fostering academic success. In this project, "**Analysis of the Performance of Bangladeshi Students**," we aim to delve into the diverse elements influencing student achievements in Bangladesh. This initiative is part of our Advanced Programming Sessional (CSE 2110) course and serves as both an academic challenge and an opportunity to make impactful discoveries.

Utilizing Python and data analysis tools like NumPy, Pandas, and Matplotlib, we will analyze a rich dataset encompassing student demographics, family background, and academic results. Our focus includes exploring the effects of internet access, location, extracurricular activities, and parental involvement on student outcomes. Through rigorous analysis, we seek to uncover actionable insights that can guide educators and policymakers in enhancing the education system. This project also provides us with a platform to refine our technical and analytical skills, ensuring a practical application of our learning.

Objectives

- To investigate how internet usage impacts students in urban and rural areas.
- To compare academic performance across various subjects and demographics.
- To analyze the relationship between age, gender, and academic achievements.
- To explore connections between location, internet access, study time, and tutoring.
- To assess the influence of extracurricular activities on students of different age groups.
- To provide actionable insights to improve educational outcomes and address key challenges.

Methodology

➤ Data Collection

The [dataset](#) includes the following columns: *index, id, full_name, age, gender, location, family_size, mother_education, father_education, mother_job, father_job, guardian, parental_involvement, internet_access, studytime, tutoring, school_type, attendance, extra_curricular_activities, english, math*

➤ Data Preprocessing

- Handle missing or incomplete data to ensure dataset reliability.
- Clean and standardize the dataset for consistency and accuracy.
- Validate data formats to minimize errors during analysis.

➤ Data Analysis

- **Pandas** for cleaning and transforming data.
- **NumPy** for numerical and statistical computations.
- **Matplotlib** for creating data visualizations.

➤ Visualizations

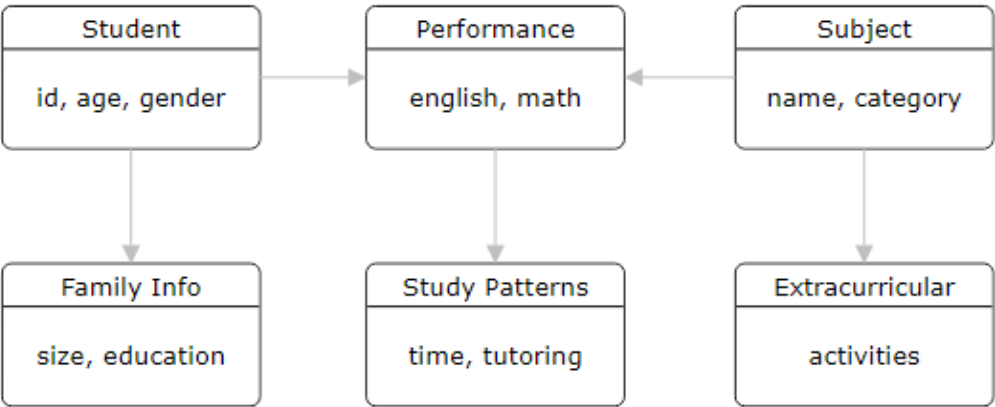
- Comparing internet usage between urban and rural students.
- Analyzing subject-wise performance across different groups.
- Exploring the relationship between age, gender, and academic achievement.
- Investigating the impact of location, internet access, and tutoring.
- Assessing the influence of extracurricular activities.

➤ Outcome

- Highlight key factors such as internet access, parental involvement, and extracurricular activities shaping student performance.
- Identify areas where targeted interventions can improve educational outcomes and student development.

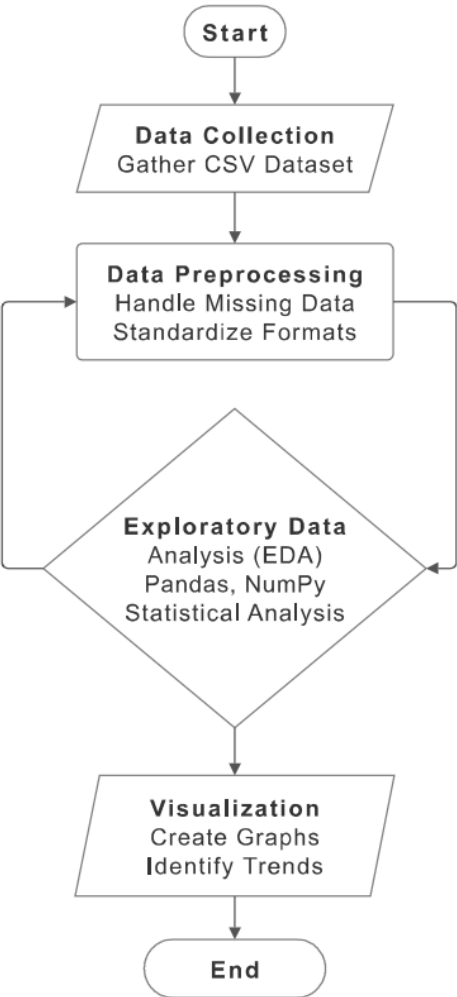
Data Relation Diagram

The diagram below visualizes the relationships between the dataset’s key attribute:



Flowchart

The flowchart below illustrates the detailed workflow of the project:



Conclusion

The "Analysis of the Performance of Bangladeshi Students" project aims to provide a clear understanding of the factors that influence student performance in Bangladesh. By using advanced programming and data analysis techniques, we will identify trends and relationships that can help improve the education system.

Our findings will offer valuable insights for teachers, policymakers, and others involved in education, helping them address challenges and promote better educational outcomes. Additionally, this project allows us to apply our programming and analytical skills in a practical way, enhancing our technical abilities. We believe our work will significantly contribute to understanding educational dynamics in Bangladesh and help us meet our course objectives.

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