### Unleashing The Potential Of Our Youth: A Student Performance Analysis

A country's growth is strongly measured by quality of its education system. Education sector, across the globe has witnessed sea change in its functioning. Today it is recognized as an industry and like any other industry it is facing challenges, the major challenges of higher education being decrease in students' success rate and their leaving a course without completion.

Analysing student work is an essential part of teaching. Teachers assign, collect and examine student work all the time to assess student learning and to revise and improve teaching. Ongoing assessment of student learning allows teachers to engage in continuous quality improvement of their courses. Many factors can influence a student's performance, including the influence of the parents' educational background, test preparation and so on.

The dataset contains the marks secured by 1000 students from a school. This project analyses and correlates student performance with different attributes. The analysis aims to understand the influence of important factors such as parental level of education, the status of test preparation course etc. on the performance of the students in the exams.

Technical Architecture:

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Technical Architecture:

* Unleashing The Potential Of Our Youth: A Student Performance Analysis
  + Project Flow
  + Define Problem / Problem Understanding
  + Data Collection & Extraction From Database
  + Data Preparation
  + Data Visualization
  + Dashboard
  + Story
  + Report
  + Performance Testing
  + Web Integration
  + Project Demonstration & Documentation

**Project Flow**

To accomplish this, we have to complete all the activities listed below,

* Define Problem / Problem Understanding
  + Specify the business problem
  + Business requirements
  + Literature Survey
  + Social or Business Impact.
* Data Collection & Extraction from Database
  + Collect the dataset,
  + Storing Data in DB2
  + Perform SQL Operations
  + Connect DB2 with Cognos
* Data Preparation
* Prepare the Data for Visualization
* Data Visualizations
  + No of Unique Visualizations
* Dashboard
  + Responsive and Design of Dashboard
* Story
  + No of Scenes of Story
* Report
  + No of Visualization with detail information
* Performance Testing
  + Amount of Data Rendered to DB2
  + Utilization of Data Filters
  + No of Calculation Fields
  + No of Visualizations/ Graphs
* Web Integration
  + Dashboard, Report and Story embed with UI With Flask
* Project Demonstration & Documentation
  + Record explanation Video for project end to end solution
  + Project Documentation-Step by step project development procedure

**Define Problem / Problem Understanding**

A problem statement is a clear and concise description of the issue or challenge that needs to be addressed. It should define the problem in a way that is understandable to stakeholders and provide a basis for developing a solution or course of action.

**Specify The Business Problem**

Refer Project Description

**Business Requirements**

Business requirement of student performance analysis refers to the need of educational institutions or organizations to gather, analyse, and use data on students' academic performance to improve teaching and learning outcomes. This process involves collecting, analysing, and interpreting data on various aspects of student performance such as test scores, attendance, behavioural patterns, and demographic information. The business requirement of student performance analysis is crucial for educational institutions to provide high-quality teaching and learning outcomes and improve student success. The ultimate goal is to gain insights and improve performance through data visualization techniques.

**Literature Survey**

A literature survey for Student Performance Analysis involves reviewing academic articles, and other sources related to the analytics of Students Performance. Researchers and practitioners in the field are exploring new methods and tools to improve teaching and learning outcomes and provide more personalized learning experiences for individual students. The analysis can provide a comprehensive understanding of the significance, challenges, and opportunities associated with Student Performance.

**Social Or Business Impact**

Social Impact: It have a positive social impact by improving student outcomes, promoting equity in education, and increasing transparency and accountability in the education system.

Business Model/Impact: It have a significant impact on businesses and educational institutions, as it provides valuable insights into student learning and helps improve teaching, increasing efficiency, and promoting competitiveness.

**Data Collection & Extraction From Database**

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes and generate insights from the data.

**Collect The Dataset**

Please use the link to download the dataset: [Link](https://drive.google.com/file/d/1qBEw4_AfqozL73NyCkQW3ZvFOhok6d-_/view?usp=share_link)



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<https://drive.google.com/file/d/1sjotTJOEcOPePBC-9XdYngcfAdjx4YIH/view?usp=sharing>

**Understand The Data**

Data contains all the meta information regarding the columns described in the CSV files. The name of file is StudentPerformance.csv

**Description for StudentPerformance.csv:**

The file StudentPerformance.csv contains 1000 rows. Each row corresponds to an individual student with details and marks in respective subjects. The columns are:

**Categorical columns are:**

Gender: Male or Female

Race/ethnicity: 5 groups, from group A to group E

Parental level of education: from high school to a master’s degree

lunch: free/reduced or standard.

**Numerical Columns are:**

Math score: out of 100

Reading score: out of 100

Writing score: out of 100

**Storing Data In DB2 & Connect DB2 With Cognos**

[Explanation video link](https://drive.google.com/file/d/1SG8uavfES8a1FGfmjodph7UovTZ617he/view?usp=sharing)



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<https://drive.google.com/file/d/1lWRexHArLp842BjpALBx3CL7UFHOo9RT/view?usp=sharing>

**Data Preparation**

Data modules are containers that describe data and rules for combining and shaping data to prepare it for analysis and visualization in IBM Cognos Analytics. Data module sources. Data modules can be based on data servers, packages, uploaded files, data sets, and other data modules

**Prepare The Data For Visualization**

[Explanation video link](https://drive.google.com/file/d/1JO3rEqLUF9bC-R0h64tkIYtqWkEumkAx/view?usp=share_link)



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<https://drive.google.com/file/d/1iMnCjaDRqt4L5BN9DsR0VdXB2xU5apZC/view?usp=sharing>

**Data Visualization**

Data visualization is the process of creating graphical representations of data in order to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

**No Of Unique Visualizations**

The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyse the Literacy include bar charts, line charts, heat maps, scatter plots, pie charts, Maps etc. These visualizations can be used to compare and analyze students  performance base on number of diffrent parameters.



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<https://drive.google.com/file/d/1XKHppCkx5ThzLpYRCngNGo8h86akK0ys/view?usp=sharing>