1/25/2025
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Student Performance Analysis & Automation

SQL & Power BI project

Objective

The objective of this project is to analyse student performance data using **SQL** and **Power BI** to:

- Identify trends in academic performance and attendance.
- Provide actionable insights to improve student outcomes.
- Demonstrate the automation of data updates and reporting.

Key Deliverables

- **Data Analysis**:
  - Cleansed and prepared raw data using SQL.
  - Calculated key metrics such as success rates, attendance rates, and performance trends.
- **Power BI Dashboard**:
  - Created an interactive dashboard to visualize student performance and attendance data. Included KPIs such as:
    - Success Rate by Subject.
    - Attendance Rate by Status.
    - Diversity Metrics
- **Automation suggestions**:
  - Set up a Power Automate flow to monitor changes in the SQL database and send email notifications.
  - Manually refreshed the Power BI dataset to reflect the latest data.

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Tools Used

- **SQL Server**: For data cleansing, preparation, and analysis.
- **Power BI**: For data visualization and dashboard creation.
- **Power Automate**: For automating data updates and notifications.

Key Insights

- **Success Rates**:
  - Cyber Security has the lowest success rate (75%), while Data Science has the highest (90%).
- **Attendance Trends**:
  - 20% of students are frequently absent, impacting their academic performance.
- **Recommendations**:
  - **Implement targeted tutoring programs for Cyber Security.**
  - **Introduce attendance incentives to reduce absenteeism.**

Students Performance Metrics

Average scores by subject, gender, and career aspiration.

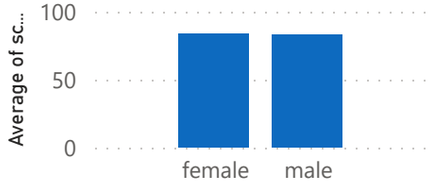
01/10/2023 29/12/2023

subject_name	Average of score
Data Science	88.73
Mathematics for Computing	88.67
Introduction to Databases	86.71
Artificial Intelligence	86.13
Research Methods	83.60
Programming Fundamentals	83.43
Software Engineering	79.40
Advanced Algorithms	79.27
Database Systems	78.53
Cyber Security	74.93
Total	**83.05**

career_aspiration	Average of score
Software Engineer	86.90
Engineer	86.47
Scientist	86.06
Doctor	84.87
Accountant	84.70
Business Owner	83.40
Teacher	82.43
Writer	81.40
Lawyer	81.13
Total	**83.05**

gender	Average of score
female	83.44
male	82.64
Total	**83.05**

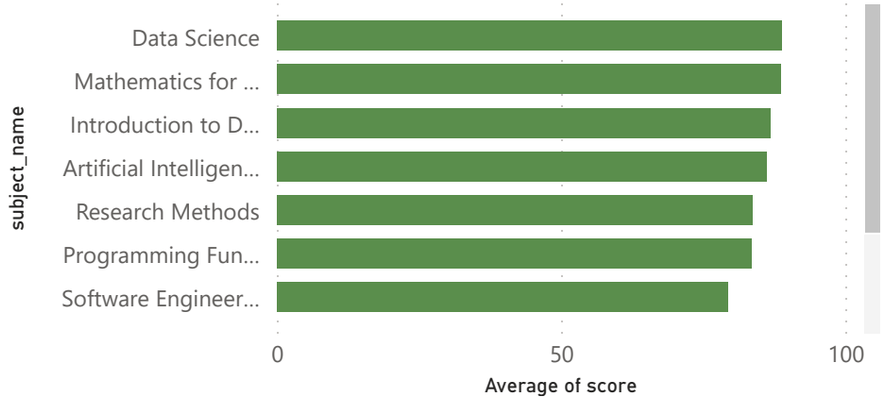
Average of score by gender



Total_Students

30

Average of score by subject_name



Average of score by career_aspiration

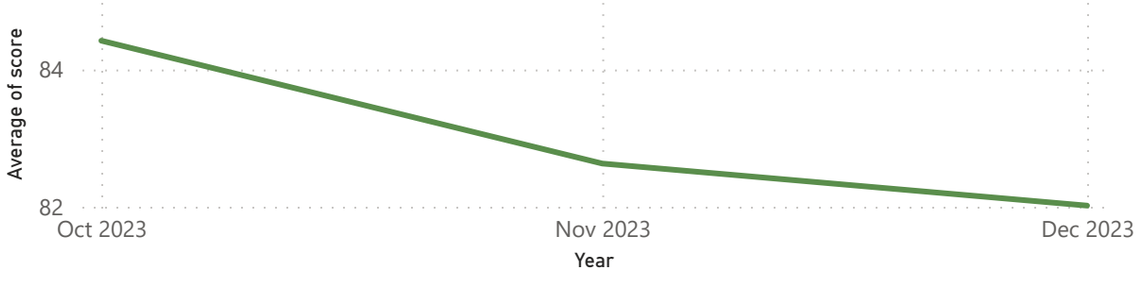
Pass/Fail Rates

By Subject, Students Pass/Fail Status

01/10/2023 29/12/2023

first_name	last_name	subject_name	Academic...	score	Pass_Fail_Status
Eva	Wilson	Programming Fundamentals	2023/24	100.00	Pass
William	King	Programming Fundamentals	2023/24	100.00	Pass
Ava	Wright	Artificial Intelligence	2023/24	99.00	Pass
Frank	Moore	Artificial Intelligence	2023/24	99.00	Pass
Ava	Wright	Mathematics for Computing	2023/24	99.00	Pass
Frank	Moore	Mathematics for Computing	2023/24	99.00	Pass
Ethan	Scott	Artificial Intelligence	2023/24	98.00	Pass
Ivy	Thomas	Artificial Intelligence	2023/24	98.00	Pass
Ethan	Scott	Mathematics for Computing	2023/24	98.00	Pass
Ivy	Thomas	Mathematics for Computing	2023/24	98.00	Pass
Ava	Wright	Introduction to Databases	2023/24	97.00	Pass
Frank	Moore	Introduction to Databases	2023/24	97.00	Pass
Ava	Wright	Programming Fundamentals	2023/24	96.00	Pass
Total					

Average of score by Year and Month



Pass Rate

88.76%

Fail Rate

11.24%

Subject_name

- [ ] Advanced Algorithms
- [ ] Artificial Intelligence
- [ ] Cyber Security
- [ ] Data Science
- [ ] Database Systems
- [ ] Dissertation
- [ ] Introduction to Databases
- [ ] Mathematics for Computing
- [ ] Programming Fundament...
- [ ] Research Methods
- [ ] Software Engineering

Total_Students_Scori...

178

Total_Passes

158

Total_Failes

20

Attendance Rates

01/10/2023 05/11/2023

Absence Rate

20%

Presence Rate

63%

Late Rate

17%

Subject_name

- [ ] Advanced Algorithms
- [ ] Artificial Intelligence
- [ ] Cyber Security
- [ ] Data Science
- [ ] Database Systems
- [ ] Dissertation
- [ ] Introduction to Databases

subject_name	Absence_Rate	Presence_Rate	Late_Rate	Average of score
Cyber Security		90%	10%	74.67
Artificial Intelligence	30%	70%		81.11
Data Science	30%	70%		90.80
Introduction to Databases	30%	70%		90.78
Mathematics for Computing		70%	30%	87.32
Software Engineering		70%	30%	77.50
Programming Fundamentals	40%	60%		88.38
Research Methods		60%	40%	81.67
Database Systems	30%	40%	30%	78.67
Total	**20%**	**63%**	**17%**	**84.20**