📝 Student Result Processing System — Project Report

📌 Project Title:

Student Result Processing System Using MySQL

🎯 Objective:

The main goal of this project is to build a system that stores student exam results, assigns grades automatically, calculates GPA, and generates a rank list. This system uses SQL features such as **triggers**, **views**, and **window functions**, making it efficient and scalable for academic institutions.

🛠️ Tools & Technologies Used:

- **Database**: MySQL 8+
- **ER Diagram**: Created using online diagram tools or Matplotlib

🧱 Database Design:

1. Students Table:

- student_id (INT, Primary Key)
- name (VARCHAR)
- department (VARCHAR)

2. Courses Table:

- course_id (INT, Primary Key)
- course_name (VARCHAR)
- credits (INT)

3. Semesters Table:

- semester_id (INT, Primary Key)
- semester_name (VARCHAR)

4. Grades Table:

- grade_id (INT, Primary Key, Auto Increment)
- student_id (Foreign Key)
- course_id (Foreign Key)
- semester_id (Foreign Key)
- marks (INT)
- grade (CHAR(2))

🔁 **Trigger Logic:**

A trigger is used to automatically assign a grade based on the student's marks:

- A → 85 and above
- B → 70 to 84
- C → 60 to 69
- D → Below 60

💡 **Key SQL Concepts Used:**

- **BEFORE INSERT Trigger** for automatic grade assignment
- **Views** to calculate overall GPA
- **Window Function (RANK)** to generate student rankings
- **CASE WHEN** logic to show pass/fail status

· 🗒️ **ER Diagram:**

· Please refer to the **er_diagram.png** file, which visually shows the relationships between the **Students**, **Courses**, **Grades**, and **Semesters** tables.

· ✅ **Conclusion:**

· This project is a complete **Student Result Management System** that automates result generation using advanced SQL features such as **Triggers**, **Views**, and

Window Functions.

It includes functionalities like **GPA calculation**, **student ranking**, and **pass/fail evaluation**.

Additionally, the system can be extended with a **Flask web interface** to make it more user-friendly and accessible.