STUDENT COURSE REGISTRATION MANAGEMENT SYSTEM

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◆ Database Overview

The **Student Course Registration System** is designed to efficiently manage **students, courses, and their registrations** in a university.

It supports tasks like storing student details, managing course offerings, and tracking which students are enrolled in which courses.

Also for better understanding I use college student dataset which available online from Kaggle to understand college students pattern

◆ Entities & Relationships

1.Students Table

- •Stores details of students (ID, name, department).
- •Example: S001 | Amit Sharma | CSE

2.Courses Table

- •Stores course details (ID, name, department, semester).
- •Example: CSE101 | Database Systems | CSE | 3

3.Registrations Table

- •Junction table linking Students and Courses (many-to-many).
- •Example: S001 | CSE101 | Semester 3

Entity Relationship (ER) Model:

- •One student → can register for many courses.
- •One course → can be taken by many students.
- •Registrations table manages this many-to-many relationship.

◆ Functional Components

Student-wise reports → Courses taken by each student.

Course-wise reports → Students enrolled in each course.

Aggregations → Total students per course, department, or semester.

Filters → Query by semester, department, or specific course.

📈 Insights from Sample Dataset (50 Students, 10 Courses, 100+ Registrations)

Course Popularity

Courses like *Database Systems (CSE101)* and *Data Structures (CSE102)* have the **highest enrollments**.

Common courses (*Mathematics III*) are taken by students across multiple departments.

Departmental Registrations

CSE students register for both **core courses** (CSE101, CSE102, CSE103) and **common electives**.

ECE and EEE students balance between technical courses (*Digital Circuits, Electrical Machines*) and electives.

ME students mostly register for *Thermodynamics* and *Fluid Mechanics*.

Student Load

Most students register for **2–3 courses per semester**.

A few students take only **1 course**, showing selective enrollment.

Semester Distribution

Semester 3 is the **heaviest** with majority of courses offered.

Semester 4 focuses on **advanced/core subjects**.

Cross-Department Trends

Some students take courses outside their department (e.g., a CSE student registering for *Mathematics III*).

This shows the flexibility of elective selection.

College student dataset analysis

This dataset contains information about **1,545 college students**, covering their **demographics (age, gender, major)**, **academic performance (GPA, course grades, course load)**, and **learning engagement (attendance, LMS logins, session duration, assignment submission, forum participation, video completion)**. It also includes **enrollment status** (Active, Graduated, Leave) and a **risk level classification** (High, Medium, Low) for each student.

Overall, the dataset is structured to support analysis of **student performance patterns, engagement behavior, and risk identification**, making it useful for academic management and intervention planning.

🎓 Student Demographics & Academics

The dataset covers **1,545 students**, aged **18–25**, with an average age of **~21.5 years**.
GPA averages around 3.0 (out of 4), indicating overall moderate performance.
All four majors (Arts, Computer Science, Engineering, Business) are **fairly balanced in representation**.

👩‍💻 Gender & Enrollment Status

Gender distribution is almost even (**Male: 531, Female: 525, Other: 489**).
Enrollment status is mixed: **540 Active, 512 Graduated, 493 on Leave**.

⚠️ Risk Levels

More than half (52%) of students are labeled High Risk.
Only **18% are Low Risk**, highlighting a potential concern for academic institutions.

📊 Engagement & Learning Behavior

Average **attendance rate** is ~79%.
Students submit about **75% of assignments** on average.
LMS logins average ~19 per month, with wide variation (0–39).
Average **session duration is ~49 minutes**.
Forum participation and video completion rates are moderate (~75%).

🔍 Correlation Insights

GPA is only weakly correlated with engagement metrics (attendance, LMS logins, submissions, etc.).
Suggests that **traditional academic performance may depend on more factors than online engagement alone**.