

**EduTrack Ltd.** has been contracted to design a database system for a university's **student management system**. The system should store and manage information related to students, courses, instructors, departments, and grades. The development team is at the initial phase where they are selecting the appropriate **data model** and deciding how to structure the **entities and attributes**. They choose to implement a **relational model** to represent relationships such as:

- A student enrolls in multiple courses.
- Each course is offered by a department.
- Instructors can teach multiple courses.

## DBMS\_Quiz-1\_Sec:J\_Summer-25

During the design, the team also classifies **entities** (like student, course, instructor) and their **attributes** (e.g., student name, course code, GPA), assigning suitable **data types** for each.

1. What is a Database Management System (DBMS)? Briefly explain how it helps in managing data efficiently in the context of EduTrack's student management system. (5)
2. Identify which data model is most appropriate for this scenario and explain why. How does the relational model help represent the relationships between students, courses, and instructors? (5)
3. List at least three entities from the case and identify their attributes. Classify the attributes as simple, composite, derived, or multivalued, and specify appropriate data types for each. (5)