Business Rules of unversity system

1.User(General Entity)

* Every user has the following attributes:

-id (Primary Key),

-name,

-email,

-password

* A user can be one of the following types:
  + **Student**
  + **Lecturer**
  + **Employee**
* Each user is assigned exactly one **Role**.
* Users inherit **Permissions** based on their assigned role.

1. Student Entity

· **Attributes**:

-id (Primary Key),

-name,

-email,

-date\_of\_birth,

-Level

-cgpa (Cumulative Grade Point Average)

- major\_department\_id (Foreign Key referencing Department)

- minor\_department\_id (Foreign Key referencing Department)

-department\_id (Foreign Key),

- role\_id (Foreign Key).

· **Relationships**:

· Each student belongs to one **Major Department**.

· A student may optionally belong to a **Minor Department** (if they are pursuing a minor).

· Each student can enroll in many **Courses**.

· A **Department** can have many students as majors and minors.

· **Role**:

* A student’s role is Student.
* Permissions for a student include:
  + Enrolling in courses.
  + Viewing enrolled courses.
  + Viewing grades and progress.
  + Communicating with lecturers and department staff.

3.Course Entity

**Attributes**:

* + id (Primary Key)
  + name
  + credits
  + level
  + department\_id (Foreign Key referencing Department)

**Relationships**:

* + Each course belongs to exactly one **Department**.
  + Each course is supervised by one **Lecturer**.
  + Each course can have many **Students** enrolled.

**Business Rules**:

* + A **Course** has a difficulty level that determines which students can take it.
  + A course must belong to one department but can involve students from other departments (e.g., electives).
  + A course is supervised by one lecturer, who is responsible for its content and grading.

4.Lecturer Entity:

· **Attributes**:

* · id (Primary Key)
* name
* email
* specialization
* department\_id (Foreign Key)
* role\_id (Foreign Key)

· **Relationships**:

* · Each lecturer belongs to exactly one **Department**.
* Each lecturer can supervise many **Courses**.
* A **Course** is supervised by one lecturer.
* A **Department** has many lecturers.

· **Role**:

* · A lecturer’s role is Lecturer.
* Permissions for a lecturer include:
  + Supervising courses.
  + Assigning grades to students.
  + Viewing students’ academic performance.
  + Managing course content.

5.Employee Entity:

**Attributes**:

* + id (Primary Key)
  + name
  + email
  + position
  + department\_id (Foreign Key)
  + role\_id (Foreign Key)

**Relationships**:

* + Each employee belongs to exactly one **Department**.
  + A **Department** can have many employees.

**Role**:

* + Employees can have roles such as Academic Assistant or Administrator.
  + Permissions for employees depend on their specific role:
    - Academic Assistants may manage course scheduling and student enrollment.
    - Administrators may manage user accounts, departments, and system settings.

1. Department Entity:

· **Attributes**:

* · id (Primary Key)
* name
* faculty\_id (Foreign Key)

· **Relationships**:

* · Each department belongs to one **Faculty**.
* A **Faculty** has many departments.
* Each department can have many:
  + **Students** (as majors or minors)
  + **Lecturers**
  + **Courses**
  + **Employees**

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1. Faculty Entity:

* · id (Primary Key)
* name
* dean (the head of the faculty)

· **Relationships**:

* · A **Faculty** has many **Departments**.
* A **Faculty** is a higher organizational unit that oversees its departments.

1. Role Entity:

* · id (Primary Key)
* role\_name (e.g., Student, Lecturer, Academic Assistant, Administrator)
* description

· **Relationships**:

* · A role is assigned to one or more **Users**.
* Each role has a set of **Permissions**.

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1. Permissions Entity:

· **Attributes**:

* · id (Primary Key)
* permission\_name (e.g., "view\_courses", "assign\_grades")
* description

· **Relationships**:

* · Permissions are associated with one or more **Roles**.
* Users inherit permissions through their roles.