
Entity Relationship Diagram Examples

1. University of Limpopo Database System

The University of Limpopo (UL) comprises multiple departments, each responsible for different academic disciplines, managing faculty members, students, courses, and research activities. Each department has a unique name and code and operates within a specific faculty, overseen by a Head of Department (HOD). Faculty members, holding various academic ranks, teach courses and engage in research projects.

Departments offer multiple courses, each identified by a course code, title, and credit hours, with prerequisites and semester offerings. Students enroll in programs at different levels—undergraduate, master's, and PhD—registering for courses and receiving grades upon completion. Research is a vital aspect, with faculty and students collaborating on projects funded by grants or university resources, leading to publications and theses. Administrative staff manage student records, course scheduling, and departmental resources, ensuring smooth operations.

Departments also oversee infrastructure, including classrooms, laboratories, and equipment, some of which require booking and maintenance.

The database must facilitate enrollment tracking, course management, faculty and research monitoring, resource allocation, and analytics, generating reports on department performance, student success rates, and research output to support decision-making.

2. Business Rules for the University Database

A faculty has departments, and each department belongs to a faculty.

An HOD manages a department, and each department is managed by one HOD.

A faculty member may teach many courses, and each course is taught by a faculty member.

A faculty member may engage in multiple research projects, and each research project may involve multiple faculty members.

A department offers many courses, but each course is offered by only one department.

A student enrolls in a program, and each program includes many students.

Students register for multiple courses, and each course is registered by multiple students.

A course is assigned a grade, and each grade is allocated to a specific course.

A student conducts research, and each research project may be conducted by one student.

A project has one grant, but each grant may fund multiple projects.

Administrative staff manage various operations, and each operation is handled by multiple admin staff members.

A department oversees multiple infrastructures, and each infrastructure is managed by only one department.

3. Kalapeng Pharmacy Database System

Kalapeng Pharmacy is a retail and online pharmacy that provides prescription and over-the-counter (OTC) medication to customers.

Customers must register before placing online orders, and each order can contain multiple medicines to prevent shortages.

The pharmacy employs pharmacists, cashiers, and branch managers.

Pharmacists verify prescriptions.

Cashiers handle walk-in transactions.

Managers oversee operations.

Payments can be made using cash, credit card, or medical insurance.

Insurance coverage requires verification before processing.

The pharmacy must comply with government regulations on controlled substances, ensuring all prescription sales are logged and reported to health authorities.