**Entity Relation Diagram | University Management System**

**ERD Case Study**Examples with solution for a university management system will help you understand how to translate a business scenario into database example. Exciting stuff today people. Today , we are actually going to get our hands-dirty and do a hands-on practice for designing a database management system by creating ERD Case Study for University Management System .

We will design a University Database Management System  today , because you’ll be able to understand the complete requirements for such scenario. Before we rush towards designing  , I want to introduce you to a very simple technique to crack case study.  Use this and the whole entity-relation diagram will be created before you know it.

There are four steps in designing a ERD for a DBMS .

1. Identify Entity and members
2. Decide relationships and Cardinality and Modality
3. Draw Entities separately
4. Connect relationships and entities

Now you know what to do with the user requirement ,  Just go through the entire case study first and then apply these four steps on it.

**ERD Case Study :**

In a University  , there are several departments and each department has a head of department who belongs to Faculty. Department have a name , phone extension , specific mailing address and Students that belong to the department. Students can belong to only one Department at a time and Department can have more than one or no Student

Students and faculty have names and unique identification numbers , with address , age , gender and other information. Student studies different Courses offered by University . Faculty teaches these *Courses*. In each semester one student can take more than one course and Faculty can teach more than one courses . Faculty members can teach in multiple Departments. Each course can be taught by many faculty members or no one

Faculty members are also working on multiple research projects. These projects are funded by government and university. One project can have more than one faculty member and one faculty member can work on more than one project

Huff , Looks like a long task . Lets apply our four steps on this requirement. Think of them and study this requirement again.

**Identify Entity and Members  ;**

Long ago ,  we told you how to identify entities . Remember? No? No worries  .  You can find it [ERD Terminologies](https://bitalksbi.com/erd-terminologies/) . Start identifying nouns in above statement and make them bold characters.

In a **University** , there are several **departments** and each **department** has a head of department who belongs to **Faculty**. **Department** have a name , phone extension , specific mailing address and Students that belong to the department. **Students** can belong to only one **Department** at a time and Department can have more than one or no Student

**Students** and **faculty** have names and unique identification numbers , with address , age , gender and other information. Student studies different Courses offered by **University** . Faculty teaches these ***Courses***. In each semester one student can take more than one course and Faculty can teach more than one courses . Faculty members can teach in multiple **Departments**. Each course can be taught by many faculty members or no one

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**Decide Relationships , Cardinality and Modality**

No idea how to do it? Go [ERD Terminologies ERD Terminologies](https://bitalksbi.com/erd-terminologies/). Simply identify verbs and identify them . Let’s make them bold Italic characters,

In a **University** , there are several **departments** and each **department** has a head of department who ***belongs***to **Faculty**. **Department** have a name , phone extension , specific mailing address and Students that ***belong***to the department. **Students** can belong to ***only one*** **Department** at a time and Department can have more than one or no Student

**Students** and **faculty** have names and unique identification numbers , with address , age , gender and other information. Student ***studies***different Courses ***offered***by **University** . Faculty ***teaches***these ***Courses***. In each semester one student can take ***more than******one*** course and Faculty can teach ***more than one*** courses . Faculty members can teach in multiple **Departments**. Each course can be taught by many faculty members or no one

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**Draw Entities  & Attribute Separately :**

You may wonder about the members , as they can sometimes are missing , so we add the missing attributes that are not in the requirement by the knowledge of the industry we are designing the DBMS for . A primary key is a must attribute for  every entity .

**Student**have Name , age , gender , address , phone Number , Roll Number , Semester , Course\_ID and Student\_ID. **Faculty**have Name , age , gender , address , phone Number ,  Semester , Course\_ID, Grade , Salary , Faculty\_ID and designation. **Course**have Name , Code , Student\_ID , Faculty\_ID , Department\_ID and Course\_ID. **Department** have Name , Student\_ID , Faculty\_ID and Department\_ID. **Research Project** – Project\_ID, Faculty\_ID , Name , Duration.

**Create Relationships Between Entities.**

We should know the relationships from above steps and also what will be the cardinality and modality.