Case Study – College Management System

The main purpose of this study is to design a database to construct a student information management system in the department of student affairs – KIET to transform the work in this department from manually to a computer-based system, which leads to providing accuracy, efficiency, security and so on.

2.1 User Requirement

After talking with the employee of the college who is responsible for the administration of the Department of Student Affairs at the college, it has been determined the required information in the system. This determination is according to the actual needs of the college. The information required for the student information management system is described as follows:

- Student main information
- Student identity information
- Faculty Information
- Course information
- Other information

The below-mentioned requirement story has been shared by the employee.

In a College, there are several departments and each department has one head of the department (HOD). Department has a name, its location, and students that belong to the department. A Student can belong to only one department and a department can have many students. If a department has recently come into existence, it might not have any students. Students have roll number, name, date of birth, gender, hobby, phone number, and address. Faculty has a name, designation, date of joining, gender & salary and belongs to a particular department. A department can run many courses with assigned credits and students can study any number of courses being offered by various departments. *There are sections within each department and each section has many students. Each section has its name, max capacity of that section, and the number of students in that section. Students need to do one mini-project individually. Each available mini-project has to be chosen based on its name, domain, subject and description.* Faculty members can teach multiple courses in multiple departments. One course can be taught by many faculty members across departments. Faculty members can be part of multiple research projects. These projects are either sponsored by the government, industry, or the college itself. One or more projects can be done by the faculty member and one project can have more than one faculty member. Research projects have a fixed duration and their status needs to be tracked on a regular basis.

After collecting the user requirement, just go through the entire story again and then break the requirement story into well-defined parts to understand the requirements in a better way.

In a College,

- There are several departments and each department has many faculties.
- Out of the faculties from each department, one faculty is acting as Head of Department.
- Department has a name, Id, phone extension, specific mailing address, and Students that belong to the department.
- Students can belong to only one department at a time.
- Department can have more than one or no Student.
- Students have the name, unique identification number, address, age, gender, hobbies, and other information.
- Faculty also have information similar to Students except for hobbies.
- A student studies different Courses.
- A department can run many courses and a course can run in many departments.
- Faculty teaches these Courses. Faculty can teach more than one course.
- Department can run many sections.
- Many students can be in one section and each section has its name and the max capacity.
- A Student must do one mini-project and one mini-project can be opted by one student only.
- 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.
- Research projects are either sponsored by the government, industry, or the college itself.
- One project can have more than one faculty member and one faculty member can work on more than one project.

Complete ER Diagram-

- Based on our understanding of entities, attributes, relationships& cardinalities and their ER Notations, below is the complete E-R diagram of our case study.