## 2.2 Relational Database Design

This section outlines the use cases of normal users and admins separately.

### 2.2.1 USERS Table

The attributes of the table are:-

* id - Serves as the primary key for this table.
* name – Stores the name of the user.
* email – Stores the email id of the user.
* password – Stores the password of the user’s account.
* contact – Stores the contact number of the user.
* city - Stores the city to which the user belongs.
* address – Stores the address of the user.
* type – Stores whether the user is a student, faculty, library staff, hostel staff or admin.
* FA – References the primary key of the USERS table and stores the id of the faculty advisor of the user in case the user is a student.
* room – Stores the room number of the user in case the user is a student.
* hostel\_dues – Stores the hostel dues of the user in case the user is a student.

### 2.2.2 SEMESTER Table

The attributes of the table are:-

* sem – Stores the name of the semester and serves as the primary key for this table.
* status – Stores ‘curr’ if sem stores the name of the current semester, ‘prev’ otherwise.

### 2.2.3 LIBRARY\_REC Table

The attributes of the table are:-

* id - Serves as the primary key for this table.
* title – Stores the title of the book.
* author – Stores the name of the author of the book.
* quantity – Stores the quantity of the book present in the library.

### 2.2.4 COURSE Table

The attributes of the table are:-

* id - Serves as the primary key for this table.
* name – Stores the name of the course.

### 2.2.5 INSTRUCTOR Table

The attributes of the table are:-

* cid - References the primary key of COURSE table.
* fid – References the primary key of USERS table.
* (cid, fid) serves as the primary key for this table.

### 2.2.6 ENROLL Table

The attributes of the table are:-

* sid – References the primary key of USERS table.
* cid – References the primary key of COURSE table.
* sem – References the primary key of SEMESTER table.
* T1 – Stores the marks scored in Test 1.
* T2 – Stores the marks scored in Test 2.
* assignment - Stores the marks scored in Assignment.
* end\_sem – Stores the marks scored in End Semester Examination.
* total – Stores the total marks scored.
* grade – Stores the grade obtained.
* (sid, cid, sem) serves as the primary key for this table.

### 2.2.7 COURSE Table

The attributes of the table are:-

* sid – References the primary key of USERS table.
* bid – References the primary key of LIBRARY\_REC table.
* due\_date – Stores the date by which the book is to be returned to the library.
* (sid, bid) serves as the primary key for this table.

### 2.2.8 ATTENDANCE Table

The attributes of the table are:-

* sid – References the primary key of USERS table.
* cid – References the primary key of COURSE table.
* date – Stores the date on which the session was held.
* session – Stores the session number.
* status – Stores ‘P’ in case the student was present for the session, ‘A’ otherwise.

# 3 Architectural Design

The application follows client server architectural model. The client (web browser) makes requests for resources which is handled and served by the server end of the application. The server program runs on a remote machine accessible via the Internet. The server has access to a database storing textual information.

# 4 User Interface Design

## 4.1 Normal User Interface

This interface provides functionality for users to execute their specific privileges. The browse functionality will be achieved using forms to specify search parameters. Faculty Advisors will have an option for registering students for various courses and students will an option for viewing the courses for which they have been registered.

## 4.2 Login Interface

This interface provides functionality for users to login to the system using the right credentials. This functionality will be achieved using a form to collect login credentials.

## 4.3 Admin Interface

This interface provides functionality that enables admin to execute administrative tasks such as assigning a faculty advisor to a student, add/remove admins and modify contents of the system. Add/Remove admins will use graphical user interfaces to enable an admin to remove another admin’s account in case (s)he is no longer a part of the institute.

# 5 Restrictions, Limitations and Constraints

* A faculty member can register only a student whom (s)he is a faculty advisor of, for various courses, if and only if the student neither has any library dues nor any hostel dues. This will ensure that the student clears his/her dues before registration.
* A faculty member can take attendance for a course if and only if (s)he is an instructor for that course.
* Only the admin has permissions to add a new course to the system, assign an instructor for a course, assign a faculty advisor for a student and update the current semester.