**Database Systems**



**Project Members:**

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**1. Courses Table**

* **Attributes**:
  + course\_id (Primary Key – used to identify the course uniquely)
  + course\_code (used for storing the code of course offered)
  + course\_name (used for storing the name of course offered)
  + instructor\_name (used for storing the name of instructor teaching the course)
  + academic\_year (used for storing the information of year and semester (e.g fall, spring, summer) of the course offered)
  + semester (used for storing the Semester in which the course is offered)
* **Purpose**: This table stores information about courses offered, including their unique identifiers and instructors.
* **Foreign Keys**: None.

**2. Documents Table**

* **Attributes**:
  + document\_id (Primary Key – uniquely identifying any document)
  + upload\_date (used for storing the date document was uploaded)
  + file\_path (used for storing and fetching file via the reference file path of the document)
  + title (used for storing the title/name of the document offered)
  + is\_free (used for storing the Boolean value of true and false according to accessibility of document)
  + price (used for storing the price of the document)
  + description (used for storing the brief description of document)
* **Purpose**: Tracks uploaded documents and their details, such as availability and pricing.
* **Foreign Keys**:
  + department\_id (Links to Departments table)
  + user\_id (Links to Users table via "Uploaded by")

**3. Departments Table**

* **Attributes**:
  + department\_id (Primary Key)
  + department\_name (used for storing the name of department)
* **Purpose**: Represents academic departments associated with courses and documents.
* **Foreign Keys**:
  + university\_id (Links to University table)

**4. University Table**

* **Attributes**:
  + university\_id (Primary Key)
  + university\_name (used for storing the name of university)
  + campus\_location (used for storing the campus location of the university)
* **Purpose**: Stores details of universities offering courses and maintaining departments.
* **Foreign Keys**: None

**5. Users Table**

* **Attributes**:
  + user\_id (Primary Key)
  + name (used for storing the name of user consisting of two attributes (first\_name and last\_name )
  + email (used for storing the email of the user)
  + age (used for storing the age of the user)
  + contact\_no (used for storing the contact number of the user)
  + password (used for storing the encrypted password of the user)
  + bio (used for storing a brief biography of the user)
  + join\_date (used for storing the date the user joined the system)
  + program (used for storing the academic program of the user, if applicable)
  + semester (used for storing the current semester of the user, if applicable)
* **Purpose**: Captures user information for students.
* **Foreign Keys**:
  + department\_id (Links to Departments table via enrollment)

**6. Wallet Table**

* **Attributes:**
  + wallet\_id (Primary Key – uniquely identifying each wallet)
  + balance (used for storing the available balance in the wallet)
* **Purpose:** Manages user wallet balances for transactions.
* **Foreign Keys:**
  + user\_id (Links to Users table)

### 7. Action Log Table

* **Attributes:**
  + log\_id (Primary Key – uniquely identifying each action log)
  + action\_timestamp (used for storing the timestamp of the logged action)
  + action\_type (used for storing the type of action performed by the user)
  + address (used for storing the IP or device address of the user performing the action)
* **Purpose:** Records user actions within the system.
* **Foreign Keys:**
  + user\_id (Links to Users table)

### ****8. Loans Table****

* **Attributes:**
  + loan\_id (Primary Key – uniquely identifying each loan)
  + request\_date (used for storing the date when the loan was requested)
  + approval\_date (used for storing the date when the loan was approved)
  + repayment\_date (used for storing the date by which the loan should be repaid)
  + amount (used for storing the loan amount requested or granted)
  + status (used for storing the status of the loan, e.g., pending, approved, rejected)
* **Purpose:** Tracks loans taken by users.
* **Foreign Keys:**
  + user\_id (Links to Users table)

### ****9. Notifications Table****

* **Attributes:**
  + notification\_id (Primary Key – uniquely identifying each notification)
  + is\_read (used for storing whether the notification has been read by the user)
  + created\_date (used for storing the creation date of the notification)
  + message (used for storing the content of the notification)
* **Purpose:** Manages notifications for users.
* **Foreign Keys:**
  + user\_id (Links to Users table)

### ****10. Document Stats Table****

* **Attributes:**
  + stats\_id (Primary Key – uniquely identifying each statistics entry)
  + purchases (used for storing the total number of times the document was purchased)
  + views (used for storing the total number of times the document was viewed)
* **Purpose:** Tracks document analytics, such as views and purchases.
* **Foreign Keys:**
  + document\_id (Links to Documents table)

### ****11. Files Access Keys Table****

* **Attributes:**
  + access\_key\_id (Primary Key – uniquely identifying each access key)
  + access\_key (used for storing the generated access key for a file)
  + is\_used (used for storing whether the access key has been used)
  + date\_created (used for storing the creation date of the access key)
  + used\_date (used for storing the date when the access key was used)
* **Purpose:** Manages file access for users.
* **Foreign Keys:**
  + document\_id (Links to Documents table)

### ****12. Tags Table****

* **Attributes:**
  + tag\_id (Primary Key – uniquely identifying each tag)
  + tag\_name (used for storing the name of the tag)
* **Purpose:** Stores tags for categorizing documents and discussions.
* **Foreign Keys:** None explicitly listed.

### ****13. Document Tags Table****

* **Attributes:**
  + document\_id (Foreign Key to Documents table)
  + tag\_id (Foreign Key to Tags table)
* **Purpose:** Links documents with tags.

### ****14. Discussions Table****

* **Attributes:**
  + discussion\_id (Primary Key – uniquely identifying each discussion)
  + is\_read (used for storing whether the discussion has been read by the user)
  + created\_date (used for storing the creation date of the discussion)
  + message (used for storing the content of the discussion)
* **Purpose:** Facilitates user discussions.
* **Foreign Keys:**
  + user\_id (Links to Users table)

### ****15. Discussion Tags Table****

* **Attributes:**
  + discussion\_id (Foreign Key to Discussions table)
  + tag\_id (Foreign Key to Tags table)
* **Purpose:** Links discussions with tags.

### ****16. Discussion Comments Table****

* **Attributes:**
  + comment\_id (Primary Key – uniquely identifying each comment)
  + comment\_date (used for storing the date when the comment was made)
  + comment\_text (used for storing the text of the comment)
* **Purpose:** Tracks comments made on discussions.
* **Foreign Keys:**
  + discussion\_id (Links to Discussions table)

### ****17. Transactions Table****

* **Attributes:**
  + transaction\_id (Primary Key – uniquely identifying each transaction)
  + remaining\_balance (used for storing the balance remaining after the transaction)
  + transaction\_date (used for storing the date of the transaction)
  + amount (used for storing the amount involved in the transaction)
  + transaction\_type (used for storing the type of transaction, e.g., credit, debit)
* **Purpose:** Records all monetary transactions.
* **Foreign Keys:**
  + user\_id (Links to Users table)

Relations

#### **Departments - Courses**

* **Type**: One-to-Many (1:N)
* **Description**: Each course is associated with a single department, but a department can offer many courses.
* **Connecting Tables**:
  + Courses references Departments through department\_id.

#### **Departments - Universities**

* **Type**: One-to-Many (1:N)
* **Description**: Each department belongs to a single university, but a university can host multiple departments.
* **Connecting Tables**:
  + Departments references Universities through university\_id.

#### **Departments-Users**

* **Type**: One-to-Many (1:N)
* **Description**: Users (students) belong to a single department, but a department can have many users.
* **Connecting Tables**:
  + Users references Departments through department\_id.

#### **Users - Documents**

* **Type**: One-to-Many (1:N)
* **Description**: Each document is uploaded by a single user, but a user can upload multiple documents.
* **Connecting Tables**:
  + Documents references Users through user\_id.

#### **Documents - Tags**

* **Type**: Many-to-Many (M:N)
* **Description**: Documents can have multiple tags, and a tag can belong to multiple documents.
* **Connecting Tables**:
  + Document Tags (Intermediary Table with document\_id and tag\_id).

#### **Discussions - Tags**

* **Type**: Many-to-Many (M:N)
* **Description**: Discussions can have multiple tags, and a tag can belong to multiple discussions.
* **Connecting Tables**:
  + Discussion Tags (Intermediary Table with discussion\_id and tag\_id).

#### **Users - Notifications**

* **Type**: One-to-Many (1:N)
* **Description**: Users can receive multiple notification, but one notification can only be sent to one user.
* **Connecting Tables**:
  + Notifications references Users through user\_id.

#### **Users – Actions\_Log**

* **Type**: One-to-Many (1:N)
* **Description**: Users can perform multiple Actions, but one action can only be performed by one user.
* **Connecting Tables**:
  + Actions\_log references Users through user\_id.

#### **Users – Wallet**

* **Type**: One-to-One (1:1)
* **Description**: Users can own one wallet.
* **Connecting Tables**:
  + Wallet references Users through user\_id.

#### **Users – Loans**

* **Type**: One-to-Many (1:N)
* **Description**: Users can owe multiple loans, but one loan can only be owed by one user.
* **Connecting Tables**:
  + Actions\_log references Users through user\_id.

#### **Users – Discussion\_comments**

* **Type**: One-to-Many (1:N)
* **Description**: One User can comment multiple times, but one a comment is written by only one user.
* **Connecting Tables**:
  + Discussion\_comments references Users through user\_id.

#### **Users – Discussion**

* **Type**: One-to-Many (1:N)
* **Description**: One User can open multiple disscussions, but a discussion can be opened by only one user..
* **Connecting Tables**:
  + Discussion references Users through user\_id.

#### **Users – Transaction**

* **Type**: One-to-Many (1:N)
* **Description**: One User can perform multiple transactions, but one transaction is performed by only one user.
* **Connecting Tables**:
  + Transaction references Users through user\_id.

#### **Documents – File\_Access\_Keys**

* **Type**: One-to-Many (1:N)
* **Description**: One Document may be accessed by multiple keys, but one access key can only be used for one document.
* **Connecting Tables**:
  + File\_access\_keys references Documents through document\_id.

#### **Courses – Documents**

* **Type**: One-to-Many (1:N)
* **Description**: One document can only belong to one course, but one course can contain multiple documents.
* **Connecting Tables**:
  + Documents references Courses through course\_id.