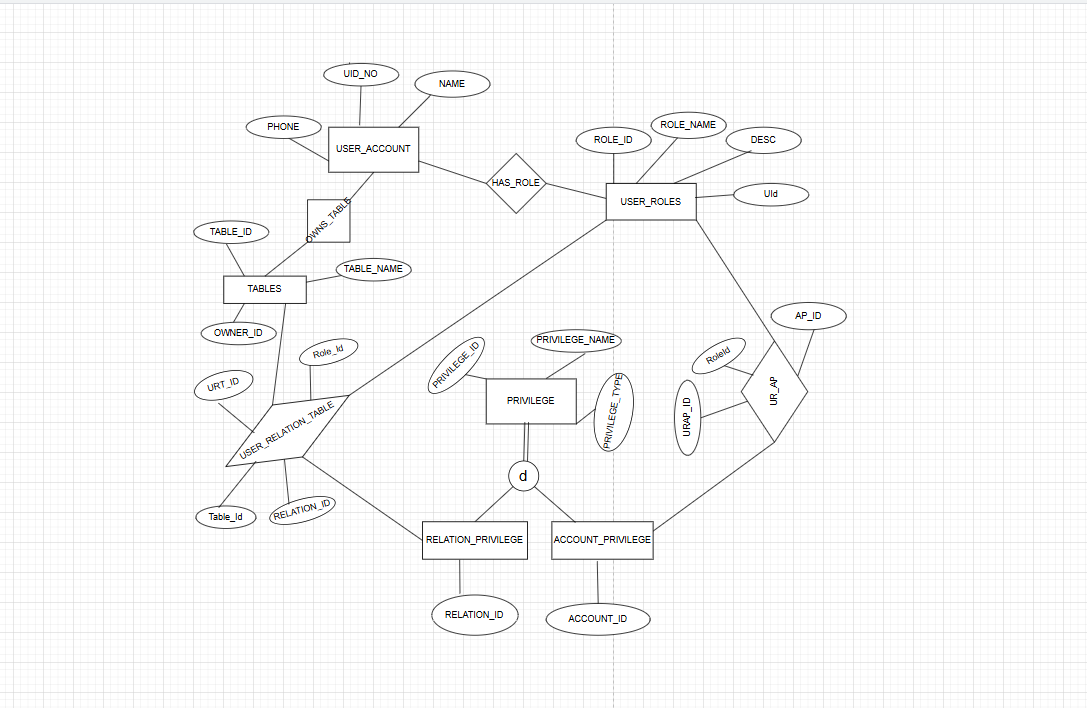
CSE 5330 - DATABASE SYSTEMS

PROJECT 2: PART1 & 2

Enhanced Entity Relationship (EER) Diagram:



Design Choices:

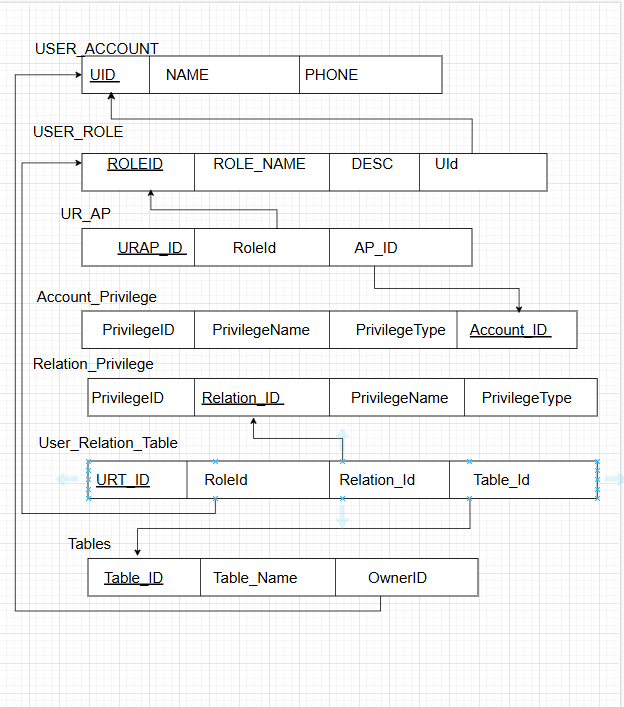
In this EER diagram for the project 2,

1. The User Account Entity has attributes UID No, Name and Phone. In which UID No is the primary key.
2. That record in the user account is the owner of the table, Owner\_ID in the table entity is the foreign key which references to user account entity. This binary relationship shows 1-to-many.
3. Allowing new privileges to be added at any time we have created a privilege entity with attributes Privilege ID, Privilege Name, privilege Type.
4. We have created two different entities, account privilege and relation privilege entities which are in disjoint relation to privilege entity.
5. The binary relationship between user roles and account privilege as one user role can have multiple privileges and one account privilege can be associated to multiple users so it’s many-to-many.
6. The ternary relationship between tables, user roles and relation privilege entity, creating a user\_relation\_table entity with attributes role\_id and table id and relation id which are foreign keys referencing the three different entities.
7. There will be a many-to-many relationship across the three entities.

Assumptions:

1. The Table entity will have multiple tables but is related to a single account.
2. Each user role is related to exactly one user account.
3. Each privilege type in privilege entity is either related to relation privilege and account privilege.

EER to Relational Mapping Schema:



Choices:

1. All the Primary keys in the 7 entities from the enhanced entity relationship are underlined.
2. The entities account privilege and relation privilege are shown different from create tables. They are shown as mentioned in the example from the class modules because of their strict disjoint relationship with privilege entity.
3. The UR\_AP forms a binary relationship between user role and account privilege.
4. The User\_Relation\_Table forms a ternary relationship between user role, relation privilege and tables entity.
5. All the foreign keys are represented by lined arrows to referenced entity.

Create Statements:

CREATE TABLE USER\_ACCOUNT (

UID INT PRIMARY KEY,

Name VARCHAR(255) NOT NULL,

Phone VARCHAR(12) UNIQUE NOT NULL

);

CREATE TABLE TABLES (

TableID INT PRIMARY KEY,

TableName VARCHAR(255) NOT NULL,

OwnerID INT,

FOREIGN KEY (OwnerID) REFERENCES USER\_ACCOUNT(UID)

);

CREATE TABLE USER\_ROLES (

RoleID INT PRIMARY KEY,

RoleName VARCHAR(255) NOT NULL,

Role\_desc VARCHAR(255),

UId INT NOT NULL,

FOREIGN KEY(UId) REFERENCES USER\_ACCOUNT(UID)

);

CREATE TABLE PRIVILEGE (

PrivilegeID INT PRIMARY KEY,

PrivilegeName VARCHAR(255) NOT NULL,

PrivilegeType ENUM('Account', 'Relation') NOT NULL

);

CREATE TABLE ACCOUNT\_PRIVILEGE (

Account\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Privilege\_Id INT,

FOREIGN KEY (Privilege\_Id) REFERENCES PRIVILEGE(PrivilegeID)

);

CREATE TABLE UR\_AP (

URAP\_ID INT PRIMARY KEY AUTO\_INCREMENT,

RoleId INT,

AP\_ID INT,

FOREIGN KEY (RoleId) REFERENCES USER\_ROLES(RoleId),

FOREIGN KEY (AP\_ID) REFERENCES ACCOUNT\_PRIVILEGE(Account\_ID)

);

CREATE TABLE RELATION\_PRIVILEGE (

Relation\_ID INT PRIMARY KEY AUTO\_INCREMENT,

Privilege\_Id INT,

FOREIGN KEY (Privilege\_Id) REFERENCES PRIVILEGE(PrivilegeID)

);

CREATE TABLE USER\_RELATION\_TABLE (

URT\_ID INT PRIMARY KEY,

RoleId INT,

Relation\_Id INT,

TableId INT,

FOREIGN KEY (RoleId) REFERENCES USER\_ROLES(RoleID),

FOREIGN KEY (Relation\_Id) REFERENCES RELATION\_PRIVILEGE(Relation\_ID),

FOREIGN KEY (TableId) REFERENCES TABLES(TableID)

);