CA 4: Part A - Database Design & SQL Querying

R and SQL code to generate and populate a SQLite database

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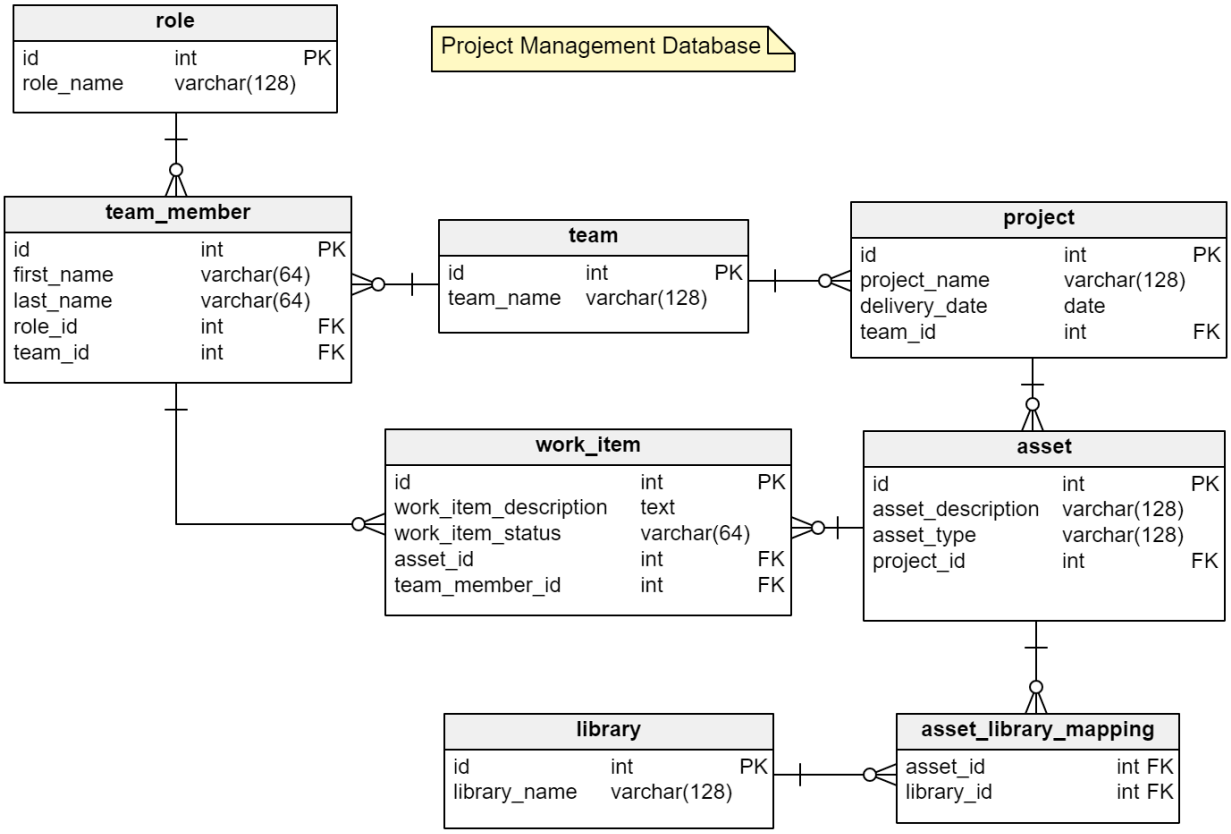
E-R Diagram

The E-R diagram of the logical data model describing the structure of my database.



Generate and Connect to SQLite Database

```
# connect to a new local SQLite database (and create if doesn't yet exist)
conn <- dbConnect(RSQLite::SQLite(), dbname = "daie_ca4_data.sqlite")
```

Create Tables in Database

```
# create the tables using the SQL from the script generated by Vertabelo
# -- Table: asset
dbExecute(conn, "CREATE TABLE asset (
    id int NOT NULL CONSTRAINT asset_pk PRIMARY KEY,
    asset_description varchar(128) NOT NULL,
    asset_type varchar(128) NOT NULL,
    project_id int NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: asset_library_mapping
dbExecute(conn, "CREATE TABLE asset_library_mapping (
    asset_id int NOT NULL,
    library_id int NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: library
dbExecute(conn, "CREATE TABLE library (
    id int NOT NULL CONSTRAINT library_pk PRIMARY KEY,
    library_name varchar(128) NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: project
dbExecute(conn, "CREATE TABLE project (
    id int NOT NULL CONSTRAINT project_pk PRIMARY KEY,
    project_name varchar(128) NOT NULL,
    delivery_date date NOT NULL,
    team_id int NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: role
dbExecute(conn, "CREATE TABLE role (
    id int NOT NULL CONSTRAINT role_pk PRIMARY KEY,
    role_name varchar(128) NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: team
dbExecute(conn, "CREATE TABLE team (
    id int NOT NULL CONSTRAINT team_pk PRIMARY KEY,
    team_name varchar(128) NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: team_member
dbExecute(conn, "CREATE TABLE team_member (
    id int NOT NULL CONSTRAINT team_member_pk PRIMARY KEY,
    first_name varchar(64) NOT NULL,
    last_name varchar(64) NOT NULL,
    role_id int NOT NULL,
    team_id int NOT NULL)")
```

```
## [1] 0
```

```
# -- Table: work_item
dbExecute(conn, "CREATE TABLE work_item (
    id int NOT NULL CONSTRAINT work_item_pk PRIMARY KEY,
    work_item_description text NOT NULL,
    work_item_status varchar(64) NOT NULL,
    asset_id int NOT NULL,
    team_member_id int NOT NULL)")
```

```
## [1] 0
```

Populate Tables with Data

```
# populate the SQLite database with data

# populate the asset table
dbExecute(conn, "INSERT INTO asset
          VALUES (1, 'Medieval Knight', '3D Character', 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset
          VALUES (2, 'Horse', '3D Character', 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset
          VALUES (3, 'Wooden Table', '3D Object', 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset
          VALUES (4, 'Spaceship', '3D Object', 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset
          VALUES (5, 'Milky Way', 'Environment', 1)")
```

```
## [1] 1
```

```
# populate the asset_library_mapping table
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (1, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (2, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (3, 3)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (4, 3)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (5, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (1, 4)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (2, 4)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (3, 4)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (4, 5)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO asset_library_mapping
          VALUES (5, 5)")
```

```
## [1] 1
```

```
# populate the library table
dbExecute(conn, "INSERT INTO library
          VALUES (1, 'Environments')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO library
          VALUES (2, '3D Characters')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO library
          VALUES (3, '3D Objects')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO library
          VALUES (4, 'Medieval Pack')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO library
          VALUES (5, 'Space Pack')")
```

```
## [1] 1
```

```
# populate the project table
dbExecute(conn, "INSERT INTO project
          VALUES (1, 'Game 1', '2023-06-23', 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO project
          VALUES (2, 'Game 2', '2023-12-12', 2)")
```

```
## [1] 1
```

```
# populate the role table
dbExecute(conn, "INSERT INTO role
          VALUES (1, 'Team Lead')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO role
          VALUES (2, 'Programmer')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO role
          VALUES (3, 'Tester')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO role
          VALUES (4, 'Artist')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO role
          VALUES (5, '3D Modeller')")
```

```
## [1] 1
```

```
# populate the team table
dbExecute(conn, "INSERT INTO team
          VALUES (1, 'Team 1')")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team
          VALUES (2, 'Team 2')")
```

```
## [1] 1
```

```
# populate the team_member table
dbExecute(conn, "INSERT INTO team_member
          VALUES (1, 'Lillian', 'Griffin', 1, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (2, 'Alexandra', 'Foley', 1, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (3, 'Sumaiya', 'Kelley', 2, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (4, 'Alivia', 'Cannon', 2, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (5, 'Hafsa', 'Howard', 3, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (6, 'Tyrell', 'Hendrix', 3, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (7, 'Lena', 'Ruiz', 4, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (8, 'Annabelle', 'Hood', 4, 2)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (9, 'Jago', 'Potts', 5, 1)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO team_member
          VALUES (10, 'Oliwier', 'Brooks', 5, 2)")
```

```
## [1] 1
```

```
# populate the work_item table
dbExecute(conn, "INSERT INTO work_item
          VALUES (1, 'Create a model of a wooden table', 'To Do', 1, 9)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO work_item
          VALUES (2, 'Create a model of a spaceship', 'In Progress', 3, 10)")
```

```
## [1] 1
```

```
dbExecute(conn, "INSERT INTO work_item
          VALUES (3, 'Test the animation of horse character', 'Complete', 2, 5)")
```

```
## [1] 1
```

Close Database Connection

```
# close the connection to the database to avoid hitting a connection limit
dbDisconnect(conn)
```