CA 4: Part A - Database Design & SQL Querying

R and SQL code to query a SQLite database

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Connect to SQLite Database

```
# connect to the local SQLite database
conn <- dbConnect(RSQLite::SQLite(), dbname = "daie_ca4_data.sqlite")
```

Database Queries

1. SELECT with WHERE, LIKE, and OR

```
# select data from table using where, like and or clauses
result <- dbGetQuery(conn, "SELECT first_name, last_name
                            FROM team_member
                            WHERE last_name LIKE '%oo%'
                            OR first_name LIKE '%ia%'")

# display the results in a table using kable (in knitr package)
kable(result,
      col.names = c("First Name", "Last Name"),
      caption = "List of Team Members with Names Containing 'oo' or 'ia'")
```

Table 1: List of Team Members with Names Containing 'oo' or 'ia'

First Name	Last Name
Lillian	Griffin
Alivia	Cannon
Annabelle	Hood
Oliwier	Brooks

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2. SELECT with DISTINCT and ORDER BY

```
# select data from table using distinct and order by
result <- dbGetQuery(conn, "SELECT DISTINCT asset_type
                            FROM asset
                            ORDER BY asset_type")

# display the results in a table using kable (in knitr package)
kable(result,
      col.names = c("Asset Types"),
      caption = "List of Distinct Asset Types")
```

Table 2: List of Distinct Asset Types

Asset Types
3D Character
3D Object
Environment

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3. Inner Join

```
# select data from tables using an inner join
result <- dbGetQuery(conn, "SELECT asset_description, asset_type, project_name
                            FROM asset
                            INNER JOIN project
                            ON asset.project_id = project.id")

# display the results in a table using kable (in knitr package)
kable(result,
      col.names = c("Asset Description", "Asset Type", "Project Name"),
      caption = "List of Assets and associated Projects")
```

Table 3: List of Assets and associated Projects

Asset Description	Asset Type	Project Name
Medieval Knight	3D Character	Game 2
Horse	3D Character	Game 2
Wooden Table	3D Object	Game 2
Spaceship	3D Object	Game 1
Milky Way	Environment	Game 1

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4. Subquery with SELECT

```
# select data from tables using a select subquery
result <- dbGetQuery(conn, "SELECT first_name, last_name, role_name
                            FROM team_member
                            INNER JOIN role
                            ON team_member.role_id = role.id
                            WHERE team_id IN (SELECT team_id
                                  FROM team_member
                                  WHERE team_id = 2)")

# display the results in a table using kable (in knitr package)
kable(result,
      col.names = c("First Name", "Last Name", "Role"),
      caption = "List of Team Members in Team 2")
```

Table 4: List of Team Members in Team 2

First Name	Last Name	Role
Alexandra	Foley	Team Lead
Alivia	Cannon	Programmer
Tyrell	Hendrix	Tester
Annabelle	Hood	Artist
Oliwier	Brooks	3D Modeller

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5. SELECT across a Date Range

```
# select data from table between a range of dates
result <- dbGetQuery(conn, "SELECT project_name, delivery_date
                            FROM project
                            WHERE delivery_date >= '2023-01-01'
                            AND delivery_date <= '2023-06-30'")

# display the results in a table using kable (in knitr package)
kable(result,
      col.names = c("Project Name", "Delivery Date"),
      caption = "List of Projects due by end of Q2 2023")
```

Table 5: List of Projects due by end of Q2 2023

Project Name	Delivery Date
Game 1	2023-06-23

Close Database Connection

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