

# 2022 - Data Analytics for Immersive Environments - CA4 - RDBMS & Linear Regression Project

## Part 1 - Generate and Populate Database

Joe O'Regan

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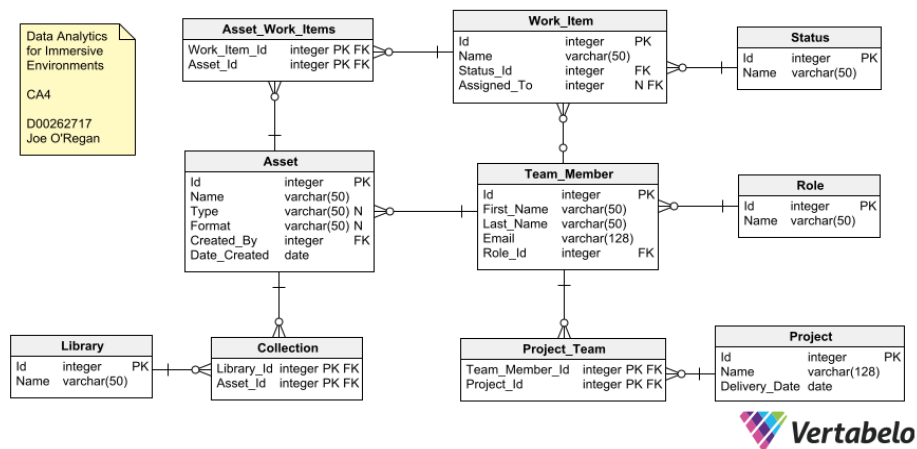
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### Repo Link

[https://github.com/joeaoregan/2022\\_DAIE\\_CA4\\_JOR1](https://github.com/joeaoregan/2022_DAIE_CA4_JOR1)

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### ER Diagram



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## Create Tables

### Create or recreate the sqlite file

Check if the sqlite file exists already and if it does delete it. Then create an in-memory RSQLite database.

```
# if the sqlite file exists already delete it
if (file.exists("daie_ca4_data.sqlite"))
  file.remove("daie_ca4_data.sqlite")

# create the sqlite file
conn <- dbConnect(RSQLite::SQLite(), "daie_ca4_data.sqlite")
```

---

## Create the tables

### Asset

Show each table cropped from the main ER Diagram using magick library. Only dimensions and offset change for each cropped table, so this code is shown once.

```
er_img <- image_read("daie_ca4_er_diagram.png")
# cropped image dimension offset by location (in pixels)
# (newXdimension x newYdimension + Xlocation + Ylocation)
asset_img = image_scale(image_crop(er_img, "181x117+184+155"),
                        ifelse(is_html_output(), scale_html, scale_pdf))
asset_img
```

Asset		
Id	integer	PK
Name	varchar(50)	
Type	varchar(50)	N
Format	varchar(50)	N
Created_By	integer	FK
Date_Created	date	

Describes a single electronic resource produced by one or more work items

- **Id:** Unique identifier for each row
- **Name:** Description of the asset
- **Type:** Short description of type of asset (Not mandatory)
- **Format:** Short description of format of asset (Not mandatory)
- **Created\_By:** Team member who created the asset
- **Date\_Created:** Date the asset was created

**Primary Key(s):** Id (auto increments)

**Foreign Key(s):** Created\_By (Team\_Member.Id)

Create the Asset table. Automatically increment the primary key. Id, Name, Created\_By, and Date\_created are mandatory fields.

```
# create tables
dbExecute(conn, "CREATE TABLE Asset (
  Id integer NOT NULL CONSTRAINT Asset_pk PRIMARY KEY AUTOINCREMENT,
  Name varchar(50) NOT NULL,
  Type varchar(50),
  Format varchar(50),
  Created_By integer NOT NULL,
  Date_Created date NOT NULL,
  CONSTRAINT Asset_Team_Member FOREIGN KEY (Created_By)
  REFERENCES Team_Member (Id)
);")
```

## Asset\_Work\_Items

Asset_Work_Items	
Work_Item_Id	integer PK FK
Asset_Id	integer PK FK

Assets are made up of work items

- **Work\_Item\_Id:** Id for work items used to create the asset
- **Asset\_Id:** Id of the asset

**Primary Key(s):** Composite. Work\_Item\_Id + Asset\_Id

**Foreign Key(s):** Work\_Item\_Id (Work\_Item.Id), Asset\_Id (Asset.Id)

```
dbExecute(conn, "CREATE TABLE Asset_Work_Items (  
    Work_Item_Id integer NOT NULL,  
    Asset_Id integer NOT NULL,  
    CONSTRAINT Asset_Work_Items_pk PRIMARY KEY (Work_Item_Id,Asset_Id),  
    CONSTRAINT Asset_Work_Item_Work_Item FOREIGN KEY (Work_Item_Id)  
    REFERENCES Work_Item (Id),  
    CONSTRAINT Asset_Work_Items_Asset FOREIGN KEY (Asset_Id)  
    REFERENCES Asset (Id)  
);")
```

---

## Collection

Collection	
Library_Id	integer PK FK
Asset_Id	integer PK FK

Collection of assets

- **Library\_Id:** Unique reference for a collection of assets
- **Asset\_Id:** Unique reference of the asset that make up a collection

**Primary Key(s):** Composite. Library\_Id + Asset\_Id

**Foreign Key(s):** Library\_Id (Library.Id), Asset\_Id (Asset.Id)

```
dbExecute(conn, "CREATE TABLE Collection (  
    Library_Id integer NOT NULL,  
    Asset_Id integer NOT NULL,  
    CONSTRAINT Collection_Id PRIMARY KEY (Library_Id,Asset_Id),  
    CONSTRAINT Collection_Asset FOREIGN KEY (Asset_Id)  
    REFERENCES Asset (Id),  
    CONSTRAINT Collection_Library FOREIGN KEY (Library_Id)  
    REFERENCES Library (Id)  
);")
```

---

## Library

Library		
Id	integer	PK
Name	varchar(50)	

Describes a collection of available assets

- **Id:** Unique reference for each collection in Library
- **Name:** Description of library collection

**Primary Key(s):** Id

**Foreign Key(s):** Id (Collection.Library\_Id)

```
dbExecute(conn, "CREATE TABLE Library (  
    Id integer NOT NULL CONSTRAINT Library_pk PRIMARY KEY AUTOINCREMENT,  
    Name varchar(50) NOT NULL  
);")
```

---

## Project

Project		
Id	integer	PK
Name	varchar(128)	
Delivery_Date	date	

Describes a project being produced, timeline, and team involved

- **Id:** Unique reference for each project
- **Name:** Description of Project
- **Delivery\_Date:** Date project is due to finish

**Primary Key(s):** Id

**Foreign Key(s):** Id (Project\_Team.Project\_Id). Each Project has multiple Team Members.

```
dbExecute(conn, "CREATE TABLE Project (  
    Id integer NOT NULL CONSTRAINT Project_pk PRIMARY KEY,  
    Name varchar(128) NOT NULL,  
    Delivery_Date date NOT NULL  
);")
```

---

## Project\_Team

Project_Team	
Team_Member_Id	integer PK FK
Project_Id	integer PK FK

Each project has team members assigned to it

- **Team\_Member\_Id:** Unique reference for each Team Member
- **Project\_Id:** Id of Project

**Primary Key(s):** Composite. Team\_Member\_Id + Project\_Id

**Foreign Key(s):** Team\_Member\_Id (Team\_Member.Id), Project\_Id (Project.Id). Each Project has multiple Team Members. Each team member can work on 1 or more projects.

```
dbExecute(conn, "CREATE TABLE Project_Team (  
    Team_Member_Id integer NOT NULL,  
    Project_Id integer NOT NULL,  
    CONSTRAINT Project_Team_Id PRIMARY KEY (Project_Id,Team_Member_Id),  
    CONSTRAINT Team_Team_Member FOREIGN KEY (Team_Member_Id)  
    REFERENCES Team_Member (Id),  
    CONSTRAINT Team_Project FOREIGN KEY (Project_Id)  
    REFERENCES Project (Id)  
);")
```

---



## Role

Role		
Id	integer	PK
Name	varchar(50)	

Each team member has a role (and only 1 role as I already used 10 tables)

- **Id:** Unique reference for role
- **Name:** Role description

**Primary Key(s):** Id

**Foreign Key(s):** Id (Team\_Member.Role\_Id). Each team member has 1 role for projects.

Additional fields that could be added in this table are salary for the role, seniority, and description. I meant to add a description field here.

```
dbExecute(conn, "CREATE TABLE Role (  
    Id integer NOT NULL CONSTRAINT Role_pk PRIMARY KEY AUTOINCREMENT,  
    Name varchar(50) NOT NULL  
);")
```

---

## Status

Status		
Id	integer	PK
Name	varchar(50)	

Work items have a progress status

- **Id:** Unique reference for status
- **Name:** Status description

**Primary Key(s):** Id

**Foreign Key(s):** Id (Work\_Item.Stats\_Id). Each work item has a status (To Do, In Progress, Review, Done).

An additional field that could be added in this table is description. I meant to add this after moving status to its own table, but forgot to come back to it.

```
dbExecute(conn, "CREATE TABLE Status (  
    Id integer NOT NULL CONSTRAINT Status_pk PRIMARY KEY AUTOINCREMENT,  
    Name varchar(50) NOT NULL  
);")
```

---

## Team\_Member

Describes an individual on the team

Team_Member		
Id	integer	PK
First_Name	varchar(50)	
Last_Name	varchar(50)	
Email	varchar(128)	
Role_Id	integer	FK

- **Id:** Unique reference for team member
- **First\_Name:** Team Member first name
- **Last\_Name:** Team Member last name
- **Email:** Team Member email
- **Role\_Id:** Team members role for projects

**Primary Key(s):** Id

**Foreign Key(s):** Id (Project\_Team.Team\_Member\_Id, Work\_Item.Assigned\_To), Role\_Id (Role.Id). Each Team Member has a role for projects. Each project team has team members. Each work item can be assigned to a team member.

```
dbExecute(conn, "CREATE TABLE Team_Member (  
    Id integer NOT NULL CONSTRAINT Team_Member_pk PRIMARY KEY AUTOINCREMENT,  
    First_Name varchar(50) NOT NULL,  
    Last_Name varchar(50) NOT NULL,  
    Email varchar(128) NOT NULL,  
    Role_Id integer NOT NULL,  
    CONSTRAINT Team_Member_Email_AK UNIQUE (Email),  
    CONSTRAINT Team_Member_Role FOREIGN KEY (Role_Id)  
    REFERENCES Role (Id)  
);")
```

---

## Work\_Item

Work_Item		
Id	integer	PK
Name	varchar(50)	
Status_Id	integer	FK
Assigned_To	integer	N FK

Describes smallest parcel of work resulting in a testable output

- **Id:** Unique reference for work item.
- **Name:** Description of work item.
- **Status\_Id:** Work item has as status (To Do, In Progress, Review, Done).
- **Assigned\_To:** Work items can be assigned to team members.

**Primary Key(s):** Id

**Foreign Key(s):** Id (Asset\_Work\_Items.Work\_Item.Id), Status\_Id (Status.Id), Assigned\_To (Team\_Member.Id). Each work item can be assigned to a team member. Each work Item has a status. Assets are made of work items.

```
dbExecute(conn, "CREATE TABLE Work_Item (  
    Id integer NOT NULL CONSTRAINT Work_Item_pk PRIMARY KEY AUTOINCREMENT,  
    Name varchar(50) NOT NULL,  
    Status_Id integer NOT NULL,  
    Assigned_To integer NOT NULL,  
    CONSTRAINT Work_Item_Statuses FOREIGN KEY (Status_Id)  
    REFERENCES Status (Id),  
    CONSTRAINT Work_Item_Team_Member FOREIGN KEY (Assigned_To)  
    REFERENCES Team_Member (Id)  
);")
```

---

## Show tables in database

```
dbListTables(conn)
```

```
## [1] "Asset"           "Asset_Work_Items" "Collection"       "Library"
## [5] "Project"         "Project_Team"     "Role"             "Status"
## [9] "Team_Member"     "Work_Item"        "sqlite_sequence"
```

---

## Data format function

Function to format tables for HTML and PDF output. Display tables using knitr library's kable function and kableExtra to format tables.

```
data_format.function <- function(data, capt) {
  data %>%
  {
    #if (is_html_output()) { # if the output is HTML add class attribute
    # kbl(., table.attr='class="table-striped table-hover"', caption = capt)}
    #else if (is_latex_output()) { # if the output is PDF ignore class attribute
      kbl(., caption = capt)
    }
  } %>% # pdf output keep tables in position
  #kable_styling("striped", ifelse(is_html_output(), "hover", "hold_position"),
  kable_styling(bootstrap_options = c("striped", "hover", "condensed", "HOLD_position"),
                 latex_options = c("striped", "HOLD_position"),
                 stripe_color = "#AAFFAA",
                 htmltable_class = "table-striped table-hover") %>%
  row_spec(0, background = "#1AE81A")
}
```

## Insert Data

### Status

```
dbListFields(conn, "Status")
```

```
## [1] "Id"    "Name"
```

Insert table data (using DBI library dbExecute function):

```
dbExecute(conn, "INSERT INTO Status ('Name') VALUES ('To Do');")
dbExecute(conn, "INSERT INTO Status ('Name') VALUES ('In Progress');")
dbExecute(conn, "INSERT INTO Status ('Name') VALUES ('Review');")
dbExecute(conn, "INSERT INTO Status ('Name') VALUES ('Done');")
```

Display table data (using knitr library kable function):

```
status_data <- dbGetQuery(conn, "SELECT * FROM Status;")
data_format.function(status_data, "Status Table")
```

Table 1: Status Table

Id	Name
1	To Do
2	In Progress
3	Review
4	Done

## Role

```
dbListFields(conn, "Role")
```

```
## [1] "Id"   "Name"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Project Manager');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Programmer');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Tester');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Artist');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('3D Modeller');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Environment Modeller');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Animator');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Shading Artist');")
dbExecute(conn, "INSERT INTO Role ('Name') VALUES ('Concept Artist');")
```

Display table data:

```
role_data <- dbGetQuery(conn, "SELECT * FROM Role;")
data_format.function(role_data, "Role Table")
```

Table 2: Role Table

Id	Name
1	Project Manager
2	Programmer
3	Tester
4	Artist
5	3D Modeller
6	Environment Modeller
7	Animator
8	Shading Artist
9	Concept Artist

## Team\_Member

```
dbListFields(conn, "Team_Member")
```

```
## [1] "Id"          "First_Name" "Last_Name"  "Email"      "Role_Id"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Joe', 'O'Regan', 'joe.oregan@daie.ca4', 2);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Derp', 'McDerp', 'derpmcderp@daie.ca4', 1);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Herpderp', 'Derpderpenson', 'hd.derpderpenson@daie.ca4', 3);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Herpa', 'Derpderp', 'herpa.derpderp@daie.ca4', 4);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('De', 'Rpderp', 'de.rpderp@daie.ca4', 5);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Pred', 'Prehpred', 'predprehpred@daie.ca4', 6);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Derpa', 'Derpa', 'derpaderpa@daie.ca4', 9);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Herpa', 'Derpa', 'herpaderpa@daie.ca4', 8);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('HerpaDerpa', 'McDerpa', 'herpaderpa.mcderpa@daie.ca4', 7);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Joe', 'Derp', 'j.derp@daie.ca4', 2);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Jon', 'Herpaderp', 'jherpaderp@daie.ca4', 7);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Joblot', 'O'Stuff', 'joblot.ostuff@daie.ca4', 3);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Joderp', 'Herpderpenson', 'j.herpderpenson@daie.ca4', 4);")
dbExecute(conn, "INSERT INTO Team_Member ('First_Name', 'Last_Name', 'Email', 'Role_Id')
VALUES ('Jo', 'McQueryfiller', 'j.mcqueryfiller@daie.ca4', 1);")
```

Display table data:

```
team_member_data <- dbGetQuery(conn, "SELECT * FROM Team_Member;")
data_format.function(team_member_data, "Team Member Table")
```



Table 3: Team Member Table

Id	First_Name	Last_Name	Email	Role_Id
1	Joe	O'Regan	joe.oregan@daie.ca4	2
2	Derp	McDerp	derpmcderp@daie.ca4	1
3	Herpderp	Derpderpenson	hd.derpderpenson@daie.ca4	3
4	Herpa	Derpderp	herpa.derpderp@daie.ca4	4
5	De	Rpderp	de.rpderp@daie.ca4	5
6	Pred	Prehpred	predprehpred@daie.ca4	6
7	Derpa	Derpa	derpaderpa@daie.ca4	9
8	Herpa	Derpa	herpaderpa@daie.ca4	8
9	HerpaDerpa	McDerpa	herpaderpa.mcderpa@daie.ca4	7
10	Joe	Derp	j.derp@daie.ca4	2
11	Jon	Herpaderp	jherpaderp@daie.ca4	7
12	Joblot	O'Stuff	joblot.ostuff@daie.ca4	3
13	Joderp	Herpderpenson	j.herpderpenson@daie.ca4	4
14	Jo	McQueryfiller	j.mcqueryfiller@daie.ca4	1

## Work\_Item

```
dbListFields(conn, "Work_Item")
```

```
## [1] "Id"          "Name"        "Status_Id"   "Assigned_To"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Art Thingy', 2, 4);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Art Test Thingy', 3, 3);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Environment Model Thingy', 2, 6);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Art Concept Thingy', 4, 7);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Art Shading Thingy', 4, 8);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Random 3D Model', 2, 5);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('3D Model Test Obj', 2, 3);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Random Blueprint', 2, 1);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Blueprint Thingy', 2, 2);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Blueprint Test', 3, 2);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Art Test', 1, 12);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Query Model Thingy', 3, 11);")
dbExecute(conn, "INSERT INTO Work_Item ('Name', 'Status_Id', 'Assigned_To')
VALUES ('Another Test', 4, 13);")
```

Display table data:

```
work_item_data <- dbGetQuery(conn, "SELECT * FROM Work_Item;")
data_format.function(work_item_data, "Work Item Table")
```

Table 4: Work Item Table

Id	Name	Status_Id	Assigned_To
1	Art Thingy	2	4
2	Art Test Thingy	3	3
3	Environment Model Thingy	2	6
4	Art Concept Thingy	4	7
5	Art Shading Thingy	4	8
6	Random 3D Model	2	5
7	3D Model Test Obj	2	3
8	Random Blueprint	2	1
9	Blueprint Thingy	2	2
10	Blueprint Test	3	2
11	Art Test	1	12
12	Query Model Thingy	3	11
13	Another Test	4	13

## Project

```
dbListFields(conn, "Project")
```

```
## [1] "Id"          "Name"        "Delivery_Date"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Art Proj', '2023-01-11');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('DAIE CA4', '2023-01-20');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('New Project', '2023-01-24');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Old Project', '2022-12-14');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Christmas 2022 Project', '2022-12-25');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Date Range Project', '2023-01-17');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Another Date Range Project', '2023-02-01');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Project Filler', '2023-03-01');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Derp Project', '2023-03-17');")
dbExecute(conn, "INSERT INTO Project ('Name', 'Delivery_Date')
VALUES ('Hmmm I Ran Out of Names', '2023-01-20');")
```

Display table data:

```
project_data <- dbGetQuery(conn, "SELECT * FROM Project;")
data_format.function(project_data, "Project Table")
```

Table 5: Project Table

Id	Name	Delivery_Date
1	Art Proj	2023-01-11
2	DAIE CA4	2023-01-20
3	New Project	2023-01-24
4	Old Project	2022-12-14
5	Christmas 2022 Project	2022-12-25
6	Date Range Project	2023-01-17
7	Another Date Range Project	2023-02-01
8	Project Filler	2023-03-01
9	Derp Project	2023-03-17
10	Hmmm I Ran Out of Names	2023-01-20

## Project\_Team

```
dbListFields(conn, "Project_Team")
```

```
## [1] "Team_Member_Id" "Project_Id"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (1, 1);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (2, 1);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (3, 1);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (4, 1);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (5, 1);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (2, 2);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (6, 2);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (7, 2);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (8, 2);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (9, 2);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (2, 3);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (10, 3);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (11, 3);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (14, 4);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (12, 4);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (13, 5);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (14, 6);")
dbExecute(conn, "INSERT INTO Project_Team ('Team_Member_Id', 'Project_Id') VALUES (14, 7);")
```

Display table data:

```
project_team_data <- dbGetQuery(conn, "SELECT * FROM Project_Team;")
data_format.function(project_team_data, "Project Team Table")
```

Table 6: Project Team Table

Team_Member_Id	Project_Id
1	1
2	1
3	1
4	1
5	1
2	2
6	2
7	2
8	2
9	2
2	3
10	3
11	3
14	4
12	4
13	5
14	6
14	7

## Asset

```
dbListFields(conn, "Asset")
```

```
## [1] "Id"          "Name"        "Type"        "Format"      "Created_By"
## [6] "Date_Created"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Asset ('Name', 'Type', 'Format', 'Created_By', 'Date_Created')
               VALUES ('Random Blueprint Asset', 'Combination of Blueprints', 'Zip file', 1, '2023-01-11');")
dbExecute(conn, "INSERT INTO Asset ('Name', 'Created_By', 'Date_Created')
               VALUES ('Random Art Asset', 4, '2023-01-10');")
dbExecute(conn, "INSERT INTO Asset ('Name', 'Created_By', 'Date_Created')
               VALUES ('Art Asset Thingy', 4, '2023-01-10');")
dbExecute(conn, "INSERT INTO Asset ('Name', 'Type', 'Created_By', 'Date_Created')
               VALUES ('Environment Asset Thingy', 'Tree for use in Environment', 4, '2023-01-02');")
```

Display table data:

```
asset_data <- dbGetQuery(conn, "SELECT * FROM Asset;")
data_format.function(asset_data, "Asset Table")
```

Table 7: Asset Table

Id	Name	Type	Format	Created_By	Date_Created
1	Random Blueprint Asset	Combination of Blueprints	Zip file	1	2023-01-11
2	Random Art Asset	NA	NA	4	2023-01-10
3	Art Asset Thingy	NA	NA	4	2023-01-10
4	Environment Asset Thingy	Tree for use in Environment	NA	4	2023-01-02

## Asset\_Work\_Items

```
dbListFields(conn, "Asset_Work_Items")
```

```
## [1] "Work_Item_Id" "Asset_Id"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (8, 1);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (9, 1);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (10, 1);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (1, 2);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (2, 2);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (4, 3);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (5, 3);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (3, 4);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (6, 4);")
dbExecute(conn, "INSERT INTO Asset_Work_Items ('Work_Item_Id', 'Asset_Id') VALUES (7, 4);")
```

Display table data:

```
asset_work_items_data <- dbGetQuery(conn, "SELECT * FROM Asset_Work_Items;")
data_format.function(asset_work_items_data, "Asset Work Items Table")
```

Table 8: Asset Work Items Table

Work_Item_Id	Asset_Id
8	1
9	1
10	1
1	2
2	2
4	3
5	3
3	4
6	4
7	4



## Collection

```
dbListFields(conn, "Collection")
```

```
## [1] "Library_Id" "Asset_Id"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Collection ('Library_Id', 'Asset_Id') VALUES (1, 1);")
dbExecute(conn, "INSERT INTO Collection ('Library_Id', 'Asset_Id') VALUES (2, 2);")
dbExecute(conn, "INSERT INTO Collection ('Library_Id', 'Asset_Id') VALUES (2, 3);")
dbExecute(conn, "INSERT INTO Collection ('Library_Id', 'Asset_Id') VALUES (3, 4);")
```

Display table data:

```
collection_data <- dbGetQuery(conn, "SELECT * FROM Collection;")
data_format.function(collection_data, "Collection Table")
```

Table 9: Collection Table

Library_Id	Asset_Id
1	1
2	2
2	3
3	4

## Library

```
dbListFields(conn, "Library")
```

```
## [1] "Id"   "Name"
```

Insert table data:

```
dbExecute(conn, "INSERT INTO Library ('Name') VALUES ('Programming');")
dbExecute(conn, "INSERT INTO Library ('Name') VALUES ('Models');")
dbExecute(conn, "INSERT INTO Library ('Name') VALUES ('Scenery');")
dbExecute(conn, "INSERT INTO Library ('Name') VALUES ('Characters');")
```

Display table data:

```
library_data <- dbGetQuery(conn, "SELECT * FROM Library;")
data_format.function(library_data, "Library Table")
```

Table 10: Library Table

Id	Name
1	Programming
2	Models
3	Scenery
4	Characters

---

## Disconnect Database

```
dbDisconnect(conn)
```