Design of the Project:

The objective of this data base is to document the multiple Video Games the Company Square Enix has created throughout its history as well as document the games' success. Using the ERD created in lab 2 (minor adjustments since lab 2), the basic structures of the tables were created. Using SQliteStudio application, the database was constructed.

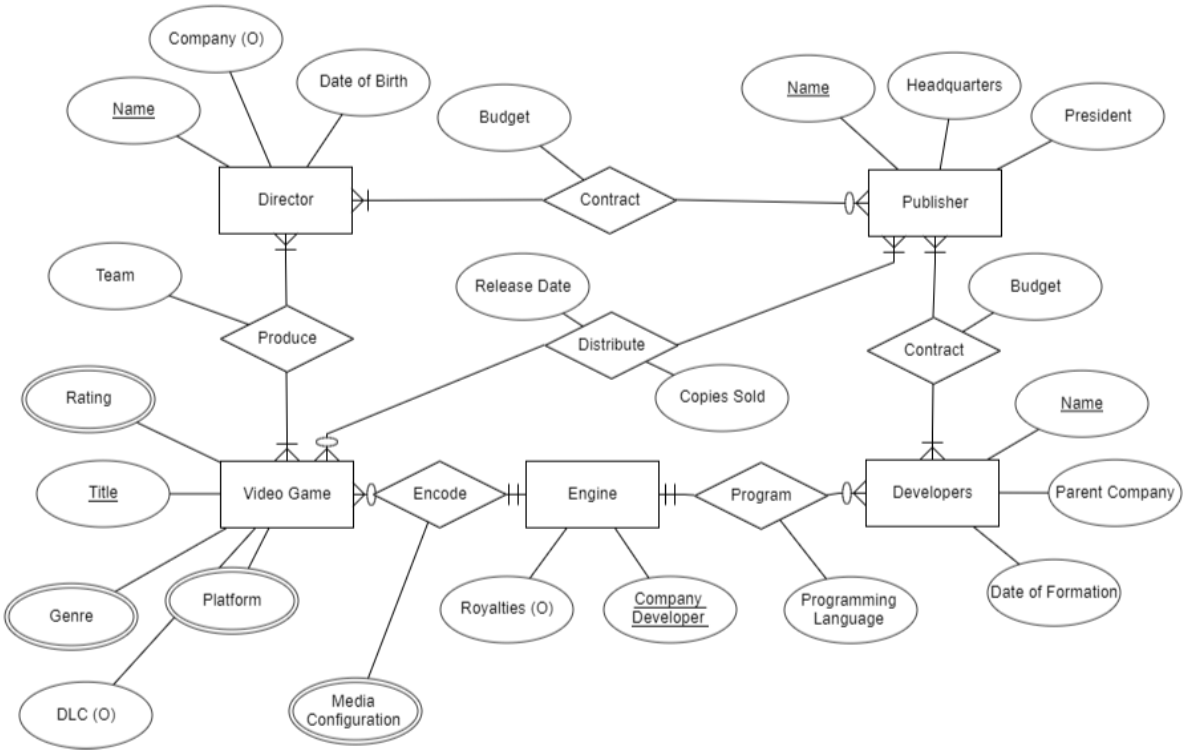

Figure 1: ERD of the Square Enix Library of Games.

Using Figure 1, the database schema can be created in which primary keys will be underlined and foreign keys will be **bolded**. The relationships with the entities are also discussed.

Entity Data Schemas:

1. Director (Name, Date of Birth, Company)

   The Director has a Name which is unique and a primary key since the Director cannot be categorized by a integer id since they at times are not part of the company or were at a point but then was not.

The Director has a *Contract* with the Publisher in which the publisher requires the Director to direct the Video Game while providing a Budget.

2. Publisher (Name, Headquarter, President)
   The Name of the Company is important as it is the leading benefactor for the Video Game for which it is the primary key.
   The Publisher has a *Contract* with the Director as well as the Developer in which they provide a budget in order for the respective to continue their work.
3. Developers (Name, Parent Company, Date of Formation)
   The Name of the developer is unique and a primary key. The Parent Company is also unique as it doesn't necessarily belong to the publisher or even other publishers.
   The Developers *Program* the Video Game with an Engine in which a Programming Language is used.
4. Engine (Company Developer, Royalties)
   The Company Developer indicates the company in which the engine was created by as it doesn't have to be created by the Publisher and as such is the primary key. Royalties indicates the percentage of royalties the Publisher owes to the Company Developer based on units sold
   The Engine *Encodes* the Video game into different media configurations such as digital or physical.
5. Video Game (Title, DLC)
   The Title of a Video Game is the primary key as it is distinct
   The Video Game is *Produced* by the director as the director has a team in order to create the video game. The Video Game is also *Distributed* by the Publisher and the Publisher dictates the Release Date as well as the Copies to be produced and sold.

The Multi-Attribute data schemas for Video Game:

1. Rating (**Title**, Metacritic, Famistu, IGN, …)
2. Genre (**Title**, Hack and Slash, RPG, MMORPG, …)
3. Platform(**Title**, PS4, XboxOne, PS3, Xbox 360, Wii u, Steam, …)
4. Media Configuration (**Title,** Physical, Digital)

From these multi-attribute data schemas, the primary and foreign key are the Title as it is indicative to know what the ratings, genre and platform are for which game. The media configuration can be either physical or digital (can be both). The parameters for the multi-attribute data schemas are too numerous to account for and as such examples are used.

Relationship Data Schemas:

1. Contract (Publisher to Director) (**Director Name, Publisher,** Budget)
   The contract between the Director and Publisher has it's own table and as such the budget is determined with the Director's Name and Publisher's Name as they are foreign keys.
2. Contract (Publisher to Developers) (**Developers, Publisher,** Budget)
   The contract between the Developers and the Publisher with Developer's Name and Publisher's name being a foreign key.
3. Produce (**Director Name, Title,** Team)
   The Director and the Video Game Title are foreign keys as they are needed for the production as well as a team.
4. Distribute (**Title, Publisher,** Release Date, Copies Sold)
   The Distribution needs the Title of the Video Game as well as the Publisher in order to have a release date and the production of the units and how many they sold.

SQL Tables:

Entities:

Director

```
CREATE TABLE Director (
    Name            TEXT PRIMARY KEY
                         NOT NULL,
    [Date of Birth] DATE UNIQUE
                         NOT NULL,
    Company         TEXT
);
```

Figure 2: Director Table.

Publisher

```
CREATE TABLE Publisher (
    Name         TEXT PRIMARY KEY
                      NOT NULL,
    HeadQuarters TEXT UNIQUE
                      NOT NULL,
    President    TEXT
);
```

Figure 3: Publisher Table.

Developers

```
CREATE TABLE Developers (
    Name                  TEXT PRIMARY KEY
                               NOT NULL,
    [Parent Company]      TEXT NOT NULL
                               UNIQUE,
    [Date of Formation]   DATE NOT NULL,
    [Programming Language] TEXT NOT NULL
);
```

Figure 4: Developers Table.

Engine

```
CREATE TABLE Engine (
    [Company Developer] TEXT    PRIMARY KEY
                                NOT NULL,
    Royalties           INTEGER
);
```

Figure 5: Engine Table.

Video Game

```
CREATE TABLE [Video Game] (
    Title TEXT PRIMARY KEY
               NOT NULL,
    DLC   TEXT
);
```

Figure 6: Video Game Table.

Multi-Attribute Tables:

Media Configuration

```
CREATE TABLE [Media Configuration] (
    Title    TEXT    REFERENCES [Video Game] (Title) ON UPDATE RESTRICT
                     NOT NULL
                     PRIMARY KEY,
    Digital  BOOLEAN,
    Physical TEXT
);
```

Figure 7: Media Configuration Table

Rating

```
CREATE TABLE Rating (
    Title      TEXT    REFERENCES [Video Game] (Title) ON UPDATE NO ACTION
                       NOT NULL,
    MetaCritic INTEGER,
    Famitsu    INTEGER,
    IGN        INTEGER
);
```

Figure 8: Rating Table

Platform

```
CREATE TABLE Platform (
    Title      TEXT    REFERENCES [Video Game] (Title) ON UPDATE RESTRICT,
    PS4        BOOLEAN,
    [Xbox One] BOOLEAN,
    [Xbox 360] BOOLEAN,
    PS3        BOOLEAN,
    [Wii U]    BOOLEAN
);
```

Figure 9: Platform Table

Genre

```
CREATE TABLE Genre (
    Title            TEXT    REFERENCES [Video Game] (Title) ON UPDATE RESTRICT,
    RPG              BOOLEAN,
    MMORPG           BOOLEAN,
    [Hack and Slash] BOOLEAN,
    [Action]         BOOLEAN
);
```

Figure 10: Genre Table

Relationship Tables:

Contract (Publisher to Developer)

```
CREATE TABLE [Contract(Pub to Dev)] (
    Developer TEXT    PRIMARY KEY
                      REFERENCES Developers (Name) ON UPDATE RESTRICT
                      NOT NULL,
    Publisher TEXT    REFERENCES Publisher (Name) ON UPDATE RESTRICT
                      NOT NULL,
    Budget    INTEGER NOT NULL
);
```

Figure 11: Contract Developer to Publisher Table.

Distribute Table

```
CREATE TABLE Distribute (
    Title          TEXT REFERENCES [Video Game] (Title) ON UPDATE RESTRICT
                        PRIMARY KEY
                        NOT NULL,
    Publisher      TEXT REFERENCES Publisher (Name)
                        NOT NULL,
    Headquarters   TEXT REFERENCES Publisher (HeadQuarters) ON UPDATE RESTRICT
                        NOT NULL,
    [Release Date] DATE
);
```

Figure 12: Distribute Table

Produce

```
CREATE TABLE Produce (
    Name     TEXT REFERENCES Director (Name) ON UPDATE RESTRICT
                  NOT NULL,
    [Title ] TEXT REFERENCES [Video Game] (Title) ON UPDATE RESTRICT
                  NOT NULL,
    Team     TEXT UNIQUE
                  NOT NULL
);
```

Figure 13: Produce Table

Contract (Publisher to Director)

```
CREATE TABLE [Contract(Dir to Pub)] (
    Name      TEXT    REFERENCES Director (Name) ON UPDATE RESTRICT
                      NOT NULL,
    Publisher TEXT    REFERENCES Publisher (Name) ON UPDATE RESTRICT
                      NOT NULL,
    Budget    INTEGER
);
```

Figure 14: Contract (Pub to Dir) Table