



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

Group Project: Part 1 (RDBMS)  
MCSD 1123/SCSP5023  
(BIG DATA MANAGEMENT)  
Section 1

Ahmad Khaidir Amir bin Rodzman (A18CS0014)  
Putera Muhammad Syabil Bin Sarianto (A18CS0235)  
LI YEXIN(MCS211046)

## 1) Selected Data

The data that has been selected for this project is the Video Game Sales in 2019 dataset from Kaggle. There are 55,792 records in the dataset as of April 12th, 2019. It was generated by a scrape of vgchartz.com.

Dataset Link - <https://www.kaggle.com/datasets/ashaheedq/video-games-sales-2019>

## 2) Data Scenario

This is a Game Shop company and in 2019 we need to create a report based on history to increase sales for the shop in future. Game sales data have been collected since the establishment of the company, and use the following analysis to determine which developers, platforms, and publishers we should work with more closely, as well as what types of games we should focus on to increase the sales and profit for upcoming years and what niche or genre developer need to focus on. How does the market trend every year affects the sales and how does user opinion on the game that they buy.

### 2.1 Column Definition

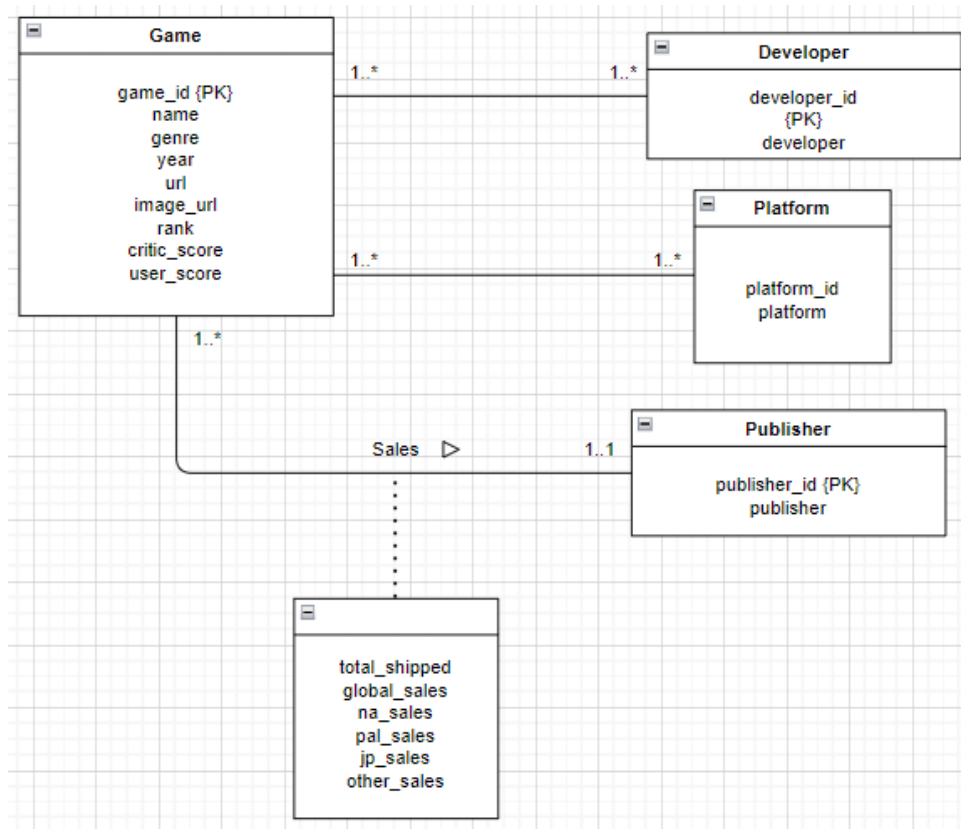
- Rank - Ranking of overall sales
- Name - Name of the game
- Platform - Platform of the game (i.e. PC, PS4, XOne, etc.)
- Genre - Genre of the game
- ESRB Rating - ESRB Rating of the game
- Publisher - Publisher of the game
- Developer - Developer of the game
- Critic Score - Critic score of the game from 10
- User Score - Users score the game from 10
- Total Shipped - Total shipped copies of the game
- Global\_Sales - Total worldwide sales (in millions)
- NA\_Sales - Sales in North America (in millions)
- PAL\_Sales - Sales in Europe (in millions)
- JP\_Sales - Sales in Japan (in millions)
- Other\_Sales - Sales in the rest of the world (in millions)
- Year - Year of release of the game

## 2.2 Possible Questions for Analysis

- 1) What are the games that have the highest user score?
- 2) Which game and publisher produce the games that have the highest user score?
- 3) Which game that is produced by Nintendo that has the highest user score
- 4) Which developer developed the rank 55th game?
- 5) Which platform has the top 20 highest critic scores?
- 6) Which platform is used between 1999 to 2005
- 7) Which publisher and game has the top 10 highest global sales?
- 8) Which top 5 genre contribute the most sales In Japan.
- 9) Which top 5 publisher contribute to the most sales in Europe?
- 10) What is the top 10 genre with the highest average of critic score?

## 3) Possible Relation

This section cover on what is possible relation or table that could exist in the Game Store Database and how they can relate to each other.

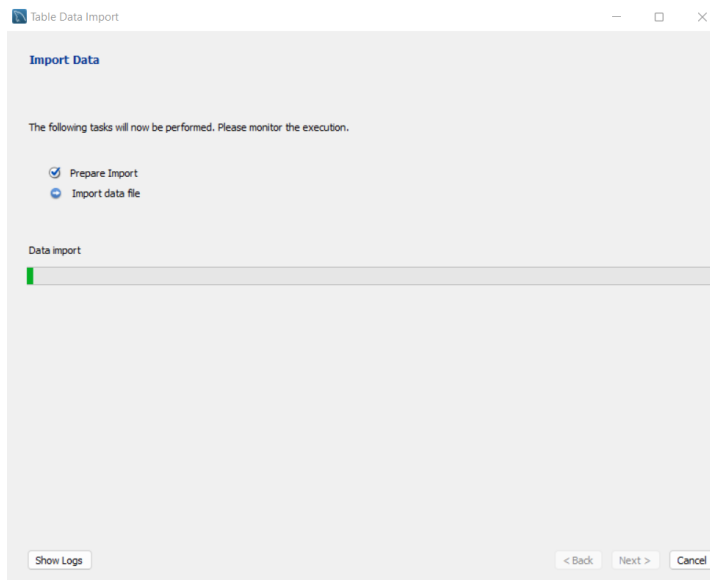


Game(gameID,name,genre,year,url,image\_url,rank,critic\_score,user\_score)

|  |
|--|
| PK - gameId<br>FK - developerID reference Developer<br>FK - platformID reference Platform<br>FK - publisherID reference Publisher<br>FK - gameId reference Sales |
| Developer(developerID,developer)<br>PK - developerID   |
| Platform(platformID,platform)<br>PK - platform_ID  |
| Publisher(publisherID, publisher)<br>PK - publisherID  |
| Sales(total_shipped,global_sales,na_sales,pal_sales,jp_sales,other_sales)<br>FK - publisherID reference Publisher<br>FK - gameId reference Game                  |

## 4) SQL Queries

### 4.1 Create Table and Import Data from csv files



MySQLBigDataDemo  
**gameshop.game**

**Table Details**

Engine: **InnoDB**  
 Row format: **Dynamic**  
 Column count: **9**  
 Table rows: **67070**  
 AVG row length: **180**  
 Data length: **11.5 MiB**  
 Index length: **0.0 bytes**  
 Max data length: **0.0 bytes**  
 Data free: **4.0 MiB**  
 Table size (estimate): **11.5 MiB**  
 File format:  
 Data path: **C:\ProgramData\MySQL\MySQL Server 8.0\Data\gameshop\game.ibd**  
 Update time: **2022-06-12 21:21:10**

Information on this page may be outdated. Click [Analyze Table](#) to update it.



|   | gameID | Name                     | Genre    | year | url   | image_url                                     |
|---|--------|--------------------------|----------|------|---|---|
|   | 32736  | Gundemonium Recollection | Shooter  | 2011 | http://www.vgchartz.com/game/44911/gunde...   | /games/boxart/default.jpg                     |
|   | 32737  | GunForce                 | Shooter  | 1992 | http://www.vgchartz.com/game/13499/gunforc... | /games/boxart/full_1195892AmericaFrontccc.jpg |
|   | 32738  | Gunlok                   | Strategy | 2001 | http://www.vgchartz.com/game/28335/gunlok/... | /games/boxart/full_8339571AmericaFrontccc.jpg |
|   | 32739  | GunLord                  | Action   | 2001 | http://www.vgchartz.com/game/49896/gunlord... | /games/boxart/default.jpg                     |
|   | 32740  | Gunma's Ambition         | Misc     | 2014 | http://www.vgchartz.com/game/83434/gunmas...  | /games/boxart/full_3678161AmericaFrontccc.png |
| * | NULL   | NULL                     | NULL     | NULL | NULL  | NULL  |

MySQLBigDataDemo  
**gameshop.publisher**


**Table Details**

Engine: **InnoDB**  
 Row format: **Dynamic**  
 Column count: **1**  
 Table rows: **56254**  
 AVG row length: **46**  
 Data length: **2.5 MiB**  
 Index length: **0.0 bytes**  
 Max data length: **0.0 bytes**  
 Data free: **4.0 MiB**  
 Table size (estimate): **2.5 MiB**  
 File format:  
 Data path: **C:\ProgramData\MySQL\MySQL Server 8.0\Data\gameshop\publisher.ibd**  
 Update time: **2022-06-12 21:50:56**

Information on this page may be outdated. Click [Analyze Table](#) to update it.

**Result Grid**   [Filter](#)

|   | Publisher        |
|---|------------------|
| ▶ | Nintendo         |
|   | Nintendo         |
|   | Nintendo         |
|   | PUBG Corporation |
|   | Nintendo         |
|   | Nintendo         |
|   | Nintendo         |
|   | Nintendo         |




MySQLBigDataDemo  
**gameshop.sales**

**Table Details**

Engine: **InnoDB**  
Row format: **Dynamic**  
Column count: **6**  
Table rows: **52446**  
AVG row length: **90**  
Data length: **4.5 MiB**  
Index length: **0.0 bytes**  
Max data length: **0.0 bytes**  
Data free: **4.0 MiB**  
Table size (estimate): **4.5 MiB**  
File format:  
Data path: **C:\ProgramData\MySQL\MySQL Server 8.0\Data\gameshop\sales.ibd**  
Update time: **2022-06-12 21:38:11**

Information on this page may be outdated. Click [Analyze Table](#) to update it.

|  | Total_Shipped | Global_Sales | NA_Sales | PAL_Sales | JP_Sales | Other_Sales |
|--|---------------|--------------|----------|-----------|----------|-------------|
|  | 0             | 0.05         | 0.01     | 0         | 0.04     | 0           |
|  | 0             | 0.05         | 0.05     | 0         | 0        | 0           |
|  | 0             | 0.05         | 0        | 0         | 0.05     | 0           |
|  | 0             | 0.05         | 0.05     | 0         | 0        | 0           |
|  | 0             | 0.05         | 0.03     | 0.01      | 0        | 0           |
|  | 0             | 0.05         | 0.05     | 0         | 0        | 0           |
|  | 0             | 0.05         | 0        | 0         | 0.05     | 0           |
|  | 0             | 0.05         | 0        | 0         | 0.05     | 0           |




MySQLBigDataDemo  
**gameshop.platform**

**Table Details**

Engine: **InnoDB**  
Row format: **Dynamic**  
Column count: **1**  
Table rows: **56342**  
AVG row length: **46**  
Data length: **2.5 MiB**  
Index length: **0.0 bytes**  
Max data length: **0.0 bytes**  
Data free: **4.0 MiB**  
Table size (estimate): **2.5 MiB**  
File format:  
Data path: **C:\ProgramData\MySQL\MySQL Server 8.0\Data\gameshop\platform.ibd**  
Update time: **2022-06-12 22:10:21**

Information on this page may be outdated. Click [Analyze Table](#) to update it.

|  | Platform |
|--|----------|
|  | GB       |
|  | Wii      |
|  | Wii      |
|  | SNES     |
|  | PS3      |
|  | PS4      |
|  | DS       |
|  | PC       |


MySQLBigDataDemo  
gameshop.platform

**Table Details**

Engine: **InnoDB**  
Row format: **Dynamic**  
Column count: **1**  
Table rows: **56342**  
AVG row length: **46**  
Data length: **2.5 MiB**  
Index length: **0.0 bytes**  
Max data length: **0.0 bytes**  
Data free: **4.0 MiB**  
Table size (estimate): **2.5 MiB**  
File format:  
Data path: **C:\ProgramData\MySQL\MySQL Server 8.0\Data\gameshop\platform.ibd**  
Update time: **2022-06-12 22:10:21**

Information on this page may be outdated. Click [Analyze Table](#) to update it.

|  | Platform |
|--|----------|
|  | GB       |
|  | Wii      |
|  | Wii      |
|  | SNES     |
|  | PS3      |
|  | PS4      |
|  | DS       |
|  | PC       |

## 4.2 Primary Key Creation

a) From developer entity

alter table Developer

ADD COLUMN developerID INT not null auto\_increment Primary Key;

|   | Developer             | developerID |
|---|-----------------------|-------------|
| ▶ | Nintendo EAD          | 1           |
|   | Nintendo EAD          | 2           |
|   | Nintendo EAD          | 3           |
|   | PUBG Corporation      | 4           |
|   | Nintendo EAD          | 5           |
|   | Game Freak            | 6           |
|   | Nintendo EAD          | 7           |
|   | Bullet Proof Software | 8           |

b) From publisher entity

alter table Publisher

ADD COLUMN publisherID INT not null auto\_increment Primary Key;

|   | Publisher        | publisherID |
|---|------------------|-------------|
| ▶ | Nintendo         | 1           |
|   | Nintendo         | 2           |
|   | Nintendo         | 3           |
|   | PUBG Corporation | 4           |
|   | Nintendo         | 5           |
|   | Nintendo         | 6           |
|   | Nintendo         | 7           |
|   | Nintendo         | 8           |

c) From platform entity

alter table platform

ADD COLUMN platformID INT not null auto\_increment Primary Key;

|   | Platform | platformID |
|---|----------|------------|
| ▶ | Wii      | 1          |
|   | NES      | 2          |
|   | Wii      | 3          |
|   | PC       | 4          |
|   | Wii      | 5          |
|   | GB       | 6          |
|   | DS       | 7          |
|   | PS       | 8          |



## 4.3 Adding foreign key column and inserting value

a) From game entity:

```
alter table game add column publisherID int null;  
update game set publisherID = gameId;
```

```
alter table game add column platformID int null;  
update game set platformID = gameId;
```

```
alter table game add column developerID int null;  
update game set developerID = gameId;
```

| Game                 | Genre      | year | url  | image_url                                      | _rank | critic_score | user_score | platformID | developerID | publisherID |
|----------------------|------------|------|--|--|-------|--------------|------------|------------|-------------|-------------|
| ports                | Sports     | 2006 | http://www.vgchartz.com/game/2667/wii-sport... | /games/boxart/full_2258645AmericaFrontccc.jpg  | 1     | 7.7          | 0          | 1          | 1           | 1           |
| Super Mario Bros.    | Platform   | 1985 | http://www.vgchartz.com/game/6455/super-m...   | /games/boxart/8972270ccc.jpg                   | 2     | 10           | 0          | 2          | 2           | 2           |
| Super Mario Kart     | Racing     | 2008 | http://www.vgchartz.com/game/6968/mario-ka...  | /games/boxart/full_8932480AmericaFrontccc.jpg  | 3     | 8.2          | 9.1        | 3          | 3           | 3           |
| Super Mario Bros. 2  | Platform   | 1988 | http://www.vgchartz.com/game/215988/player...  | /games/boxart/full_8052843AmericaFrontccc.jpg  | 4     | 0            | 0          | 4          | 4           | 4           |
| Super Mario Bros. 3  | Platform   | 2009 | http://www.vgchartz.com/game/24656/wii-spor... | /games/boxart/full_7295041AmericaFrontccc.jpg  | 5     | 8            | 8.8        | 5          | 5           | 5           |
| Super Mario Bros. 4  | Platform   | 1998 | http://www.vgchartz.com/game/4030/pokemon...   | /games/boxart/full_6442337AmericaFrontccc.png  | 6     | 9.4          | 0          | 6          | 6           | 6           |
| Super Mario Bros. 5  | Platform   | 2006 | http://www.vgchartz.com/game/1582/new-su...    | /games/boxart/full_2916260AmericaFrontccc.jpg  | 7     | 9.1          | 8.1        | 7          | 7           | 7           |
| Super Mario Bros. 6  | Puzzle     | 1989 | http://www.vgchartz.com/game/4534/tetris/r...  | /games/boxart/3740960ccc.jpg                   | 8     | 0            | 0          | 8          | 8           | 8           |
| Super Mario Bros. 7  | Platform   | 2009 | http://www.vgchartz.com/game/35076/new-su...   | /games/boxart/full_1410872AmericaFrontccc.jpg  | 9     | 8.6          | 9.2        | 9          | 9           | 9           |
| Super Mario Bros. 8  | Misc       | 2010 | http://www.vgchartz.com/game/47724/minecra...  | /games/boxart/full_minecraft_1AmericaFront.png | 10    | 10           | 0          | 10         | 10          | 10          |
| Super Mario Bros. 9  | Shooter    | 1985 | http://www.vgchartz.com/game/6246/duck-hu...   | /games/boxart/full_6570468AmericaFrontccc.jpg  | 11    | 0            | 0          | 11         | 11          | 11          |
| Super Mario Bros. 10 | Misc       | 2007 | http://www.vgchartz.com/game/2666/wii-play/... | /games/boxart/full_6165969AmericaFrontccc.jpg  | 12    | 5.9          | 4.5        | 12         | 12          | 12          |
| Super Mario Bros. 11 | Party      | 2010 | http://www.vgchartz.com/game/45608/kinect-...  | /games/boxart/full_kinect-adventures_386Ame... | 13    | 6.7          | 0          | 13         | 13          | 13          |
| Super Mario Bros. 12 | Simulation | 2005 | http://www.vgchartz.com/game/1657/nintendo...  | /games/boxart/full_4870931AmericaFrontccc.jpg  | 14    | 8.4          | 0          | 14         | 14          | 14          |

b) From sales entity:

```
alter table sales  
ADD COLUMN dummyPrimary INT not null auto_increment Primary Key;
```

```
alter table sales add column gameId int null;  
alter table sales add column publisherID int null;
```

```
update sales set gameId = dummyPrimary;  
update sales set publisherID = dummyPrimary;
```

```
alter table sales  
DROP COLUMN dummyPrimary;
```

|      | Total_Shipped | Global_Sales | NA_Sales | PAL_Sales | JP_Sales | Other_Sales | publisherID | gameID |
|------|---------------|--------------|----------|-----------|----------|-------------|-------------|--------|
| 0    | 3.66          | 1.65         | 1.22     | 0         | 0.79     | 1           | 1           | 1      |
| 5.5  | 0             | 0            | 0        | 0         | 0        | 2           | 2           | 2      |
| 0    | 2.83          | 1.65         | 0.85     | 0.05      | 0.28     | 3           | 3           | 3      |
| 5.5  | 0             | 0            | 0        | 0         | 0        | 4           | 4           | 4      |
| 2.83 | 0             | 0            | 0        | 0         | 0        | 5           | 5           | 5      |
| 0    | 3.66          | 1.58         | 1.6      | 0.08      | 0.4      | 6           | 6           | 6      |
| 0    | 2.83          | 1.32         | 1.08     | 0.04      | 0.39     | 7           | 7           | 7      |
| 5.48 | 0             | 0            | 0        | 0         | 0        | 8           | 8           | 8      |
| 5.46 | 0             | 0            | 0        | 0         | 0        | 9           | 9           | 9      |

#### 4.4 Adding foreign key to all entities

SET FOREIGN\_KEY\_CHECKS=0;

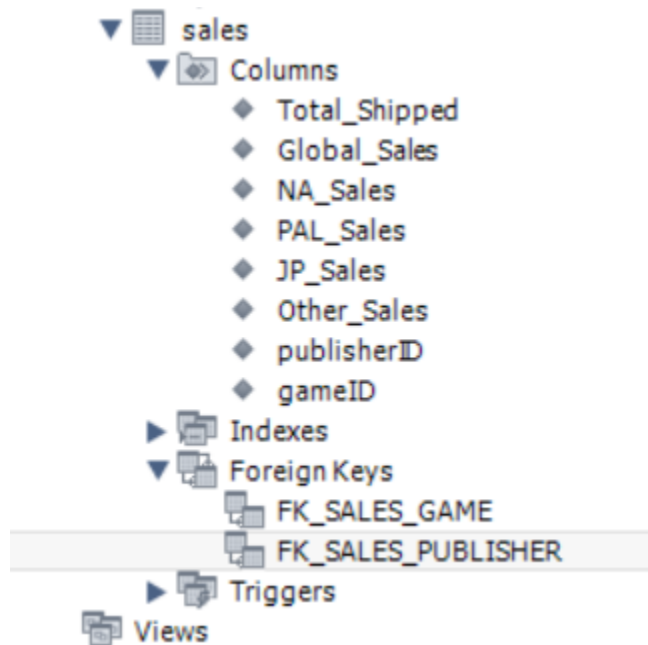
a) From game entity:

- 1) To add foreign key to publisher  
ALTER TABLE game  
ADD CONSTRAINT FK\_GAME\_PUBLISHER  
FOREIGN KEY (publisherID)  
REFERENCES publisher(publisherID)
- 2) To add foreign key to platform  
ALTER TABLE game  
ADD CONSTRAINT FK\_GAME\_PLATFORM  
FOREIGN KEY (platformID)  
REFERENCES platform(platformID)
- 3) To add foreign key to developer  
ALTER TABLE game  
ADD CONSTRAINT FK\_GAME\_DEVELOPER  
FOREIGN KEY (developerID)  
REFERENCES publisher(developerID)



b) From sales entity:

- 1) To add foreign key to publisher  
ALTER TABLE sales  
ADD CONSTRAINT FK\_SALES\_PUBLISHER  
FOREIGN KEY (publisherID)  
REFERENCES publisher(publisherID)
- 2) To add foreign key to publisher  
ALTER TABLE sales  
ADD CONSTRAINT FK\_SALES\_GAME  
FOREIGN KEY (gameID)  
REFERENCES game(gameID)



#### 4.5 SQL Queries for possible scenario analysis

1) What are the games that have the highest user score?

```
select name as GAME_NAME, user_score as USER_SCORE  
from game  
where user_score=(select Max(user_score)from game);
```

|   | GAME_NAME                               | USER_SCORE |
|---|---|------------|
| ▶ | The Legend of Zelda: Breath of the Wild | 10         |
|   | Final Fantasy X                         | 10         |
|   | The Legend of Zelda: Ocarina of Time    | 10         |
|   | Red Dead Redemption                     | 10         |
|   | Kirby Star Allies                       | 10         |
|   | Dissidia: Final Fantasy                 | 10         |
|   | Monster Hunter Tri                      | 10         |
|   | The Legend of Zelda: Breath of the Wild | 10         |
|   | Lunar: Silver Star Story Complete       | 10         |
|   | Okami HD                                | 10         |
|   | Archibald's Adventures                  | 10         |
|   | Astro Match3                            | 10         |
|   | The Legend of Zelda Collector's Edition | 10         |
|   | Viper Racing                            | 10         |
|   | Blossom Tales: The Sleeping King        | 10         |
|   | Dust: An Elysian Tail                   | 10         |
|   | Hollow Knight                           | 10         |

2) Which game and publisher produce the games that have the highest user score?

```
select name as GAME_NAME, user_score as USER_SCORE, publisher.Publisher as  
PUBLISHER_NAME  
from game inner join publisher on game.publisherID= publisher.publisherID  
where user_score=(select Max(user_score)from game)
```

|   | GAME_NAME                               | USER_SCORE | PUBLISHER_NAME             |
|---|---|------------|----------------------------|
| ▶ | The Legend of Zelda: Breath of the Wild | 10         | EA Sports                  |
|   | Final Fantasy X                         | 10         | Ubisoft                    |
|   | The Legend of Zelda: Ocarina of Time    | 10         | Nintendo                   |
|   | Red Dead Redemption                     | 10         | Nintendo                   |
|   | Kirby Star Allies                       | 10         | Rockstar Games             |
|   | Dissidia: Final Fantasy                 | 10         | Microsoft Game Studios     |
|   | Monster Hunter Tri                      | 10         | Nintendo                   |
|   | The Legend of Zelda: Breath of the Wild | 10         | Activision                 |
|   | Lunar: Silver Star Story Complete       | 10         | Disney Interactive Studios |
|   | Okami HD                                | 10         | Codemasters                |
|   | Archibald's Adventures                  | 10         | JoWood Productions         |
|   | Astro Match3                            | 10         | Unknown                    |
|   | The Legend of Zelda Collector's Edition | 10         | Tri Synergy                |
|   | Viper Racing                            | 10         | Sega                       |
|   | Blossom Tales: The Sleeping King        | 10         | Curve Digital              |
|   | Dust: An Elysian Tail                   | 10         | Versus Evil                |
|   | Hollow Knight                           | 10         | Unknown                    |

3) Which game that is produced by Nintendo that has the highest user score

```

select name as GAME_NAME, user_score as USER_SCORE, publisher.Publisher as
PUBLISHER_NAME
from game inner join publisher on game.publisherID= publisher.publisherID
where user_score=(select Max(user_score)from game) and publisher.Publisher="Nintendo"

```

|   | GAME_NAME                            | USER_SCORE | PUBLISHER_NAME |
|---|--------------------------------------|------------|----------------|
| ▶ | The Legend of Zelda: Ocarina of Time | 10         | Nintendo       |
|   | Red Dead Redemption                  | 10         | Nintendo       |
|   | Monster Hunter Tri                   | 10         | Nintendo       |

4) Which developer developed the rank 55th game?

```

Select Developer as DEVELOPER_NAME, game.name as GAME_NAME, game._rank as
GAME_RANK
from game inner join developer on game.developerID=developer.developerID
where game._rank=(select _rank from game where _rank=55)

```

|   | DEVELOPER_NAME | GAME_NAME               | GAME_RANK |
|---|----------------|-------------------------|-----------|
| ▶ | Rockstar Games | New Super Mario Bros. 2 | 55        |

5) Which platform has the top 20 highest critic scores?

```
SELECT Platform as PLATFORM_NAME, game.critic_score as GAME_CRITIC_SCORE
from game inner join platform on game.platformID= platform.platformID
order by game.critic_score desc limit 20
```

|   | PLATFORM_NAME | GAME_CRITIC_SCORE |
|---|---------------|-------------------|
| ▶ | Linux         | 10                |
|   | PC            | 10                |
|   | GB            | 10                |
|   | NES           | 10                |
|   | PS2           | 10                |
|   | PS3           | 10                |
|   | PC            | 10                |
|   | PS2           | 10                |
|   | PS4           | 10                |
|   | PC            | 10                |
|   | PC            | 10                |
|   | PS2           | 10                |
|   | X360          | 10                |
|   | PS            | 10                |
|   | NES           | 10                |
|   | SNES          | 10                |
|   | DS            | 10                |
|   | Wii           | 9.9               |
|   | PC            | 9.9               |
|   | PS2           | 9.9               |

6) Which platform is used between 1999 to 2005

```
SELECT Platform as PLATFORM_NAME, year as GAME_PRODUCED_YEAR
from platform inner join game on platform.platformID = game.platformID
```

where year BETWEEN 1999 AND 2005  
group by Platform order by year

|   | PLATFORM_NAME | GAME_PRODUCED_YEAR |
|---|---------------|--------------------|
|   | X360          | 1999               |
|   | N64           | 1999               |
|   | NGage         | 1999               |
| ▶ | DSi           | 1999               |
|   | Aco           | 1999               |
|   | PS4           | 1999               |
|   | GB            | 2000               |
|   | 7800          | 2000               |
|   | ApII          | 2000               |
|   | GBC           | 2000               |
|   | AST           | 2000               |
|   | WinP          | 2000               |
|   | Ouya          | 2000               |
|   | Lynx          | 2000               |
|   | 5200          | 2000               |
|   | PCE           | 2001               |
|   | XB            | 2001               |
|   | PS            | 2001               |
|   | Mob           | 2001               |
|   | Linux         | 2001               |
|   | PSV           | 2001               |
|   | SNES          | 2001               |
|   | WiiU          | 2002               |

Default 08

7) Which publisher and game has the top 10 highest global sales.

```
SELECT Publisher as PUBLISHER_NAME, game.name as GAME_NAME, sales.global_sales
as GLOBAL_SALES
from ((game INNER JOIN publisher ON game.publisherID = publisher.publisherID)
INNER JOIN sales ON game.gameID = sales.gameID)
order by sales.global_sales desc LIMIT 10
```

|   | PUBLISHER_NAME              | GAME_NAME                             | GLOBAL_SALES |
|---|-----------------------------|---------------------------------------|--------------|
|   | Electronic Arts             | Dr. Mario                             | 20.32        |
|   | Nintendo                    | Assassin's Creed III                  | 19.39        |
|   | Nintendo                    | Uncharted: Drake's Fortune            | 16.15        |
| ▶ | Electronic Arts             | Splatoon                              | 15.86        |
|   | Activision                  | Batman: Arkham City                   | 15.09        |
|   | Sony Computer Entertainment | The Lord of the Rings: The Two Towers | 14.82        |
|   | LucasArts                   | Forza Motorsport 4                    | 14.74        |
|   | Electronic Arts             | Spider-Man: The Movie                 | 13.94        |
|   | Nintendo                    | The Elder Scrolls IV: Oblivion        | 13.86        |
|   | Capcom                      | The Legend of Zelda: The Wind Waker   | 13.8         |

8) Which top 5 genre contribute the most sales In Japan.

```
select genre as GAME_GENRE, SUM(sales.jp_sales) as JAPAN_SALES_SUM
from game inner join sales on game.gameID= sales.gameID
group by genre order by JAPAN_SALES_SUM desc limit 5
```

|   | GAME_GENRE   | JAPAN_SALES_SUM    |
|---|--------------|--------------------|
| ▶ | Action       | 116.95000000000026 |
|   | Sports       | 106.35000000000029 |
|   | Misc         | 77.21000000000053  |
|   | Role-Playing | 71.89000000000019  |
|   | Shooter      | 68.66000000000003  |

9) Which top 5 publisher contribute to the most sales in Europe

```
select Publisher as GAME_PUBLISHER, SUM(sales.Pal_sales) as PAL_SALES_SUM
from publisher inner join sales on publisher.publisherID= sales.publisherID
group by Publisher order by PAL_SALES_SUM desc limit 5
```



|   | GAME_PUBLISHER  | PAL_SALES_SUM       |
|---|-----------------|---------------------|
| ▶ | Nintendo        | 282.68999999999992  |
|   | Electronic Arts | 165.009999999999985 |
|   | Activision      | 127.14              |
|   | Ubisoft         | 100.57000000000003  |
|   | EA Sports       | 97.28               |

10) What is the top 10 genre with the highest average of critic score?

select genre as GENRE, AVG(critic\_score) as CRITIC\_SCORE\_AVERAGE  
 from game  
 group by genre order by CRITIC\_SCORE\_AVERAGE desc limit 10

|   | GENRE            | CRITIC_SCORE_AVERAGE |
|---|------------------|----------------------|
| ▶ | Role-Playing     | 1.4050977807075349   |
|   | Shooter          | 1.339467945922373    |
|   | Action-Adventure | 1.2527960526315791   |
|   | Party            | 1.2106666666666666   |
|   | Platform         | 1.196487663280116    |
|   | Fighting         | 1.1623021582733808   |
|   | Racing           | 1.0835643564356443   |
|   | MMO              | 1.0554054054054056   |
|   | Sandbox          | 1.0222222222222221   |
|   | Music            | 1.0143589743589745   |