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Instructor:	Faezeh Ensan
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<i>Assignment/Lab Number:</i>	4
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*By signing above you attest that you have contributed to this written lab report and confirm that all work you have contributed to this lab report is your own work. Any suspicion of copying or plagiarism in this work will result in an investigation of Academic Misconduct and may result in a "0" on the work, an "F" in the course, or possibly more severe penalties, as well as a Disciplinary Notice on your academic record under the Student Code of Academic Conduct, which can be found online at: <http://www.ryerson.ca/senate/current/pol60.pdf>

Lab 4 Report

Data Base Values

Using the information from lab 3 and in lab 1, the columns were filled with the necessary information with the tasks from lab 1 in mind.

Contract (Dir to Pub)

	driID	sqID	Producer
1	1	1	Ichiro Hazama
2	2	2	Davide Chris Floyd
3	3	3	Takashi Tokita
4	4	4	Tomoya Asano
5	5	5	Mario Chabtini
6	6	6	Victoria Setian
7	7	7	Yosuke Saito
8	8	8	Ryota Aomi
9	9	9	Shinji Hashimoto
10	10	10	Rie Nishi

Figure 1: Table of Contract(Dir to Pub)

Using the information from the Video_Game table and the Square Enix Table, the contract is formed between these two parties with a Producer being in charge of the management of the Director and the reporting to the publisher Square Enix.

Contract (Pub to Dev)

	devID	sqID	Development Time
1	1	1	5
2	2	2	3
3	3	3	2
4	4	4	7
5	5	5	3
6	6	6	2
7	7	7	3
8	8	8	2
9	9	9	2
10	10	10	6

Figure 2: Table of Contract (Pub to Dev)

The publisher Square Enix requests the Developer, sometimes an outsourced developer, to create a game from the publisher's library of IPs with a set date of completion. The Development Time indicates the time and resources needed for the completion of each game.

Developers

	devID	Name	Parent Company	Date of Formation
1	1	Team Ninja	Koei Tecmo	1995
2	2	Avalanche Studios	Nordisk Film	2003
3	3	Tokyo RPG Factory	Square Enix	2014
4	4	Square Enix	Square Enix	2003
5	5	Eidos Montreal	Square Enix Europe	2007
6	6	Deck Nine		1997
7	7	Platinum Games	NULL	2007
8	8	Omega Force	Koei Tecmo	1996
9	9	Ilinx	Square Enix	2005
10	10	Luminous Productions	Square Enix	2018

Figure 3: Table of Developers and their Parent Companies

The Developers have their own unique elements as they are entities which allows for data manipulation when it comes to indicating the developers and their works to be an in-house developer. The Developers have their own primary ID keys.

Director

	dirID	Name	Company
1	1	Takeo Kujiraoka	Square Enix
2	2	Webb Pickersgill	Deck Nine Games
3	3	Tomoki Miyoshi	Square Enix
4	4	Keisuke Miyauchi	Square Enix
5	5	Daniel Chayer	Eidos Montreal
6	6	Francesco Antolini	Avalanche Games
7	7	Yoko Taro	NULL
8	8	Tomohiko Sho	Omega Force
9	9	Toshifumi Nabeshima	Square Enix
10	10	Tetsuya Nomura	Square Enix

Figure 4: Table of Directors and their Respective Companies

The Director table shows the director's name and the company in which they primarily work for (not always the case with working in one company, some are cross-company employees or freelancers). The Director have their own primary ID keys.

Distribute

	vgID	sqID	Release Date North America	Release Date Japan	Copies_Sold
1	1	1	2018-01-30	2018-1-11	460000
2	2	2	2017-12-20	2017-12-20	NULL
3	3	3	2019-08-22	2019-08-22	36000
4	4	4	2018-07-13	2018-07-13	2000000
5	5	5	2018-09-14	2018-09-14	4200000
6	6	6	2018-12-04	2018-12-4	378056
7	7	7	2017-03-07	2017-2-23	4500000
8	8	8	2017-04-27	2016-5-27	580000
9	9	9	2019-03-05	2019-2-28	80000
10	10	10	2019-01-29	2019-1-25	5000000

Figure 5: Table of Distributed Games with their Release Dates and Copies Sold

The publisher manages the distribution of the games as with the release dates of the games in Japan and North America. The publisher also keeps track of the copies sold of the games they publish (most of the times).

Engine

	enID	Company Developer	Royalties
1	1	Unreal Engine 4	5
2	2	Unity	5
3	3	Foundation Engine	NULL
4	4	Apex Engine	NULL
5	5	Warrior Engine	NULL
6	6	Orochi 4	NULL
7	7	Luminous Studio	NULL
8	8	Enlighten	NULL
9	9	Crystal Tools	NULL
10	10	Glacier 2	NULL

Figure 6: Table of Engines Game use with their Royalties

The Engines used for the game vary from studio to practical uses. The engines without royalties are proprietary engines in which the studio who created them has sole usage and rights to distribute them, but most do not let other studios use their in-house custom engines. Thus, the ones who do distribute them have royalties for the amount of copies sold. The royalties shown in Figure 6 are the basic royalties.

GameModes

	vgID	Single Player	Multiplayer
1	1	1	1
2	2	1	0
3	3	1	0
4	4	1	0
5	5	1	0
6	6	1	0
7	7	1	0
8	8	1	1
9	9	1	1
10	10	1	0

Figure 7: Table of Game Modes Games Have

Every game has game modes in which player can play independently or with other players via online or in person. Certain games only have single player or multiplayer or both.

Genre

	vgID	Gen1	Gen2
1	1	Action Role-Playing	Fighting
2	2	Graphic Adventure	NULL
3	3	Action Role-Playing	NULL
4	4	Role Playing	NULL
5	5	Action Adventure	NULL
6	6	Action Adventure	NULL
7	7	Action Role-Playing	NULL
8	8	Hack and Slash	Action Role-Playing
9	9	Stealth	NULL
10	10	Action Role-Playing	NULL

Figure 8: Table of Genres for Each Game

Games have their own Genres separate from other entertainment. They can have more than one genre as they can have multiple modes or different aspects of their game have their respective genre.

Media Configuration

	vgID	Digital	Physical
1	1	1	1
2	2	1	1
3	3	1	0
4	4	1	1
5	5	1	1
6	6	1	1
7	7	1	1
8	8	1	1
9	9	1	1
10	10	1	1

Figure 9: Table of Games in Either Physical or Digital Format

Games have their distinct forms of media that can be used by the same hardware. Most consoles can play Digital or Physical forms of the games, but certain games don't get a physical release as they have lower budgets or do not have access to the resources. Thus, some games are digital only releases.

Platforms

	vgID	PS4	Ninten	Xbox C	Microso	PS3	Arcade	Linux	macOS	Androi	iOS	Stadia	PS Vita
1	1	1	NULL	NULL	1	NULL	1	NULL	NULL	NULL	NULL	NULL	NULL
2	2	1	NULL	1	1	NULL	NULL	1	1	1	1	NULL	NULL
3	3	1	1	NULL	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
4	4	NULL	1	NULL	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5	5	1	NULL	1	1	NULL	NULL	1	1	NULL	NULL	1	NULL
6	6	1	NULL	1	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
7	7	1	NULL	1	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
8	8	1	1	NULL	1	1	NULL	NULL	NULL	NULL	NULL	NULL	1
9	9	1	NULL	NULL	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10	10	1	NULL	1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 10: Games and Their Respective Platform Releases

Many games come out on many platforms for gaming but not all forms. Most games are released with the most accessible platforms as to widen the target audience, boosting sales but certain games are developed with only one or two consoles in mind when it comes to pushing the sale of the console instead of the game. These releases are dubbed "Exclusive" titles for their respective platform(s).

Produce

	vgID	dirID	TeamID
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10

Figure 11: Table of Video Games, Directors and Teams that Worked on the Game

With the work from the Director and the Team (Developers), the Video Game was created. Each Video Game has their own respective Team and Director.

Rating

	vgID	MetaCri	Famitsu	IGN	Destru	Edge	EGM	Game Ir	Game I	GameM	GameS	GamesTM	Ninten	Ninten	The Gu	RPGFai	VideoC	Games	PC Gam	Polygo
1	1	67/100	35/40	6.9/10	7/10	5/10	7/10	6/10	3/5	7.9/10	5/10	6/10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2	2	77/100	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
3	3	72/100	31/40	7.4/10	NULL	NULL	NULL	7.5/10	NULL	NULL	5/10	NULL	7/10	8/10	2/5	6.5/10	NULL	NULL	NULL	NULL
4	4	83/100	36/40	9.3/10	7.5/10	NULL	NULL	8/10	NULL	NULL	8/10	NULL	9/10	9/10	NULL	NULL	8/10	NULL	NULL	NULL
5	5	77/100	NULL	9/10	7.5/10	NULL	8/10	NULL	4/5	NULL	6/10	NULL	NULL	NULL	NULL	NULL	7/10	4/5	84/100	NULL
6	6	68/100	NULL	7.9/10	NULL	NULL	NULL	NULL	NULL	NULL	6/10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	73/100	NULL
7	7	88/100	39/40	8.9/10	9/10	NULL	8.5/10	7.75/10	NULL	NULL	9/10	NULL	NULL	NULL	NULL	NULL	NULL	4.5/5	79/100	8/10
8	8	76/100	NULL	7.5/10	7.5/10	NULL	NULL	NULL	NULL	NULL	8/10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
9	9	40/100	31/40	3.8/10	2/10	NULL	NULL	NULL	2/5	NULL	3/10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10	10	83/100	39/40	8.7/10	8/10	NULL	7.5/10	9.5/10	4.5/10	NULL	8/10	NULL	NULL	NULL	NULL	NULL	4/10	4/5	NULL	NULL

Figure 12: Table of the Ratings Games get from Review Companies

Many Video Games live or die based on their Ratings from Review Companies, especially from Metacritic as their bonus pay and livelihood are based on the ratings. Ratings are very important for companies as they are deciding factoring in the development of a sequel or spin-off.

Square Enix

	sqID	Developers	Former	Date of Formation	Location
1	1	Square Enix Inc.	false	March 1989	El Segundo, California, United States
2	2	Square Enix Europe	false	December 1998	Blackfriars, London, United Kingdom
3	3	Crystal Dynmaics	false	April 22 2009	Montreal, Quebec, Canada
4	4	Square Enix Montreal	false	2012	Montreal, Quebec, Canada
5	5	Tokyo RPG Factory	false	2015	Shinjuku, Tokyo, Japan
6	6	Luminous Productions	false	March 27 2018	Shinjuku, Tokyo, Japan
7	7	DigiCube	true	February 6 1996	Tokyo, Japan
8	8	Square Electronic Arts	true	April 27, 1998	Costa Mesa, California, United States
9	9	Eidos Hungary	true	2002	Budapest, Hungary
10	10	PlayOnline	false	January 28 2000	Tokyo, Japan

Figure 13: Table of Internal Developers with their Date of Formation and Location

Square Enix is a publisher which owns many internal development teams but at times they do not use them as they out-source the development of their respective IPs to third parties. With the internal teams spanning continents and with differing Dates of Formations, Square Enix has a plethora of creative talents which they use occasionally.

Video Game

	vgID	Title	IP	DLC	Remake/Remaster
1	1	Dissidia Final Fantasy NT	Final Fantasy	1	0
2	2	Life is Strange;; Beofre the Storm	Life is Strange	0	0
3	3	Oninaki	NULL	0	0
4	4	Octopath Traveler	NULL	0	0
5	5	Shadow of the Tomb Raider	Tomb Raider	0	0
6	6	Just Cause 4	Just Cause	1	0
7	7	Nier Automata	Nier	1	0
8	8	Dragon Quest Heroes II	Dragon Quest	1	0
9	9	Left Alive	Front Mission	0	0
10	10	Kingdom Hearts III	Kingdom Hearts	1	0

Figure 14: Table of Video Games and the IPs they belong to with DLC and Remake/Remaster

The main table where most of the information presented in the table are important. The Video Games come from a variety of IPs, developers, times and uses different Engines, modes of play, Genres from each other. The Video Games presented are vastly different from each other as to fill the requirements of the lab.

Tasks

1. Biggest Releases First in North America

The tasks ask for the Biggest Release in North America. Using the Release Dates in NA and the units sold in Distribute, joining the Video Game table with the Distribute table on the left with finding the max of the copies sold and the release date of the NA being smaller than the JP, the title can be found.


```

1 Select
2   Video_Game.Title,
3   Distribute."Release Date North America",
4   MAX(Distribute.Copies_Sold)
5 From
6   Video_Game
7   Left Join Distribute Using (vgID)
8 Where
9   (Distribute."Release Date North America" < Distribute."Release Date Japan")

```

Figure 15: Query Code of Task 1

	Title	Release Date North America	MAX(Distribute.Copies_Sold)
1	Kingdom Hearts III	2019-01-29	5000000

Figure 16: Table of Task 1

2. Games Where JP and NA Releases Dates are the Same

The Video Game and Distribute tables are used again and the dates of the NA and JP releases are compared with matching dates appearing on the Query Table.

```

1 Select
2   Video_Game.Title,
3   Distribute."Release Date Japan",
4   Distribute."Release Date North America"
5 From
6   Video_Game
7   Left Join Distribute Using (vgID)
8 Where Distribute."Release Date Japan" = Distribute."Release Date North America"

```

Figure 17: Query Code for Task 2

	Title	Release Date Japan	Release Date North America
1	Life is Strange: Beofre the Storm	2017-12-20	2017-12-20
2	Oninaki	2019-08-22	2019-08-22
3	Octopath Traveler	2018-07-13	2018-07-13
4	Shadow of the Tomb Raider	2018-09-14	2018-09-14

Figure 18: Table for Task 2

3. Highest Rated Game

Simply finding the highest rating from the Rating table with the Video Game title and combining the tables. Using MAX command, the highest value can be obtained.

```

1 Select
2   Video_Game.Title, MAX(Rating.MetaCritic)
3 from Video_Game
4   Left Join Rating using (vgID)

```

Figure 19: Query Code for Task 3

	Title	MAX(Rating.MetaCritic)
1	Nier Automata	88/100

Figure 20: Table for Task 3

4. Least Successful IP

Looking through the Copies Sold on Distribute, the least Copies Sold by a Video Game with an IP will appear on the table.

```

1 Select
2     Video_Game.Title,
3     Video_Game.IP,
4     MIN(Distribute.Copies_Sold)
5
6 From
7     Video_Game
8     Left Join Distribute Using (vgID)
9 Where
10    Video_Game.ip IS NOT NULL

```

Figure 21: Query Code for Task 4

	Title	IP	MIN(Distribute.Copies_Sold)
1	Left Alive	Front Mission	80000

Figure 22: Table for Task 4

5. Most Sold Game

Looking through the Distribute, picking the Video Game title with the most Copies Sold.

```

1 Select
2     Title,
3     MAX(Copies_Sold)
4 from Video_Game
5 Inner Join Distribute Using (vgID)

```

Figure 23: Query Code for Task 5

	Title	MAX(Copies_Sold)
1	Kingdom Hearts III	5000000

Figure 24: Table for Task 5

6. Outsourced vs Internal Game Performance

Collecting the Video Game titles, Square Enix Developers and Developers Names into one table with the Copies Sold from Distribute shown as well, the differences between the internal teams and outsourced teams can be viewed.

```

1 Select
2     Video_Game.Title,
3     Developers.Name,
4     Square_Enix.Developers,
5     Distribute.Copies_Sold
6 from
7     Video_Game
8     Left Join Distribute using (vgID)
9     Left Join Square_Enix Using (sqID)
10    Left Join "Contract(Pub to Dev)" Using (sqID)
11    Left Join Developers Using (devID)

```

Figure 25: Query Code for Task 6

	Title	Name	Developers	Copies_Sold
1	Dissidia Final Fantasy NT	Team Ninja	Square Enix Inc.	460000
2	Life is Strange;; Beofre the Storm	Avalanche Studios	Square Enix Europe	NULL
3	Oninaki	Tokyo RPG Factory	Crystal Dynmaics	36000
4	Octopath Traveler	Square Enix	Square Enix Montreal	2000000
5	Shadow of the Tomb Raider	Eidos Montreal	Tokyo RPG Factory	4200000
6	Just Cause 4	Deck Nine	Luminous Productions	378056
7	Nier Automata	Platinum Games	DigiCube	4500000
8	Dragon Quest Heroes II	Omega Force	Square Electronic Arts	580000
9	Left Alive	Ilinx	Eidos Hungary	80000
10	Kingdom Hearts III	Luminous Productions	PlayOnline	5000000

Figure 26: Table for Task 6

7. Release on Exclusive Platforms

Most games are not released exclusively for one console only as they slowly release for other consoles or platforms meaning exclusivity is limited to time. Due to the games being released for other consoles later, some are still not released for more than 3 platforms, creating a less exclusive release but still an exclusive release. All the games that have released for 2 of the selected common platforms are considered exclusive.

```

1 Select
2     Video_Game.Title,
3     case
4         WHEN (Platform."Microsoft Windows" = 1 AND Platform.PS4 = 1 AND Platform."Xbox One" = 1) OR
5              (Platform."Microsoft Windows" = 1 AND Platform.PS4 = 1 AND Platform."Nintendo Switch" = 1) OR
6              (Platform."Microsoft Windows" = 1 AND Platform."Xbox One" = 1 AND Platform."Nintendo Switch" = 1) OR
7              (Platform.PS4 = 1 AND Platform."Xbox One" = 1 AND Platform."Nintendo Switch" = 1)
8         THEN 'NO'
9         else 'YES'
10    end as PlatformExclusive,
11    Platform."Microsoft Windows",
12    Platform.PS4,
13    Platform."Xbox One",
14    Platform."Nintendo Switch"
15 From
16     Video_Game
17     Left Join Platform Using (vgID)

```

Figure 27: Query Code for Task 7

	Title	Platform	Microso	PS4	Xbox O	Nintend
1	Dissidia Final Fantasy NT	YES	1	1	NULL	NULL
2	Life is Strange;; Beofre the Storm	NO	1	1	1	NULL
3	Oninaki	NO	1	1	NULL	1
4	Octopath Traveler	YES	1	NULL	NULL	1
5	Shadow of the Tomb Raider	NO	1	1	1	NULL
6	Just Cause 4	NO	1	1	1	NULL
7	Nier Automata	NO	1	1	1	NULL
8	Dragon Quest Heroes II	NO	1	1	NULL	1
9	Left Alive	YES	1	1	NULL	NULL
10	Kingdom Hearts III	YES	NULL	1	1	NULL

Figure 28: Table for Task 7

8. Remake or Original Games

Considering the resurgence of remakes or remasters of old games, are these remakes/remaster games better than stand alone titles? Comparing the Copies Sold and Video Game Remaster/Remake column will help with the answer.

```

1 Select
2     Video_Game.Title,
3     Video_Game."Remake/Remaster",
4     Distribute.Copies_Sold
5
6 From
7     Video_Game
8     Left Join Distribute Using (vgID)
9 Where
10    Video_Game."Remake/Remaster" = 0

```

Figure 29: Query Code for Task 8

	Title	Remake/Remaster	Copies_Sold
1	Dissidia Final Fantasy NT	0	460000
2	Life is Strange;; Beofre the Storm	0	NULL
3	Oninaki	0	36000
4	Octopath Traveler	0	2000000
5	Shadow of the Tomb Raider	0	4200000
6	Just Cause 4	0	378056
7	Nier Automata	0	4500000
8	Dragon Quest Heroes II	0	580000
9	Left Alive	0	80000
10	Kingdom Hearts III	0	5000000

Figure 30: Table for Task 8

Due to the table having limited data points, the answer to this question will have to wait.

9. Does Games with the same Director have more Successful Games?

Looking at the reoccurrence of Director's name when joining Video Game table and Distribute table with the Copies Sold will aid in the answer.

```

1 Select Distinct
2   Video_Game.Title,
3   count(Director.Name),
4   Distribute.Copies_Sold,
5   Produce.vgID as p_vgId,
6   Produce.dirID as p_dirID
7 from
8   Video_Game
9   Left Join Produce ON Video_Game.vgID = p_vgID
10  Left Join Director ON Director.dirID = p_dirID
11  Left Join Distribute ON Distribute.vgID = Video_Game.vgID
12 Group by Director.Name
13 Having count(Director.Name) > 1

```

Figure 31: Query Code for Task 9

No table can be generated for this task as there isn't enough data points for the Director's name to appear more than once. More data points are needed

10. Which Games have more than 2 Genres

Using the Genre table, checking if the Gen2 column isn't NULL will narrow down the Video Game titles that are not single genre.

```

1 Select
2   Video_Game.Title,
3   Genre.Gen1,
4   Genre.Gen2
5 From
6   Video_Game
7   Left Join Genre Using (vgID)
8 Where Genre.Gen2 IS NOT NULL

```

Figure 32: Query Code for Task 10

	Title	Gen1	Gen2
1	Dissidia Final Fantasy NT	Action Role-Playing	Fighting
2	Dragon Quest Heroes II	Hack and Slash	Action Role-Playing

Figure 33: Table for Task 10