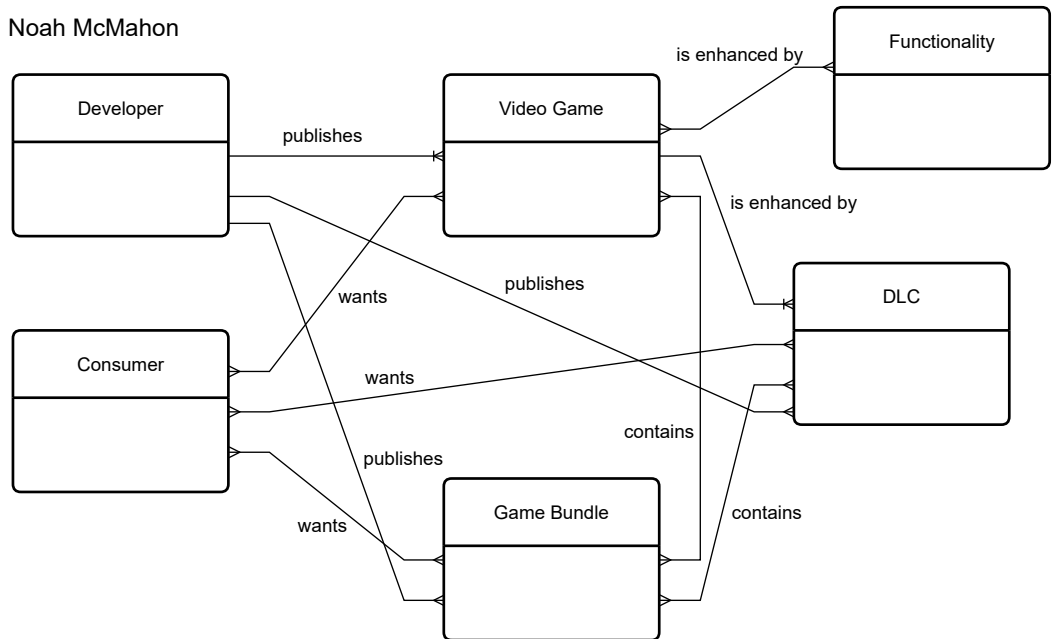# INFO 330 Final Project

Noah Andrew McMahon

December 8, 2023

1   Phase 1:

Nintendo is one of the top video game companies in the world. This company both produces games themselves for their platforms (ranging from the Nintendo 3DS to the Wii U to the Nintendo Switch) as well as hosts games from other developers on their consoles. The incredible amount of video games that exist on these consoles, specifically the Nintendo Switch (the console that I will be looking at), it is sometimes difficult to find the games that a consumer might want to play. This is the main issue that I will be looking at for this database.

The first entity for this Nintendo game database would be a video game entity. This entity would have attributes such as title and price, among others. Each video game would be published by a developer, but one developer can publish numerous video games. This second entity would be a developer entity, with attributes such as developer name and general genre. A third entity would be a DLC entity, with attributes such as title and price. A game can have multiple DLCs, but a DLC can belong to only one game. The fourth entity would be a customer entity, whose attributes may include name, address, and payment information. A customer can own and play numerous games and their respective DLCs. A fifth entity would be game bundles, whose attributes would include the title of the bundle as well as the price. A game bundle can have many games and DLCs as part of it, and a game or a DLC could be part of different bundles. The sixth and final entity would be functionality entity, which would cover the differing number of players each video game has in its differing modes. Some attributes of this entity would be minimum players and maximum players.

Noah McMahon

Developer				Functionality
	publishes	Video Game	is enhanced by	

Developer
Video Game
Functionality
Consumer
DLC
Game Bundle

publishes
is enhanced by
is enhanced by
wants
publishes
wants
contains
publishes
wants
contains

2 Phase 2:

The logical model as well as the relational schema is being turned in with this project.

3 Phase 3:

The file in which I set up and dumped all my data is also being in turned in with this project.

4 Phase 4:

USE nintendo_game_db;

– Prompt 1: –
– Create a function that returns a "wish" list of all of the video games, DLCs, –
– and game bundles that match a consumer's favorite genre. –


```
GO
CREATE FUNCTION fnWishList(@username VARCHAR(50))
    RETURNS TABLE
RETURN
    (SELECT vg.game_title, d.DLC_title, gb.bundle_title
    FROM Video_Game vg
    JOIN DLC d
    ON vg.game_title = d.game_title
    JOIN DLCToGameBundle dgb
    ON d.DLC_title = dgb.DLC_title
    JOIN Game_Bundle gb
    ON dgb.bundle_title = gb.bundle_title
    WHERE vg.genre1 = (SELECT fav_genre FROM Consumer WHERE username = @username)
    OR vg.genre2 = (SELECT fav_genre FROM Consumer WHERE username = @username)
    OR vg.genre3 = (SELECT fav_genre FROM Consumer WHERE username = @username));
GO


SELECT *
FROM fnWishList('Poohbear')
```

	game_title	DLC_title	bundle_title
1	Cult of the Lamb	Cult of the Lamb - Cultist and Heretic Pack	Cult of the Lamb: Heretic Edition
2	Cult of the Lamb	Cult of the Lamb - Cultist Pack	Cult of the Lamb: Cultist Edition
3	Fire Emblem: Three Houses	Fire Emblem: Three Houses - Expansion Pass	Fire Emblem: Three Houses + Expansion Pass
4	Mario + Rabbids Sparks of Hope	Mario + Rabbids Sparks of Hope DLC 3: Rayman in ...	Mario + Rabbids Sparks of Hope: + Rayman Edition
5	Mario + Rabbids Sparks of Hope	Mario + Rabbids Sparks of Hope Season Pass	Mario + Rabbids Sparks of Hope Gold Edition
6	Fire Emblem Engage	Order of Heroes Item Set	Fire Emblem Engage Expansion Pass
7	Overcooked! 2	Overcooked! 2 - Campfire Cook Off	Campfire Cook Off + Game
8	Overcooked! 2	Overcooked! 2 - Campfire Cook Off	Overcooked! 2 - Gourmet Edition
9	Overcooked! 2	Overcooked! 2 - Carnival of Chaos	Carnival Chaos + Game
10	Overcooked! 2	Overcooked! 2 - Carnival of Chaos	Overcooked! 2 - Gourmet Edition
11	Overcooked! 2	Overcooked! 2 - Night of the Hangry Horde	Night of the Hangry Horde + Game
12	Overcooked! 2	Overcooked! 2 - Night of the Hangry Horde	Overcooked! 2 - Gourmet Edition
13	Overcooked! 2	Overcooked! 2 - Surf 'n' Turf	Overcooked! 2 - Gourmet Edition
14	Overcooked! 2	Overcooked! 2 - Surf 'n' Turf	Surf 'n' Turf + Game

This function returns all of the games on a hypothetical wish list for user 'Poohbear'. This function is very useful in that it matches a user's favorite genre of video game with anything game, DLC, or game bundle that the user might want.

```
SELECT *
FROM fnWishList('Jeremy')
```

	game_title	DLC_title	bundle_title
1	Headbangers: Rhythm Royale	Headbangers: Pigeon Pass	Headbangers: Rhythm Royale - Digital Deluxe Editi...
2	Mario Kart 8 Deluxe	Mario Kart 8 Deluxe - Booster Course Pass	Mario Kart 8 Deluxe Bundle (Game + Booster Cour...
3	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Costume Pack	Nickelodeon All-Star Brawl 2 Ultimate Edition
4	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Season Pass	Nickelodeon All-Star Brawl 2 Deluxe Edition
5	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Season Pass	Nickelodeon All-Star Brawl 2 Ultimate Edition
6	Splatoon 3	Splatoon 3 Expansion Pass	Splatoon 3 Bundle (Game + Expansion Pass)
7	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 1	Super Smash Bros. Ultimate: Fighters Pass
8	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 10	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
9	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 11	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
10	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 2	Super Smash Bros. Ultimate: Fighters Pass
11	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 3	Super Smash Bros. Ultimate: Fighters Pass
12	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 4	Super Smash Bros. Ultimate: Fighters Pass
13	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 5	Super Smash Bros. Ultimate: Fighters Pass
14	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 6	Super Smash Bros. Ultimate: Fighters Pass Vol. 2

This function returns all of the games on a hypothetical wish list for user 'Jeremy'. This function is very useful in that it matches a user's favorite genre of video game with anything game, DLC, or game bundle that the user might want.

```
-- Prompt 2: --
-- Create a function that takes a maximum amount of money that --
```

– a consumer is willing to spend and return [from their "wish list"] –
– a list of all of the games under that amount. –

```
    GO
CREATE FUNCTION fnUnderMax(@max_amt SMALLINT, @username VARCHAR(50))
    RETURNS TABLE
RETURN
    (SELECT DISTINCT vg.game_title, d.DLC_title, gb.bundle_title
    FROM fnWishList(@username) wl
    JOIN Video_Game vg
    ON vg.game_title = wl.game_title
    JOIN DLC d
    ON vg.game_title = d.game_title
    JOIN DLCToGameBundle dgb
    ON d.DLC_title = dgb.DLC_title
    JOIN Game_Bundle gb
    ON dgb.bundle_title = gb.bundle_title
    WHERE (vg.price + d.price) ¡ @max_amt OR (gb.price) ¡ @max_amt);
GO


    SELECT *
FROM fnUnderMax(100, 'Poohbear')
```

	game_title	DLC_title	bundle_title
1	Cult of the Lamb	Cult of the Lamb - Cultist and Heretic Pack	Cult of the Lamb: Heretic Edition
2	Cult of the Lamb	Cult of the Lamb - Cultist Pack	Cult of the Lamb: Cultist Edition
3	Fire Emblem: Three Houses	Fire Emblem: Three Houses - Expansion Pass	Fire Emblem: Three Houses + Expansion Pass
4	Mario + Rabbids Sparks of Hope	Mario + Rabbids Sparks of Hope DLC 3: Rayman in ...	Mario + Rabbids Sparks of Hope: + Rayman Edition
5	Mario + Rabbids Sparks of Hope	Mario + Rabbids Sparks of Hope Season Pass	Mario + Rabbids Sparks of Hope Gold Edition
6	Fire Emblem Engage	Order of Heroes Item Set	Fire Emblem Engage Expansion Pass
7	Overcooked! 2	Overcooked! 2 - Campfire Cook Off	Campfire Cook Off + Game
8	Overcooked! 2	Overcooked! 2 - Campfire Cook Off	Overcooked! 2 - Gourmet Edition
9	Overcooked! 2	Overcooked! 2 - Carnival of Chaos	Carnival Chaos + Game
10	Overcooked! 2	Overcooked! 2 - Carnival of Chaos	Overcooked! 2 - Gourmet Edition
11	Overcooked! 2	Overcooked! 2 - Night of the Hangry Horde	Night of the Hangry Horde + Game
12	Overcooked! 2	Overcooked! 2 - Night of the Hangry Horde	Overcooked! 2 - Gourmet Edition
13	Overcooked! 2	Overcooked! 2 - Surf 'n' Turf	Overcooked! 2 - Gourmet Edition
14	Overcooked! 2	Overcooked! 2 - Surf 'n' Turf	Surf 'n' Turf + Game

This function returns all of the games on a hypothetical wish list for user 'Poohbear' that are under a certain inputted price. This function is very useful in that it matches a user's favorite genre of video game with anything game, DLC, or game bundle that the user might want, and then accounts for a hypothetical budget that they might have.

SELECT *
FROM fnUnderMax(80, 'Jeremy')

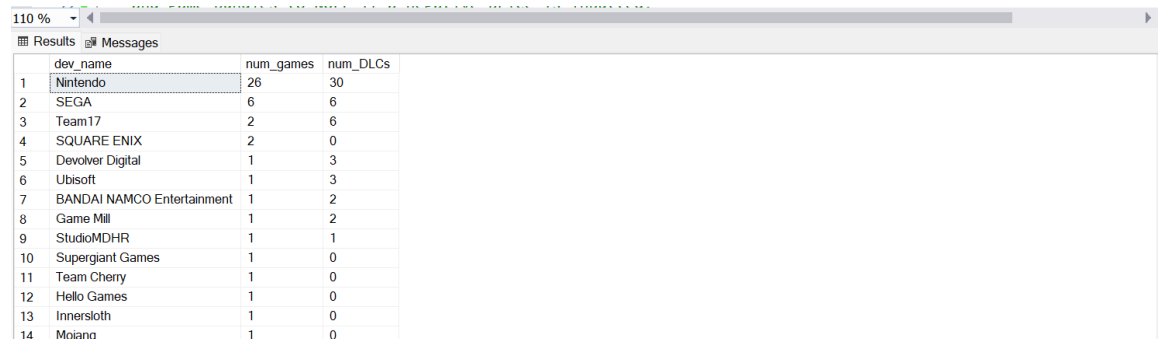|	game_title	DLC_title	bundle_title
1	Headbangers: Rhythm Royale	Headbangers: Pigeon Pass	Headbangers: Rhythm Royale - Digital Deluxe Edit...
2	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Costume Pack	Nickelodeon All-Star Brawl 2 Ultimate Edition
3	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Season Pass	Nickelodeon All-Star Brawl 2 Deluxe Edition
4	Nickelodeon All-Star Brawl 2	Nickelodeon All-Star Brawl 2 Season Pass	Nickelodeon All-Star Brawl 2 Ultimate Edition
5	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 1	Super Smash Bros. Ultimate: Fighters Pass
6	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 10	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
7	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 11	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
8	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 2	Super Smash Bros. Ultimate: Fighters Pass
9	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 3	Super Smash Bros. Ultimate: Fighters Pass
10	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 4	Super Smash Bros. Ultimate: Fighters Pass
11	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 5	Super Smash Bros. Ultimate: Fighters Pass
12	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 6	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
13	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 7	Super Smash Bros. Ultimate: Fighters Pass Vol. 2
14	Super Smash Bros. Ultimate	Super Smash Bros. Ultimate: Challenger Pack 8	Super Smash Bros. Ultimate: Fighters Pass Vol. 2

This function returns all of the games on a hypothetical wish list for user 'Jeremy' that are under a certain inputted price. This function is very useful in that it matches a user's favorite genre of video game with anything game, DLC, or game bundle that the user might want, and then accounts for a hypothetical budget that they might have.

– Prompt 3: –
– Return the number of video games and the number of DLCs that each –
– developer developed. Order the results by the number descending. –

SELECT vg.dev_name, COUNT(vg.game_title) AS "num_games",
(SELECT COUNT(DLC_title) FROM DLC WHERE dev_name = vg.dev_name)
AS "num_DLCs"
FROM Video_Game vg
GROUP BY vg.dev_name
ORDER BY num_games DESC, num_DLCs DESC

	dev_name	num_games	num_DLCs
1	Nintendo	26	30
2	SEGA	6	6
3	Team17	2	6
4	SQUARE ENIX	2	0
5	Devolver Digital	1	3
6	Ubisoft	1	3
7	BANDAI NAMCO Entertainment	1	2
8	Game Mill	1	2
9	StudioMDHR	1	1
10	Supergiant Games	1	0
11	Team Cherry	1	0
12	Hello Games	1	0
13	Innersloth	1	0
14	Mojang	1	0

This SQL query returns the number of DLCs and the number of video games that each developer produced. The results of the query shows that Nintendo has produced a vast majority of both the video games and the DLCs in the database.

– Prompt 4: –
– Create triggers to set the price of video games, DLCs, –
– and game bundles to NULL if a negative price is inputted. –

```
    GO
CREATE TRIGGER Video_Game_UPDATE_INSERT
    ON Video_Game
    AFTER UPDATE, INSERT
AS
    UPDATE Video_Game
    SET price = NULL
    WHERE price < 0


    GO
CREATE TRIGGER DLC_UPDATE_INSERT
    ON DLC
    AFTER UPDATE, INSERT
AS
    UPDATE DLC
    SET price = NULL
    WHERE price < 0


    GO
CREATE TRIGGER Game_Bundle_UPDATE_INSERT
```

ON Game_Bundle
AFTER UPDATE, INSERT
AS
UPDATE Game_Bundle
SET price = NULL
WHERE price < 0
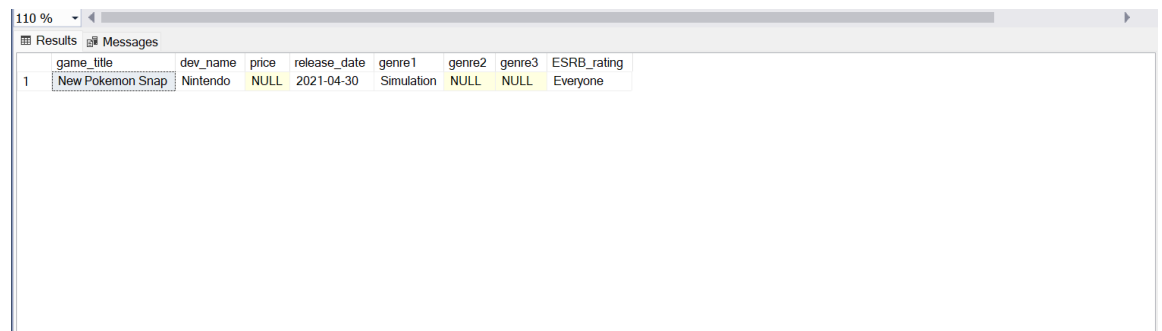
INSERT INTO Video_Game(game_title, dev_name, price, release_date, genre1, genre2, genre3, ESRB_rating)
VALUES('New Pokemon Snap', 'Nintendo', -59.99, '04/30/2021', 'Simulation', NULL, NULL, 'Everyone')

SELECT *
FROM Video_Game
WHERE game_title = 'New Pokemon Snap'

	game_title	dev_name	price	release_date	genre1	genre2	genre3	ESRB_rating
1	New Pokemon Snap	Nintendo	NULL	2021-04-30	Simulation	NULL	NULL	Everyone

This trigger shows that if an impossible price (a price below zero) is entered as a video game, the price is set to NULL. This is important as it makes sure that no bad price attribute data gets entered into the database.

INSERT INTO DLC(DLC_title, game_title, dev_name, price, release_date, ESRB_rating)
VALUES('Extra Pokemon Snap', 'New Pokemon Snap', 'Nintendo', -9.44, '05/07/2021', 'Everyone')

SELECT *
FROM DLC
WHERE DLC_title = 'Extra Pokemon Snap'

This trigger shows that if an impossible price (a price below zero) is entered as a DLC, the price is set to NULL. This is important as it makes sure that no bad price attribute data gets entered into the database.

INSERT INTO Game_Bundle(bundle_title, dev_name, price, release_date, ESRB_rating)
VALUES('New Pokemon Snap Expansion (Game + DLC)', 'Nintendo', -75.00, '03/24/2022', 'Everyone')

SELECT *
FROM Game_Bundle
WHERE bundle_title = 'New Pokemon Snap Expansion (Game + DLC)'

This trigger shows that if an impossible price (a price below zero) is entered as a game bundle, the price is set to NULL. This is important as it makes sure that no bad price attribute data gets entered into the database.

– For Resetting the Database Without those Trigger Test Values –
DELETE FROM Video_Game WHERE game_title = 'New Pokemon Snap'
DELETE FROM DLC WHERE DLC_title = 'Extra Pokemon Snap'
DELETE FROM Game_Bundle WHERE bundle_title = 'New Pokemon Snap Expansion (Game + DLC)'

– Prompt 5: –
– Create a function that returns the number of players –
– for a designed video game. –


```
    GO
CREATE FUNCTION fnNumPlayers(@game_title VARCHAR(50))
    RETURNS TABLE
RETURN
    (SELECT f.func_type, f.players_min, f.players_max
    FROM Functionality f
    JOIN VideoGameToFunctionality vgf
    ON f.func_id = vgf.func_id
    WHERE vgf.game_title = @game_title);
GO
```
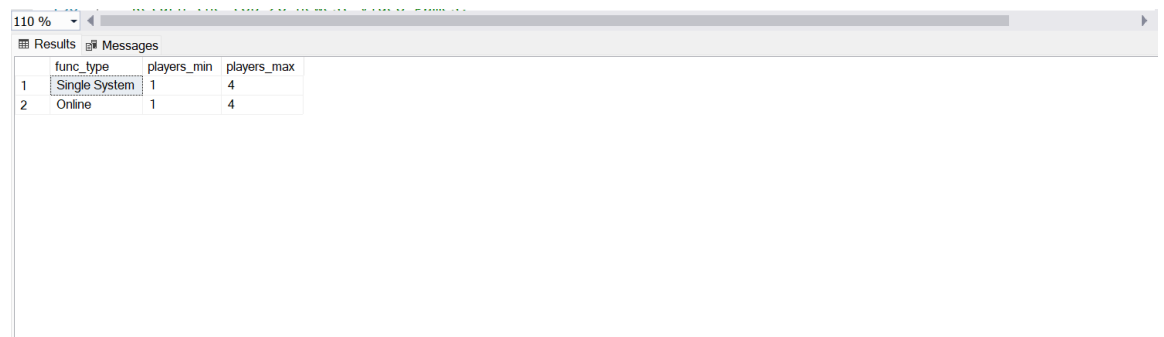

```
    SELECT *
FROM fnNumPlayers('Super Mario Bros Wonder')
```
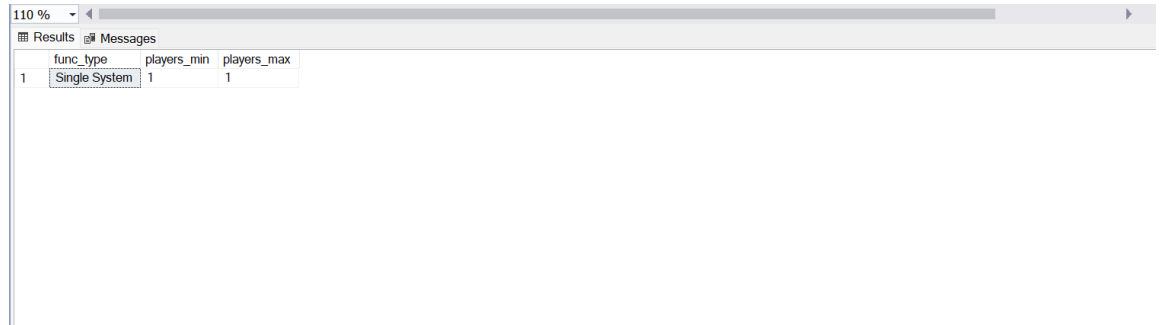
	func_type	players_min	players_max
1	Single System	1	4
2	Online	1	4

This function returns a table with the functionality or number of players for 'Super Mario Bros Wonder' for all different play styles of said video game. This is very important as consumers may be interested in which games they can play

online or with their friends.
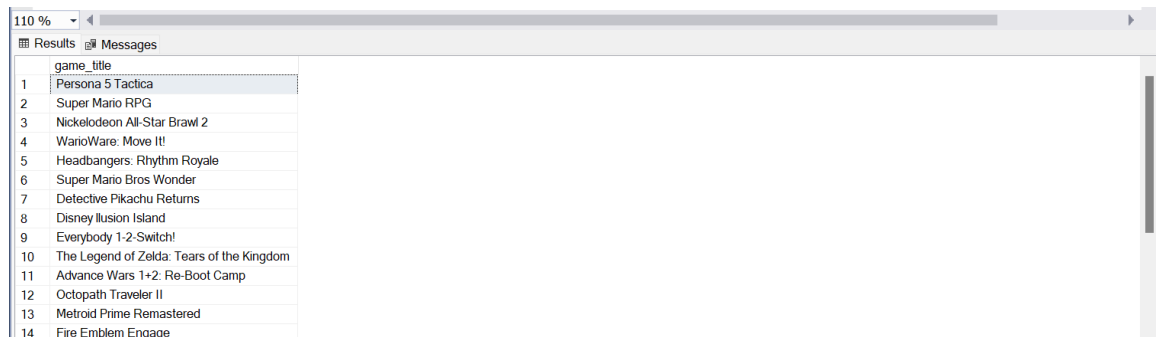
SELECT *
FROM fnNumPlayers('Super Mario RPG')

	func_type	players_min	players_max
1	Single System	1	1

This function returns a table with the functionality or number of players for 'Super Mario RPG' for all different play styles of said video game. This is very important as consumers may be interested in which games they can play online or with their friends.

– Prompt 6: –
– Return the top 20 newest video games. –
– Also, return the top 10 oldest DLCS. –

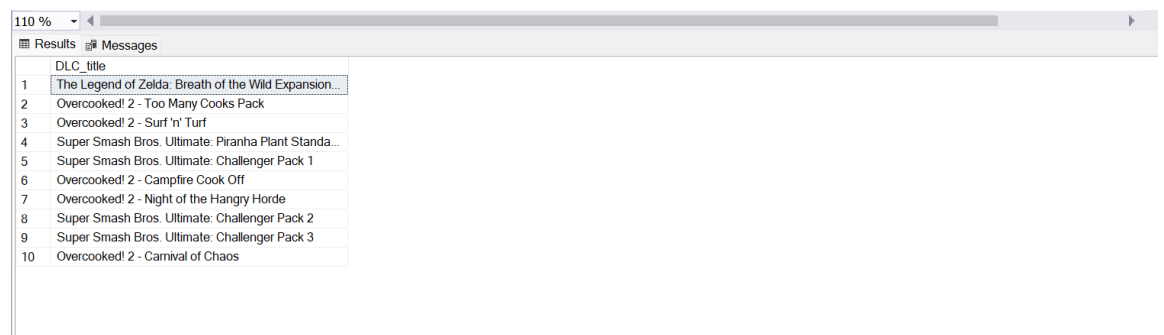SELECT TOP 20 game_title
FROM Video_Game
ORDER BY release_date DESC

	game_title
1	Persona 5 Tactica
2	Super Mario RPG
3	Nickelodeon All-Star Brawl 2
4	WarioWare: Move It!
5	Headbangers: Rhythm Royale
6	Super Mario Bros Wonder
7	Detective Pikachu Returns
8	Disney Ilusion Island
9	Everybody 1-2-Switch!
10	The Legend of Zelda: Tears of the Kingdom
11	Advance Wars 1+2: Re-Boot Camp
12	Octopath Traveler II
13	Metroid Prime Remastered
14	Fire Emblem Engage

This SQL query returns the top 20 newest video games in order of their release date. This is useful in that it allows consumers to see fresh, new games that they might be interested in with a more current fanbase.

SELECT TOP 10 DLC_title
FROM DLC
ORDER BY release_date ASC

	DLC_title
1	The Legend of Zelda: Breath of the Wild Expansion...
2	Overcooked! 2 - Too Many Cooks Pack
3	Overcooked! 2 - Surf 'n' Turf
4	Super Smash Bros. Ultimate: Piranha Plant Standa...
5	Super Smash Bros. Ultimate: Challenger Pack 1
6	Overcooked! 2 - Campfire Cook Off
7	Overcooked! 2 - Night of the Hangry Horde
8	Super Smash Bros. Ultimate: Challenger Pack 2
9	Super Smash Bros. Ultimate: Challenger Pack 3
10	Overcooked! 2 - Carnival of Chaos

This SQL query returns the top 10 oldest DLCs in the order of their release date. This is useful in that it allows consumers to see DLCs that they might have missed out on.