INST327 (0202)

Final report

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Team Number/Name: 0202 - 4

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Introduction:

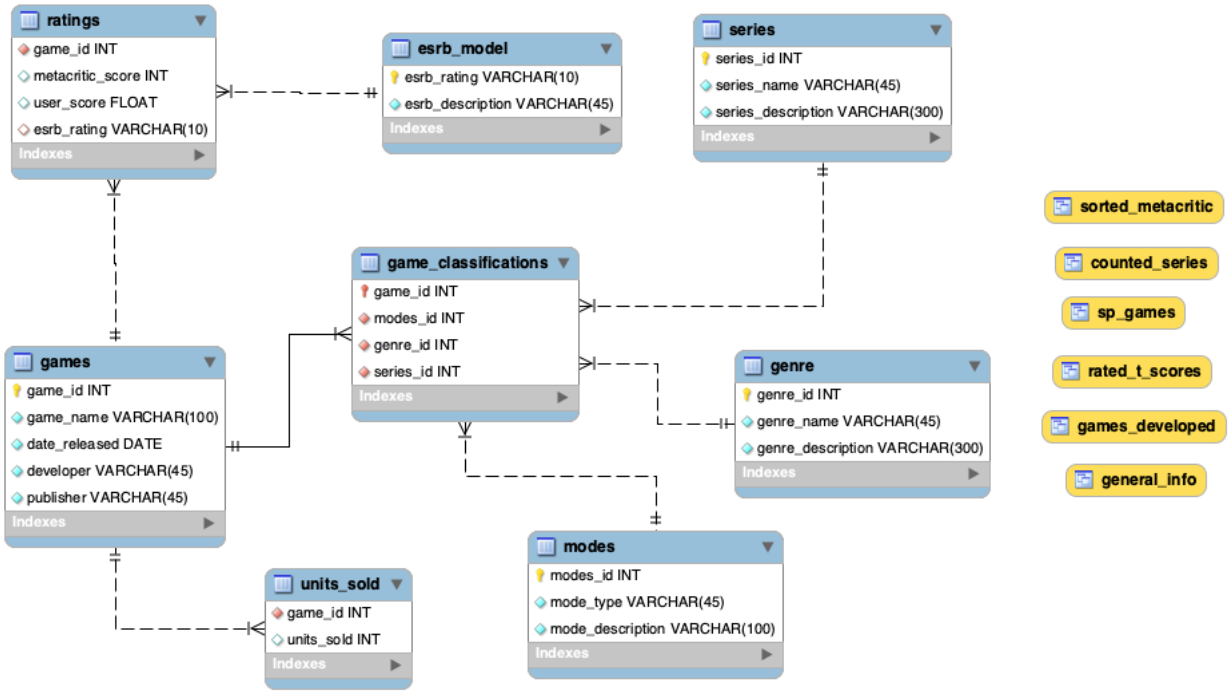
Video games have been a popular entertainment medium for the past few decades. As time went by, the graphical capabilities and methods of playing video games have been evolving swiftly. From the gesture-based Nintendo Wii to the adaptive triggers and advanced haptic technology of the PlayStation 5, video games have had a variety of different interaction types and have become increasingly more enjoyable and inclusive to all players. In 2017, Nintendo released their newest console with the unique ability to switch from a docked home console to a portable handheld device; it was fittingly named the Nintendo Switch. Since its release, there have been a multitude of Nintendo Switch exclusives like Super Smash Bros Ultimate and Pokemon Legends: Arceus. However, there isn't an easy way to discover new Switch exclusives and that's the problem our database aims to solve. Our database will include every Nintendo Switch exclusive that has already been released and will include various descriptors to help Switch owners decide whether they should purchase a game; these descriptors include things such as the game' genre, release date, reviews, whether it is a single-player or multiplayer game, etc.

Our database has seen its fair share of changes throughout our time spent working on it. We initially hoped to create a database for all video games released since the release of the original Xbox (to have a measurable range, since 2001 and forward) but we realized that would be a bit much as there have been a plethora of video games released. We then lowered the scope to only Nintendo games till we ultimately decided on Nintendo Switch games since information on Nintendo Switch games is much more readily available online as opposed to the many games Nintendo has released throughout their multi decade-long presence in the video game industry.

Database Description:

Logical Design:

Below is an Entity Relationship Diagram (ERD) for the Nintendo Switch Games database. As the diagram shows, the database revolves around the *games* table. All the tables in the database refer back to the *games* database via the *game_id* primary key and it holds key information about each game such as the game's name, its release date, the developer, and the publisher.



Sample Data:

For our sample data we continued to build off of a smaller version of the Nintendo games dataset we acquired prior to finalizing the scope of the whole project. Below is a section of the main excel sheet where we compiled all the data into, before we split each table's content into its own excel sheet for easy importation.

game_id	game_name	date_released	metacritic_score	user_score	esrb_rating	modes_id	developer	publisher	genre_id	series_id	units_sold	genre_na
1	1-2-Switch	2017-03-03	58	4.8	E10+	2	Nintendo	Nintendo	Party	N/A	3,180,000.00	Otome
2	Angelique Luminarise	2021-05-20	N/A	N/A	N/A	1	Ruby Party	KOEI Tecmo	Otome	Angelique	12,000.00	Fighting
3	Animal Crossing: New Horizons	2020-03-20	90	5.5	E	3	Nintendo	Nintendo	Simulation	Animal Crossing	37,620,000.00	Simulatio
4	ARMS	2017-06-16	77	7.1	E10+	3	Nintendo	Nintendo	Fighting	N/A	2,100,000.00	Party
5	Astral Chain	2019-08-30	87	8.9	T	3	PlatinumGames	Nintendo	Action-adventure	N/A	1,080,000.00	Action-ac
6	Astro Duel Deluxe	2017-05-30	59	6.6	E10+	1	Panic Button	Panic Button	Shoot 'em up	N/A	N/A	Shoot 'en
7	Boost Beast	2017-07-20	48	5.5	E	1	Arzest	Arc System Works	Tile-matching	N/A	N/A	Platform
8	BoxBoy! + BoxGirl!	2019-04-26	81	7.9	E	3	HAL Laboratory	Nintendo	Platform	Boxboy!	N/A	Action
9	Bowser's Fury	2021-02-12	89	8.7	E	3	Nintendo	Nintendo	Action-adventure	Super Mario	5,590,000.00	Tile-matc
10	Cadence of Hyrule	2019-06-13	85	8	E	3	Brace Yourself Games	Nintendo	Action	The Legend of Zelda	N/A	Puzzle

Views / Queries:

The below table shows what requirements each query will fulfill. Four of the queries fulfilled multiple requirements, while the games_developed and general_info queries only fulfilled one.

View Name	A	B	C	D	E
sorted_metacritic	x	x			
counted_series	x	x	x		
games_developed			x		
sp_games	x	x		x	
rated_t_series	x	x			x
general_info	x				

Changes from the original design:

Our initial plan for this project was to create a database that had a scope of all video games from consoles after the original xbox. Although after hours of searching for content we found it not feasible due to the size of the scope and difficulty in finding public datasets of the content. After collecting feedback from Team 1's peer review and comments from the teacher assistant before and after the peer review, we then decided to downscale to only Nintendo games. Although after more hours of research, we then downscaled again to only Nintendo switch video games. This in turn allowed us to narrow the scope of the project down from around 1000 entities to around 100 total unique video games that were actually added to the database. Thus allowing our group to focus on quality of work rather than the quantity of entities. As we

downscaled we had to manipulate our table choice in order to make the content make sense. A major example of this was when we took the “Sequel” table, a table that identified the sequel of each game if applicable, and switched it out with a “Series” table, a table that identifies the series a game belongs to if applicable. The reason for this change was because since we were dealing with video games that only pertained to one generation of consoles and since the Nintendo switch released in 2017, there really hasn't been enough time for games to have sequels yet to make the addition of a “Sequel” table reasonable to have. With changes to the database like a new scope and tables, we were then able to add a couple new questions to the list that the database will be able to answer. An example would be, “How many games have been released in the Pokemon series?”. This will allow us to find a multitude of information including how many games are in a series, when the first game was released, when the most recent game was released, which are most popular based on ratings, and more. As a group we have come together to think of ways we could narrow the scope. Multiple ideas were thrown into the mix, such as only Mario games, N64 games only, Nintendo games only, and Switch games. We decided Nintnedo was the most practical platform for this database and the Nintendo switch had the content we needed. We then worked together to create a redesigned CSV file and change our ERD to match the new scope of our database.

Database Ethics Considerations:

After taking our peers' suggestions and consideration of our own, we have assembled enough information to build an exceptional Nintendo Switch games database. Post the changes and the completion of the database, our stance on how we consider the concept of diversity, equity, and inclusion is the same. Although we have decided to narrow down our database from video games to just Nintendo games datasets, our database still includes information resources, allowing the capture and retention of the full social, historical, and demographic diversity. Therefore, it is important to consider every aspect of diversity in the industry. As previously noted, the male overpopulates the female in video games, based on a study mentioned in our original proposal, females are rarely the main protagonists. We were able to recognize the gender representation gap through our collection of Nintendo switch games. Most of the games with female characters have significantly low units sold and are usually not rated. This is also true for players of different ethnicities. Therefore, there is a lack of gender and race/ethic inclusivity.

Even in our new dataset of Nintendo games, this fact remains and could lead to inaccurate presentation of real time participants and compromise the accuracy and validity of the databases.

Data collection continues to be a critical part of the video game world. Unlike two generations of video game consoles back, the modern gaming system revolves around online connectivity. Many games are available online for users to play for free. Examples of top popular free online games include Destiny 2, Rocket League, Halo Infinite, Fortnite Battle Royal, etc. Although these games are “free”, the real price is the collection of user’s personal information by companies. We plan on building our database using sources and collecting video game information from the publisher, sales records, and ratings in order to provide a useful amount of information. We are not focused on user’s personal information that could pose data privacy breach threats or break a different code of ethics. Thus far, there are no data elements that lead to compromising user privacy. Our data collection method consists of finding data sets in the form of CSV files and verifying contents with reliable websites. If information from data sets become limited, we might use web-scraping techniques to acquire the remainder of the data. The data we could acquire through these methods is publicly accessible and would not come close to breaking any ethical rules on using user data.

Lessons Learned:

We believe the lessons we learned as a team have all revolved around time. From scheduling to compiling information, time has always been the dictator in what we planned to follow through with. Our team set up a solid schedule on when to meet on paper, although as college students this perfect schedule was only perfect on paper. As we progressed through the semester we set soft due dates for our team for the parts that made up each deliverable and progress report, rather than following a strict schedule. This allowed us to to not only keep a positive perspective on eachother but also not get burned out by the workload pressure from other classes and this project. The other time dependent issue we came across was the scope at the beginning. We were worried about volume instead of quality and complexity. After we figured out a database with the scope of hundreds of video games would not be possible with the time we had, and what we could leverage with other classes we then downsized the scope twice to only Nintendo Switch exclusive games. This final decision of the scope was based on a few factors. The most important was time, this downscaled scope answered what we could do to a

high degree of quality with the time given. Then the contents within this new scope allowed us to create meaningful tables with rich content.

Potential Future Work:

For future work, as far as video games are concerned, the catalog for video games is forever growing. There were plenty of titles we had hoped to have implemented in our database but they are set to release either this year or next year. Along with adding new content as it releases, something we would have liked to have done is capture and display whether each video game was capable of using motion controls. Between the Nintendo Switch and Nintendo Switch lite, the answer whether it be a yes or no, would be the deciding factor for a Switch Lite owner because they are not able to use motion controllers if not purchased separately. Another piece of information that would have been nice to add would be development costs per each game. By knowing development costs you can not only see which developer had the most support but which video game is being prioritized. These are only two possible ideas but we believe the database we created as a team is the perfect starting point for any future work about the Nintendo Switch or any general information seeking query about a specific Nintendo Switch game.