**Module 8 Option 1: Johnson Video Store**

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MIS 407-1: Database Concepts

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***Introduction***

Johnson Video Store has hired our firm, Ace Software to create a database for their video store company. Johnson Video Store is hoping to upgrade their database for quite some time, as they have been using hard copies to keep records of their videos and DVD’s that were purchased from distributors. Additionally, the company has also been using hard copies to keep track of rentals from customers, by using invoices and rental forms. However, Johnson Video Store feels the time for upgrading their database is now.

***Context***

The meeting with the proprietors of the company was fruitful. Ace Software discovered that video and DVD are both copies of a movie kept in a distinct plastic case that is rented out. Additionally, there are numerous copies of videos and DVDs of each title, which means the title should always be available. In the company’s inventory, there are thousands of videos and DVD’s which they receive at a wholesale price from several distributors. The video and DVD prices are founded on the size of their shipment and the prior business they have done with the distributors. As for the price of the individual DVD, this could vary depending on the distributor. For instance, Company X may sell Johnson Video Store four copies of the movie, The Usual Suspects, in DVDs for $1.50, which would be $6 total, while Company Y would sell four copies of the same movie for $2 per copy, in DVDs, or $8 total (“Same Product”, 2020).

Also, each video and DVD has a specific identification number that the proprietors designate in the inventor, which is on top of the distributor’s serial number for the item. Since each movie has their own specific identification number, the business owners assign this number to each movie along with the title and movie IDs. Johnson Video Store needs the information provided by the distributors via electronic catalogs, to be cataloged in the Johnson Video Store Database.

***Things to Do***

The proprietors of the company need to document when a video or DVD is rented, when it is returned, or returned late, damaged, or not rewound, in addition to taxes. The company needs to document which videos are returned passed their deadline since there late charges need to be applied to the standard fees. Sometimes, there are movies that are discounted, or types of movies that are discounted. Patrons want to rent movies centered on actors/actresses, director, movie length, genre of movie, rating, year, and how many Oscars the movie won. Furthermore, clients want to know their own rental behavior based on number of videos rented in a month, year, etc. For the company, the owners need to store basic information on their clients in the databased, based on name, address, telephone numbers.

***Rules***

A couple of rules in the database need to be established. All the rules have been set forth by the company.

Rule No. 1: is that there is no limit to the number of video and or DVD copies of a movie that the owners can have in their inventory.

Rule No. 2: Video/DVD ID numbers, movie ID numbers, and distributor ID numbers for videos, DVD, and movies are all distinct.

Rule No. 3: Each movie must be able to have an unlimited number of actors, actresses, directors, and Oscar Awards. (No other type of awards will be logged in the database.

Rule No. 4: The rental of equipment, sale of videos, DVDs, popcorn, etc. is not to be stored in the database.

Rule No. 5: Each family can own one rental card

Rule No. 6: Any products ***purchased*** can be returned within 14 days, with either a receipt or the credit card that was used to purchase the movie

Rule No. 7: Any damaged product will result in a fine, that will cost a flat fee of $25

Rule No. 8: Any items that are lost will result in a fine, that will cost a flat fee of $25

Rule No. 9: Any movie returned after the due date will result in a fine for $5/day

***ERD Diagram.***

Before creating an entity relationship diagram, entity relationship sentence pairs need to be formed. Entity pairs are important because they are statistically connected (Fang, Sarma, Yu, Bohannon, 241, 2011).

* One customer can have numerous transactions
* A transaction can have only one customer
* A transaction can have numerous DVD rent/purchase line item
* A DVD rent/purchase line item can have only one transaction
* A DVD rent/purchase line item can have only one DVD
* A DVD can have multiple DVD rent/purchase line items
* A DVD rent purchase line item can have only one movie
* A movie can have numerous DVD rent purchase line items
* A transaction may have numerous VHS rent purchase line item
* A VHS rent purchase line item can have only one transaction
* A VHS rent purchase line item must have only one VHS
* A VHS can have multiple VHS rent purchase line items
* A VHS rent purchase line item can only have one movie
* A movie can have numerous VHS rent purchase line items
* A movie can have several VHSs
* A VHS can have only one movie
* A movie can have numerous DVDs
* A DVD can have only one movie
* A movie can have one or more Director line items
* A Director line item must have only one movie
* A Director line item must have only one director
* A director can have numerous director line items
* A movie can have numerous actress line items
* An actress line item can have only one movie
* An actress can have numerous actress line items
* An actress line items can have only one actress
* A movie can have numerous actor line items
* An actor line item must have only one movie
* An actor line item must have only one actor
* An actor can have numerous actor line items
* A movie can have numerous Oscar line items
* An Oscar line item can have only one movie
* An Oscar line item can have one director
* A director can have numerous Oscar line items
* An Oscar line item can have one actor
* An actor can have numerous Oscar line items
* An Oscar line item can have one actress
* An actress can have several Oscar line items
* An Oscar line item must have only one Oscar
* An Oscar Award can have multiple Oscar line items
* A movie can have numerous DVD Distributor line item
* A DVD distributor line item can have only one movie
* A DVD distributor line item must have only one Distributor DVD
* A Distributor DVD can have numerous DVD distributor line items
* A DVD distributor line item must have only one distributor movie
* A Distributor movie can have numerous DVD distributor line items
* A DVD distributor line item can have only one distributor
* A Distributor can have numerous DVD Distributor lien item
* A movie can have numerous VHS Distributor line items
* A VHS distributor line item can have only one movie
* A VHS distributor line item can have only one Distributor VHS
* A Distributor VHS can have numerous VHS distributor line items
* A VHS distributor line item must have only one distributor movie
* A Distributor movie can have numerous VHS distributor line items
* A VHS distributor line item can have only one distributor
* A Distributor can have numerous VHS distributor line items
* A Distributor movie can have numerous Distributor DVDs
* A Distributor DVD must have only one Distributor Movie
* A Distributor movie can have several Distributor VHSs
* A Distributor VHS can have only one Distributor movie.

***ERD Model***

The following diagram is an ERD for the video store.

Diagram

Description automatically generated

The ERD model was created with Lucid Chart. ERD is a conceptual data framework and the main objective of an ERD is, it demonstrates the data structure of a real situation using entities, relationships and attributes (Shoval, Danoch, Balabam, 2004, 217). The ERD was based on the crow foot model, using M-N relationship with attributes lines (Mannino, 2019, 155). In this case, an ERD was constructed for the Johnson Video Store, using the crow foot method. Over twenty entities were created, with each entity having at least two attributes. For those attributes that required them, a foreign key (FK) and primary key (PK) were labeled.

***Creating Tables***

***Actor Line Individual Table***

***Graphical user interface, text, application

Description automatically generated***

***Client Table***

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Description automatically generated***

The previous two screenshots are the creation of the actor line individual table, and the client table. The actor line individual table was fairly straightforward. The three entities were the actor line id, which was also the primary key, and both the actor and movie IDs. All three entities were also inputted as integers in the database since they were all numbers. The second screenshot is the client table. In this table, the primary key is id. For me this table was a little bit tricky. Initially, I had phone number and zip code as a regular integer, but that kept giving me an error in PGAdmin4. The error message read along the lines of, not enough size or memory. Therefore, I decided to use a big integer, which has eight bites of storage size (TutorialsPoint, 2021).

***Insert Statements***

***Actor Insert Statement***

***Graphical user interface, text, application

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***Client Insert Statement***

***Graphical user interface, text, application, email

Description automatically generated***

The actor insert statement was fairly straightforward, and I had no issues there. Each actor had an ID, which I started with 1001 and worked my way down the number line. Next, I had put their names in the table, and I made sure it had a single quotation mark. The next table, or the client insert table, has the basic information of the clients. This table is populated with the client’s first and last name, street address, city, state, zip code, phone number and email address. This table I had trouble with. My issues centered on spacing, punctuation, and data type. I believe I had to change the data type to help fix my issues with the email and street address.

***Contents of All Tables***

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The screenshot above represent the code that was used to show all tables. However, I struggled quite a bit with trying to find the contents of all my tables. I was only able to find how to view the table names, but not look at each and every single data point.

***Retrieve all customers Names, Account Numbers, Addresses sorted by Account Number***

***Graphical user interface, text, application

Description automatically generated***

In this screenshot, there is a list of all customer names, account numbers, or in this case id’s, and addresses. All of these were sorted by id numbers. I had started off my identification numbers with one and went up to five. I populated my customer table with basketball players from the Denver Nuggets, and I created random address’s for them. I was able to retrieve all five customers, and use the order by ID function, which gave me the list of IDs in sequential order.

***Retrieve all DVD rented in last 30 days***

***Graphical user interface, text, application

Description automatically generated***

In this screenshot, I was able to sort the data by the rental end date. I selected the table that I wanted to use, which was the DVD rent purchase table. Then, I applied the order by function, which allowed me to select the rental end date. The rental start date was ordered by the rental month.

***Update a customer Name***

***Graphical user interface, text, application

Description automatically generated***

Updating a customer’s name was fairly straightforward. For this task, I chose the customer Will Barton, and I updated his last name to Will Martin. Here, all I had to do was use the update script. After that, I was able to choose which set I wanted to change, which was three, and from there I was able to change whatever I wanted.

***Delete a Specific Customer***

***Graphical user interface, text, application

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This task was fairly straightforward. Here, I was able to use the delete function. I knew that I had to delete a customer, so I used the client table. Then, the where function, allowed me to choose which customer, or which row I wanted to delete, and I chose the second row.

***Conclusion***

Johnson Video Store has hired our firm, Ace Software to create a database for their video store company. This paper demonstrates the creation of a new database for Johnson Video Store. First, Ace Software created all the Entity Relationship Pairs to help create the Entity Relationship Diagram. Tables were then created, populated, and organized, while also performing other miscellaneous tasks such as dropping rows, updating names etc. There are several lessons I learned from this project. First, as you have mentioned countless of times Professor, when debugging, it is easier to take small chunks of code, and take them one line at a time. If you take paragraphs of code, and try to debug all of them, this can get quite frustrating. Second lesson I learned, and it is a lesson I keep learning is, make sure punctuation in the code is correct. There were numerous times, when I was writing the code and the punctuation is not correct. The third lesson I learned was, when you populate the tables, go slow, and make sure it is correct. It became really hard to go back and try to edit the tables again, and I am sure there is definitely an easier way to do this. The fourth lesson I learned is practice makes perfect. Towards the end of populating the tables, I got really fast, as it became natural. Overall, this class has taught me a lot. I fairly poor with computers, and in the beginning especially, I was quite lost. I was trying to juggle school and work, and it became too much. As I became more familiar with PgAdmin4, I grew more comfortable, tasks such as creating, and populating tables became second nature. However, I still need more experience with PgAdmin4, because there were certain tasks that I really struggled with.

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***Appendix***

***Creating Tables***

***Transaction Table***

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***DVD Rent/Purchase Table***

***Graphical user interface, text, application

Description automatically generated***

***VHS Rent/Purchase Table***

***Graphical user interface, text, application

Description automatically generated***

***DVD Table***

***Graphical user interface, text, application

Description automatically generated***

***VHS Table***

***Graphical user interface, text, application

Description automatically generated***

***Movie Table***

***Graphical user interface, text, application

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***Director Line Individual Table***

***Graphical user interface, text, application

Description automatically generated***

***Actor Line Individual Table***

***Graphical user interface, text

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***Actress Line Individual Table***

***Graphical user interface, text, application

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***Director Table***

***Graphical user interface, text, application

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***Oscar Awards Table***

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***Oscar Awards Line Item Table***

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***Director Line Individual Table***

***Graphical user interface, text, application

Description automatically generated***

***Actor Line Individual Table***

***Graphical user interface, text, application

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***Actress Line Individual Table***

***Graphical user interface, text, application

Description automatically generated***