Flix2You: Maintenance, Update & Redesign

Section 004V

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I. Executive Summary

The members of StarTech have noticed that Flix2You is competing in a very tough industry where technology is constantly changing and becoming outdated. Flix2You is currently struggling to make business decisions because they do not have the course of action. If StarTech is chosen to complete this task, we will completely redesign the database to make it more up to date and efficient. In order to maximize the information available to the company StarTech has created a better database system utilizing the data that was already available for the Flix2You.

We have come up with a solution that is not only cheaper, but is also more efficient. With our plan we can take the current database and information and redesign it in a more proficient way. We will make sure it is still cost efficient and that it is still very easy to read and interpret. We understand that Flix2You has a budget that they would rather not exceed and StarTech can provide the best solution for that budget.

We are eager to go into more details about our current proposal as we feel that it is up to date and cost efficient. Our team is filled with trained professionals that are ready to teach the employees of Flix2You how to operate the database at a simple level. Flix2You must have the willingness to learn and accept our ideas so we can come together as one so that the company can provide the best quality of services to the consumers for years down the line.

At StarTech, we understand that legal considerations and security are both important factors. In order to make sure that this stuff Is accounted for we have decided that all information must remain private and is unable to be released to the public by terms and agreement. This will ensure that our business proposals will remain in secrecy with Flix2You and that there should be no further problems in the future. In terms of security, we do have a recovery plan if outside threats try to attack and/or steal our information. Our recovery plan will ensure that all attacks will be subsided whether its internal or external.

II. Project Overview

Over the last 10 years the business of online movie rental and movie streaming has skyrocketed. Many companies have noticed the high demand for this and have made very successful businesses from this. There are now mainstream companies introducing their own way of watching movies online through their subscription. For example, Amazon was primarily an online store where you could buy pretty much anything you needed. Now, there is Amazon Video where you can buy and stream movies for a low price. Competitors like this have shown that Flix2You needs to improve their level of service in order to stay in the money-making business along with the other top companies.

With competition on the rise Flix2You is currently falling behind at a very quick rate. Instore media purchasing is no longer a big thing now that all this technology is omnipresent. There are trends indicating that people would rather purchase a movie from home and stream it rather than go out to the store to buy a DVD hard copy. Flix2You has no database right now and the consultants can't even retrieve what they thought was the database therefore they have no way to view it. Because of this, Flix2You has no way of knowing who their customers are and what they want. Management is lacking, business is lacking, and consumer reports are dropping.

Flix2You has noticed that they are beginning to lose customers and came to the conclusion that their business structure is very off. Their data that they have collected has become outdated causing many issues for the customers. As population continues to grow the demand for things continue to grow as well. Meaning, more people are looking for media service providers and if Flix2You is outdated and need to be reorganized than they are going to lose a lot of potential business. The database where movie information is stored must be remodeled in order to have a better accessing experience. As we know Flix2You currently has a database with lots of information, but how are we supposed to find what we are looking for if everything is spread out and scrambled. It would be very difficult to effectively analyze the current data without remodeling it.

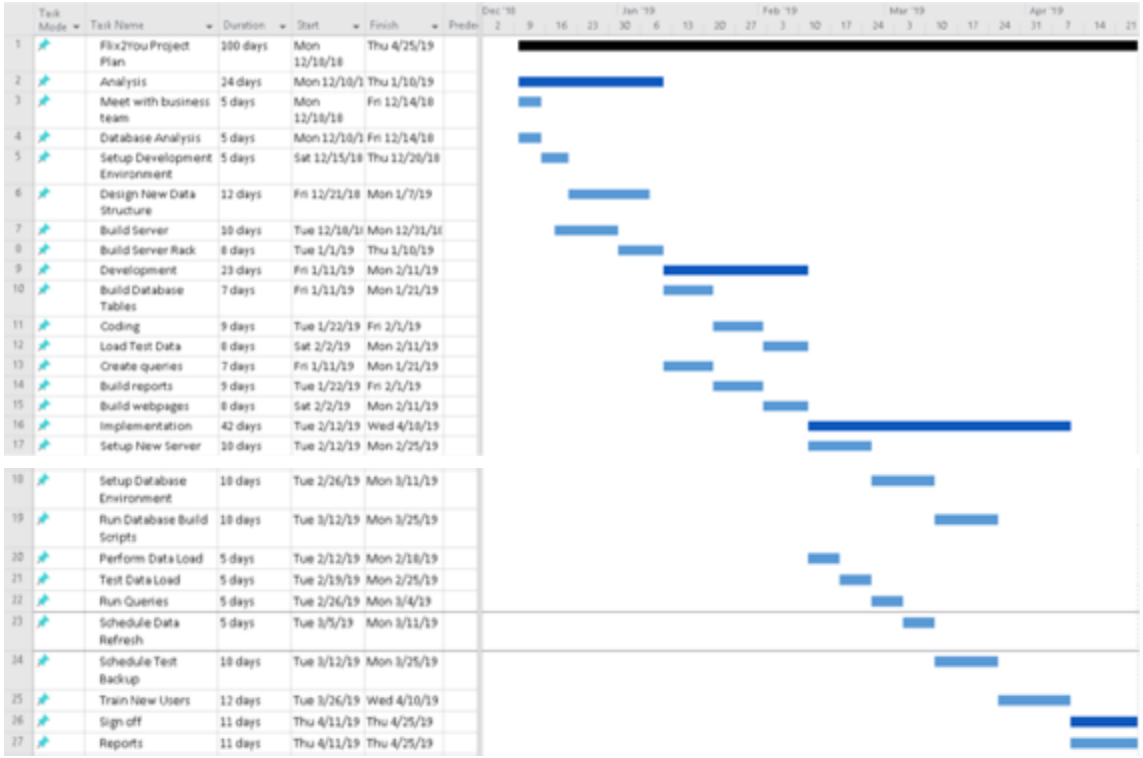
With the help of StarTech, you will have a database for Flix2You that is steady and reliable while taking into account what customers believe is best. It may be thought that it is impossible achieve a database that is friendly and cheap but it can be done without the need of upgrading any parts or hardware. Flix2You currently does not have access to their customers data. This a problem. This greatly hinders their ability to make business decisions because they cannot analyze customer analytics. In order for Flix2you to win over more customers they must understand the needs and wants of the consumers by creating dialog with them. If they find out what the consumers prefer than they can implement it into their company therefore attracting more consumers.

StarTech has a plan that will make querying through databases much faster enabling all users to quickly access and analyze customer data. By having customer data like this we can analyze common trends. These trends could be along the lines of most common ages that are viewing movies, favorite actors/actresses, how movies are being viewed, etc. This is all important data and can greatly impact sales and numbers.

If you know the needs and wants of a customer and can put out those needs and wants Flix2You will be back on track in no time.

Flix2You is on track to end up how Blockbuster did. However, we believe that with our solution we can re-evaluate the current systems flaws and turn them around to make the company gain profit in the end. We will cipher through all of the data in the database and neatly re-organize it into a better system that separates data that may not be so useful with data that may be useful. During this process I am sure we will discover where Flix2You went wrong with their current scheme and show them how to prevent this from occurring again. We will need to come up with administrative site for only the admins to have access to so that not everyone in the company will have access to all the information in the current Flix2You database.

III. Project Management



	Task Mode	Task Name	Duration	Start	Finish	Predec
1		Flix2You Project Plan	100 days	Mon 12/10/18	Thu 4/25/19	
2		Analysis	24 days	Mon 12/10/1	Thu 1/10/19	
3		Meet with business team	5 days	Mon 12/10/18	Fri 12/14/18	
4		Database Analysis	5 days	Mon 12/10/1	Fri 12/14/18	
5		Setup Development Environment	5 days	Sat 12/15/18	Thu 12/20/18	
6		Design New Data Structure	12 days	Fri 12/21/18	Mon 1/7/19	
7		Build Server	10 days	Tue 12/18/1	Mon 12/31/1	
8		Build Server Rack	8 days	Tue 1/1/19	Thu 1/10/19	
9		Development	23 days	Fri 1/11/19	Mon 2/11/19	
10		Build Database Tables	7 days	Fri 1/11/19	Mon 1/21/19	
11		Coding	9 days	Tue 1/22/19	Fri 2/1/19	
12		Load Test Data	8 days	Sat 2/2/19	Mon 2/11/19	
13		Create queries	7 days	Fri 1/11/19	Mon 1/21/19	
14		Build reports	9 days	Tue 1/22/19	Fri 2/1/19	
15		Build webpages	8 days	Sat 2/2/19	Mon 2/11/19	
16		Implementation	42 days	Tue 2/12/19	Wed 4/10/19	
17		Setup New Server	10 days	Tue 2/12/19	Mon 2/25/19	
18		Setup Database Environment	10 days	Tue 2/26/19	Mon 3/11/19	
19		Run Database Build Scripts	10 days	Tue 3/12/19	Mon 3/25/19	
20		Perform Data Load	5 days	Tue 2/12/19	Mon 2/18/19	
21		Test Data Load	5 days	Tue 2/19/19	Mon 2/25/19	
22		Run Queries	5 days	Tue 2/26/19	Mon 3/4/19	
23		Schedule Data Refresh	5 days	Tue 3/5/19	Mon 3/11/19	
24		Schedule Test Backup	10 days	Tue 3/12/19	Mon 3/25/19	
25		Train New Users	12 days	Tue 3/26/19	Wed 4/10/19	
26		Sign off	11 days	Thu 4/11/19	Thu 4/25/19	
27		Reports	11 days	Thu 4/11/19	Thu 4/25/19	

Overview

Our project is scheduled for 100 days , with this taken into consideration, the timeline was created and formed with parallel schedule expectancy. This allows for two sequences of deliverability to be progressed concurrently which should minimize the time and maintain the achievement speed of the overall project. In a series circuit if any of the tasks are not completed, the project will stop and not continue. However, this timeline is dealing with this issue, in which if one task is not completed, the project will not stop and continue to move forward.

Analysis

Analysis is the first step in the system development of any project. Meeting with the business team and analysis of the database will take place simultaneously so that examination from a technical view and a business view can progress. From a business standpoint, we will cover everything from the customer's life expectancy to the Flix2You deliverability. Programmers and data analysts will work together to determine the functional dependencies, multivalued dependencies, candidate keys, and each table's primary key. Also, they will look for possible foreign keys.

Development

Database redesign is an achievable task if the database's data is nonexistent. The true problematic situation lies where we have data, want to change the data, and make minimal impact on the data. The reality is that making major changes can have positive or negative effect. This is why we have to entirely backup the complete database and work on a comprehensive copy of the functional system. By editing the copy, we can make changes without worry. Tables, coding, testing, queries, and reports will be cycled through the development of the new database. Potential database driven web pages and their querying abilities will start to develop exploiting SQL and PHP.

Implementation

The implementation of the redesigned database will involve an overall training through presentations as well as hands on training with each employee. The training will comply with all different levels within the hierarchy including programmers, developers, administrators, managers, and data processing professionals. The training will provide a comprehensive introduction to Microsoft SQL Server 2012. We will provide support and teach how to write SQL queries to retrieve and manipulate data, secure and backup databases with Management Studio, integrate SQL Server from Microsoft Office, and how to transform data into useful and strategic information.

Hands-on experience will include constructing tables and protecting data with constraints, retrieving and modifying data with SQL, moving data with the import/export utility, manage SQL Server security and experience with designing reports.

Project Resources and Budget

Name	Role	Cost	Projected Hours	Extended Cost
Jack	Project Manager	$45/hour	560	$25,200
Ben	Database Administrator	$23/hour	560	$12,880
Paul	Data Analyst	$20/hour	560	$11,200
Evan	Programmer	$21/hour	560	$11,760
				$61,040

The role of a Project Manager is to lead his team in completing the task at hand. He should know about the people on his team and what their capabilities are. Knowing those capabilities, he should assign specific tasks to certain individuals based on their skills. Scheduling is by far the most important task he will undertake. He needs to know how long it will take to complete certain tasks and when the deadline of the project would be.

The role of a Database Administrator is to design, create and maintain database management systems. He focuses on researching and analyzing the best methods of modifying the database to suit specific user requirements. Database Administrators are crucial as they build and keep track of the databases which store customer information, inventory and other transaction data.

The role of a Data Analyst is to perform a variety of tasks related to collecting, organizing and interpreting statistical information. He should present data in the form of charts, graphs and tables. He then uses that data for designing and developing relational databases for an organization. Data Analysts are acquired by companies to help achieve their business goals, expand their corporation or to enhance their business practices.

The role of a Programmer is to create programs for business applications. He uses programming languages such as Visual Basic or Java to create software that performs a specific tasks. In most cases, the Programmer designs a graphical user interface (GUI) so that users can run the software through easy and menu-oriented modules. The GUI acts as a translator between the user and underlying software code created by the Programmer.

Component	Detail	Price	Quantity	Extended Price
Server	Dell PowerEdge R620	$2,160	3	$6,480
Server Rack	Dell Enclosure Rack	$760	1	$760
Software	Microsoft SQL Server 2012 Enterprise	$10,000	1	$10,000
Dashboard	Klipfolio	$1,995 + $15/month	1	$1,995 + $15/month
External HD	Buffalo Link Station 420 6TB	$500	4	$2,000
Backup	Guardian Maximus Raid 1 Quad Interface	$420	2	$840
Router	Cisco Systems 2911	$1000	2	$2,000
Remote Backup	Arvixe Business Class Pro	$35/month	1	$35/month
				$24,075 + $50/month

Total Project Budget: $85,115 + $50.00/month

IV. User Analysis

Overview

We decided to let each group of people in their department view what is only necessary. This will ensure that all operations will remain secure. Since our plan is to fix the current database using normalization, we will give general ideas of which each group would be in charge of.

Marketing

The marketing team will view all parts of the database that have to do with customers and their purchasing activity. They will be able to calculate reports and help with the decisions in the future.

Customers

Customers will be restricted to only being allowed to browse, purchase or rent the videos that the company has to offer, as well as make a profile and customize it. They will be able to access their rental history and videos that may be similar to ones they have already rented as well.

Customer Service

Customer Service is the department in which the staff will be able to provide help and guidance to customers who may have concerns or problems. They will be able to address problems that a customer may have that concerns payment, shipping and overall difficulties, as well as modify tables that have to do with a customer's information. They will not be allowed to make new tables. However, they are allowed to view all tables that have to do with the customer's transactions, such as payment methods and dates of the rentals.

Human Resources

Human Resources is the department in which the staff securely maintain employee information in our database and will also be needed to address the problems that an employee may be concerned with. They will be allowed to view all employee information and make changes as needed.

Operations

While the Customer Service will be able to help a customer with shipping and transaction problems, the Operations employees will be responsible for the actual process of transactions. They are in charge of billing the customers and shipping out the rentals. Because billing and shipping are two completely different processes, we have decided to divide them up. People in charge of the shipping department will only view customer's information along with the movies they want to rent. They will also have to keep track of the customer queue, which will tell the order in which each user has rented a movie. The billing department will view and modify a customer's information, their transactions, and their accounts, but will not have the ability to create tables.

Information Technology

Information Technology will be in charge of the day to day operations of the corporation and will be able to maintain the daily functions of the database. Because this group will have a very broad job position, access to the database will be granted by the database administrator and will be assigned certain parts of the database depending on the job.

Management

The management department will be just under the rank of the database administrator, and as such, will be able to view and edit all tables in the database including personal and sensitive information.

Database Administrator

There is only one database administrator to ensure that fewer errors will be added into the database due to confusion. He has access to all parts of the database which includes being able to edit, view and create tables. He also allows access to other departments in some instances, such as deciding which parts of the database the IT department will be able to access in order to successfully complete the job. He will also be able to address concerns or problems that the other departments have.

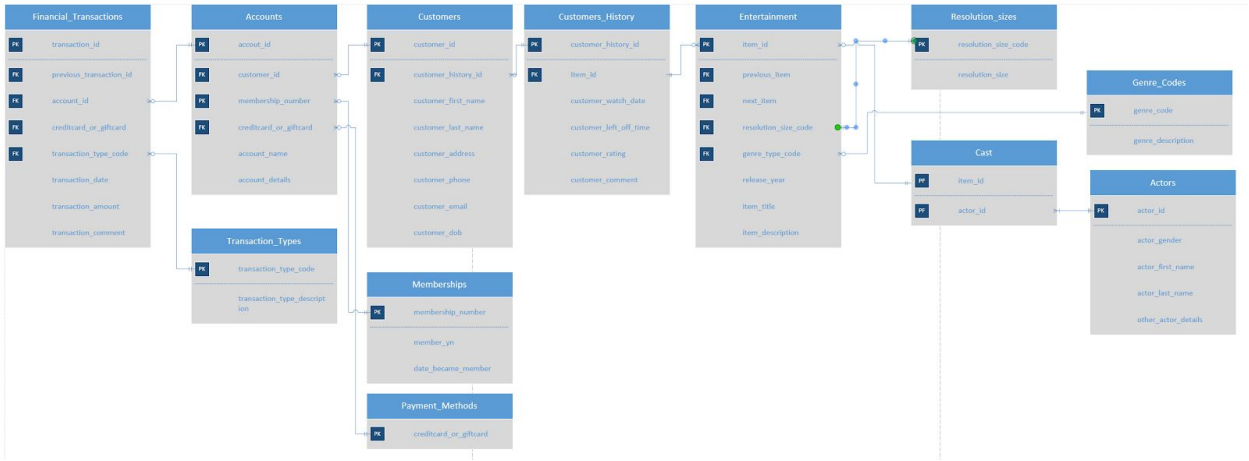
V. Organization of Data

Database Proposal

Based on our transition from a physical business to a digital business we have the ability to remove many of the tables that we had previously establish, this refers more specifically to the video_store table, and condition codes. This information can be either discarded fully from the database as we aren't interested in this aspects anymore and don't contribute to our reports or analysis of user video preferences. While this are the most extreme modification in the database we will still be altering other facets of the ERD. We will be altering payment method to hold all credit cards and gift cards to be use in transaction and to allow for either splitting of the service cost or to have a backup payment method. format_types will be changed to resolution_sizes. rental_status_code will also be deleted and implemented in a different way, we will be implementing this by altering the attribute in customers named as "member_yn" by moving all the member related information to accounts as it may hold multiple customers and also has our new payment method as described as above. The final and biggest alteration will be the deleting and replacement of customer_rental with customers_history, which will hold item_id ,customer_id, rating, watch_date, left_off_time, and comments and customer_history primary key will be histroy_id and will be a foreign key in customers as all of this information will be customer based and allow us to make a system for recommendation. Another minor alteration that will be done with movies is to change it to "entertainment" and will hold both series, movies, and franchises and will hold previous_item and next_item to allow for continuous watching both series, movie franchises and in the future if expansion is needed for any other type of serialized content such as podcasts, albums and etc.

Another aspect of the database that we will be changing is the normalization from 2nd normal form to the third normal form to maintain integrity of our database and we will create denormalized version every amount of hours to allow for users to get non critical information such as rating, and view count. While decreasing the load on the overall server and create just-in-time denormalization for time critical reports such as business oriented decisions, which genre is in demand, plot types and membership numbers. The ERD is already in the second normal form due to the fact that all of the tables only have one primary key and we can establish that it is in the third normal form because only relevant data to each table is being held and any transitive entities have been moved to another table and used a foreign key, this can be seen in the modification of customers which was split into membership and customers and can also be seen with entertainment were we removed all the entities related to the physical attributes or business attributes such as amount of stock, sales and condition, leaving only direct data such as release year, cast, title and the description and other data related to the digital copy of the movie, series or show.

New Entity Relationship Diagram



SQL Commands

```
/* Creating the TABLES*/
/* financial_transactions */
CREATE TABLE financial_transactions(
        transaction_id int IDENTITY(1,1) NOT NULL,
        previous_transaction_id int NULL,
        account_id int  NOT NULL,
        creditcard_or_giftcard real NULL,
        transaction_type_code int NULL,
        transaction_date date NULL,
        transaction_amount money NULL,
        transaction_comment varchar(512) NULL);

/* accounts */
CREATE TABLE accounts(
        account_id int IDENTITY(1,1) NOT NULL,
        customer_id int NOT NULL,
        membership_number int NOT NULL,
        creditcard_or_giftcard real NULL,
        account_name char(20) NULL,
        account_details varchar(512) NULL);

/* Transaction_Types */
CREATE TABLE transaction_types(
        transaction_type_code int IDENTITY(1,1) NOT NULL,
        transaction_type_description varchar(512) NULL);

/* customers */
CREATE TABLE customers(
        customer_id int IDENTITY(1,1) NOT NULL,
        customer_history_id int NOT NULL,
        customer_first_name char(20) NOT NULL,
        customer_last_name char(20) NOT NULL,
        customer_address varchar(255) NULL,
        customer_phone real NULL ,
        customer_email varchar(255) NOT NULL,
        customer_dob date  NULL);

/* memberships */
CREATE TABLE memberships(
        membership_number int IDENTITY(1,1) NOT NULL,
        member_yn char(1) NULL,
        date_became_member date NULL);

/* customers_history*/
CREATE TABLE customers_history(
        customer_history_id int IDENTITY(1,1) NOT NULL,
        item_id int NOT NULL,
        customer_watch_date date NULL,
        customer_left_off_time time NULL ,
```

```
		customer_rating char(1) NULL,
		customer_comment varchar(512) NULL);

/*entertainment */
CREATE TABLE entertainment(
		item_id int IDENTITY(1,1) NOT NULL,
		previous_item int NULL,
		next_item int NULL,
		resolution_size_code int NULL,
		genre_type_code int NOT NULL,
		release_year date NULL,
		item_title varchar(128) NOT NULL,
		item_description varchar(512) NULL);

/* resolution_sizes */
CREATE TABLE resolution_sizes(
		resolution_size_code int IDENTITY(1,1) NOT NULL,
		resolution_size char(20) NULL);

/* genre_codes */
CREATE TABLE genre_codes(
		genre_code int IDENTITY(1,1) NOT NULL,
		genre_code_description char(20) NULL);

/* item_cast */
CREATE TABLE item_cast(
		item_id int NOT NULL,
		actor_id int NOT NULL);

/* actors */
CREATE TABLE actors(
		actor_id int IDENTITY(1,1) NOT NULL,
		actor_gender char(1) NOT NULL,
		actor_first_name char(20) NOT NULL,
		actor_last_name char(20) NOT NULL,
		other_actor_details varchar(512) NULL);

/* payment_methods */
CREATE TABLE payment_methods(
		creditcard_or_giftcard real DEFAULT(0) NOT NULL
		);

/*Primary Keys*/

ALTER TABLE financial_transactions ADD CONSTRAINT pk_financial_transactions PRIMARY KEY (transaction_id);
ALTER TABLE accounts ADD CONSTRAINT pk_accounts PRIMARY KEY (account_id);
ALTER TABLE transaction_types ADD CONSTRAINT pk_transaction_types PRIMARY KEY (transaction_type_code);
ALTER TABLE customers ADD CONSTRAINT pk_customers PRIMARY KEY (customer_id);
ALTER TABLE memberships ADD CONSTRAINT pk_memberships PRIMARY KEY (membership_number);
ALTER TABLE customers_history ADD CONSTRAINT pk_customers_history PRIMARY KEY (customer_history_id);
ALTER TABLE entertainment ADD CONSTRAINT pk_entertainment PRIMARY KEY (item_id);
ALTER TABLE resolution_sizes ADD CONSTRAINT pk_resolution_sizes PRIMARY KEY (resolution_size_code);
ALTER TABLE genre_codes ADD CONSTRAINT pk_genre_codes PRIMARY KEY (genre_code);
ALTER TABLE actors ADD CONSTRAINT pk_actors PRIMARY KEY (actor_id);
Alter TABLE payment_methods ADD CONSTRAINT pk_payment_methods PRIMARY KEY (creditcard_or_giftcard);

/* Foreign Keys */
/*financial_transactions*/
ALTER TABLE financial_transactions ADD CONSTRAINT fk_financial_transactions_previous_transaction_id FOREIGN KEY
(previous_transaction_id) REFERENCES financial_transactions (transaction_id);
ALTER TABLE financial_transactions ADD CONSTRAINT fk_financial_transactions_account_id FOREIGN KEY (account_id)
REFERENCES accounts (account_id);
ALTER TABLE financial_transactions ADD CONSTRAINT fk_financial_transactions_creditcard_or_giftcard FOREIGN KEY
(creditcard_or_giftcard) REFERENCES payment_methods (creditcard_or_giftcard);
ALTER TABLE financial_transactions ADD CONSTRAINT fk_financial_transactions_transaction_type_code FOREIGN KEY
(transaction_type_code) REFERENCES transaction_types (transaction_type_code);
/*accounts*/
ALTER TABLE accounts ADD CONSTRAINT fk_accounts_customer_id FOREIGN KEY (customer_id) REFERENCES customers
(customer_id);
```

```
ALTER TABLE accounts ADD CONSTRAINT fk_accounts_membership_number FOREIGN KEY (membership_number)
REFERENCES memberships (membership_number);
/*customers*/
ALTER TABLE customers ADD CONSTRAINT fk_customers_customer_history_id FOREIGN KEY (customer_history_id)
REFERENCES customers_history (customer_history_id);
/*customers_history*/
ALTER TABLE customers_history ADD CONSTRAINT fk_customers_history_item_id FOREIGN KEY (item_id) REFERENCES
entertainment (item_id);
/*entertainment*/
ALTER TABLE entertainment ADD CONSTRAINT fk_entertainment_previous_item FOREIGN KEY (previous_item) REFERENCES
entertainment (item_id);
ALTER TABLE entertainment ADD CONSTRAINT fk_entertainment_next_item FOREIGN KEY (next_item) REFERENCES
entertainment (item_id);
ALTER TABLE entertainment ADD CONSTRAINT fk_entertainment_resolution_size_code FOREIGN KEY (resolution_size_code)
REFERENCES resolution_sizes (resolution_size_code);
ALTER TABLE entertainment ADD CONSTRAINT fk_entertainment_genre_type_code FOREIGN KEY (genre_type_code)
REFERENCES genre_codes (genre_code);
/*item_cast*/
ALTER TABLE item_cast ADD CONSTRAINT fk_item_cast_item_id FOREIGN KEY (item_id) REFERENCES
entertainment(item_id);
ALTER TABLE item_cast ADD CONSTRAINT fk_item_cast_actor_id FOREIGN KEY (actor_id) REFERENCES actors (actor_id);
```

SQL Sample Data

```
INSERT INTO memberships VALUES ('y','20050211');
/*INSERT INTO memberships VALUES ('y','20100423');*/
INSERT INTO memberships VALUES ('n','20180827');

INSERT INTO payment_methods VALUES (0000000000000000);
INSERT INTO payment_methods VALUES (1111111111111111);

INSERT INTO actors VALUES ('m', 'Robert', 'Downey', 'Tony Stark / Iron Man');
INSERT INTO actors VALUES ('m','Chris', 'Hemsworth', 'Thor');
INSERT INTO actors VALUES ('m','Mark', 'Ruffalo', 'Bruce Banner / Hulk');
INSERT INTO actors VALUES ('f','Lady', 'Gaga', 'Ally');
INSERT INTO actors VALUES ('m','Bradley', 'Cooper', 'Jack');
INSERT INTO actors VALUES ('m','Sam', 'Elliott', 'Bobby');
INSERT INTO actors VALUES ('m', 'Craig', 'Nelson', 'Bob Parr / Mr. Incredible (voice)');
INSERT INTO actors VALUES ('f', 'Holly', 'Hunter', 'Helen Parr / Elastigirl (voice)');
INSERT INTO actors VALUES ('f', 'Sarah', 'Vowell',  'Violet Parr (voice)');

INSERT INTO transaction_types VALUES ('Payment');
INSERT INTO transaction_types VALUES ('Deposit');
INSERT INTO transaction_types VALUES ('Refund');

INSERT INTO genre_codes VALUES ('Action & Adventure');
INSERT INTO genre_codes VALUES ('Comedy');
INSERT INTO genre_codes VALUES ('Documentary');
INSERT INTO genre_codes VALUES ('Drama');
INSERT INTO genre_codes VALUES ('Education');
INSERT INTO genre_codes VALUES ('Foreign');
INSERT INTO genre_codes VALUES ('Horror');
INSERT INTO genre_codes VALUES ('Romance');
INSERT INTO genre_codes VALUES ('Thriller');
INSERT INTO genre_codes VALUES ('Western');

INSERT INTO resolution_sizes VALUES ('360p');
INSERT INTO resolution_sizes VALUES ('720p');
INSERT INTO resolution_sizes VALUES ('1080p');
INSERT INTO resolution_sizes VALUES ('1440p');
INSERT INTO resolution_sizes VALUES ('4k');

INSERT INTO entertainment VALUES (NULL,NULL,3,1,'20180515 00:00:00 am','Incredibles 2', 'Bob Parr (Mr. Incredible) is left to
care for the kids while Helen (Elastigirl) is out saving the world.');
INSERT INTO entertainment VALUES (NULL,NULL,3,3,'20180805  00:00:00 am','A Star Is Born', 'A musician helps a young singer
find fame, even as age and alcoholism send his own career into a downward spiral.');
INSERT INTO entertainment VALUES (NULL,NULL,5,1,'20180327  00:00:00 am','Avengers: Infinity War','The Avengers and their
allies must be willing to sacrifice all in an attempt to defeat the powerful Thanos before his blitz of devastation and ruin puts an end
to the universe.');
```

```
INSERT INTO item_cast VALUES (1,1);
INSERT INTO item_cast VALUES (1,2);
INSERT INTO item_cast VALUES (1,3);

INSERT INTO item_cast VALUES (2,4);
INSERT INTO item_cast VALUES (2,5);
INSERT INTO item_cast VALUES (2,6);

INSERT INTO item_cast VALUES (2,7);
INSERT INTO item_cast VALUES (2,8);
INSERT INTO item_cast VALUES (2,9);

INSERT INTO customers_history VALUES (1,'20180515 00:00:00 am','00:00:00',10, 'great movie');
INSERT INTO customers_history VALUES (2,'20180805  00:00:00 am','00:00:00',6, 'alright had hopes for the main character');

INSERT INTO customers VALUES (1, 'Ozymandias','Folklore', '123 fake street, MI 16802, USA', 9999999999,
'fakeemail@fakeemail.com', '19970211 00:00:00 am');
INSERT INTO customers VALUES (2, 'Jeriko', 'SMith', '359 Alsnulf Blvd, FL 32044, USA', 9999990000, 'realemail@fakeemail.com',
'19981211 00:00:00 am');

INSERT INTO accounts  VALUES (1,1,1,'Folklore','one customer within the account');
INSERT INTO accounts  VALUES (2,2,2,'Smith','one customer within the account');

INSERT INTO financial_transactions VALUES (NULL,1,0000000000000000,1,'20180324',10,'First Payment, Autopay Enabled');
INSERT INTO financial_transactions VALUES (NULL,2,1111111111111111,2,'20180424',10, 'Forgot to remove free trial');
INSERT INTO financial_transactions VALUES (1,1,0000000000000000,1,'20180424',10, 'Auto Payment successful');

SELECT * FROM accounts;
SELECT * FROM actors;
SELECT * FROM customers;
SELECT * FROM customers_history;
SELECT * FROM entertainment;
SELECT * FROM financial_transactions;
SELECT * FROM genre_codes;
SELECT * FROM item_cast;
SELECT * FROM memberships;
SELECT * FROM payment_methods;
SELECT * FROM resolution_sizes;
SELECT * FROM transaction_types;
```

VI. Database Administration

Database Administration

A database administrator (DBA) directs and performs activities related to maintaining a successful database environment. These responsibilities include designing, implementing, and maintaining the database system; establishing policies and procedures pertaining to the management, business rules, security, maintenance, and use of the database management system.

Our Database administrator needs many hardware and software skills. The hardware skills include an understanding of database: operations, security, organization, and design. The software skills include knowledge of SQL, XML, CGI, Java, R, TCP/IP, Python, firewalls, and web servers and many other technologies. The Database Administrator also needs complete knowledge of the Flix2You infrastructure. They need to know who has access to what sections of the database, they need to all changes being made to the database, how it is organized, and the efficiency level it is running at. They must also know how the database is being secured and who has the top level rights in securing that database.

In our Flix2You database, the administrator will lead the database operation by delegating administrative permissions to certain databases to ensure only those who need direct access to a database have it. Rather than giving everyone access to all databases. Databases will be clustered based on similarities in usage (ie.user name and user ID's) and who needs access to them, for example, the customer's financial analytics team may need access to information such as the Monthly and Quarterly revenues, and the numbers of downloads, rents, and sales that were made. And the advertising department may need access to areas that discuss the most popular movie titles, ratings, and what days are common to rent movies, to create better-targeted commercials. Our database clustering system in addition to our administrative delegation will ensure that the advertising and financial have access to everything they need to see and nothing more. We will also use the Advanced Encryption Standard to secure our databases, this security plan is explained more in detail in the next section.

Database Backup and Recovery

Flix2You will work with to reduce the chances of security breaches outside of their control and keep costs lower for the investors and customers. We will store our backups in an off-site warehouse that will act as a huge external hard drive this will be in an undisclosed protected location in the midwest. This will be mildly costly due to the fact that land in the midwest is cheap, the majority of the costs will be on the security of the facility but will be worth the cost for our customer's safety. Flix2You should store its backup and recovery strategies on a secure server that can only be accessed by certain individuals on the cybersecurity team. We will protect our data using the AES method, Advanced Encryption Standard, this is the most secure form of encryption, often used by the US government to protect classified information and will most definitely keep our customer's data safe from outside breaches. This process works by using "a block cipher, which encrypts data one fixed-size block at a time, unlike other types of encryption, such as stream ciphers, which encrypt data bit by bit" ("Which Encryption ... most secure?", 2012). This method keeps the data nearly 100% secure the only liability

will be in a password the is only given to heads of cybersecurity. Monthly updates will be used to update our security system and address technical issues the occur during the usage of the site. These updates will be created by our IT team and made to specifically address the issues the customer's experience and add any new features to improve customer experience. To find these issue we will send out a monthly survey asking users what issues they have experienced and if they felt the last update got rid of their bugs.

Database Security

We will secure our database through several different layers of security on both the customer and the employee end. On the customer's end to ensure that only those who are intended to have login information are accessing the account, we will require the customer to have Two-Factor Identification and use a third party passcode manger to keep their information safe. Two-factor identification is the process of having a user login into the Flix2You database and then verifying it by having the user enter a code sent to their cell phone or email. We will require our customers to do two-factor identification every time they log into Flix2You on a new system. The second measure of customer security we will be taking is partnering with a password management company to ensure their password is secure. We will recommend that they use this service for all of their passwords due to its high security. A password manager allows the user to enter a single password, stores it in a secure database when the customer needs to login into Flix2You they sign into the password manager and then copy the password given to them into Flix2You. This allows method will ensure our user's passwords have the maximum security.

Database Privacy

Our customer's data will be used exclusively by Flix2You for the purpose of enhancing user experiences. This information will not be sold or given away. We will use our customer's data in our predictive analytics to recommend movies to our customers based on what as previously watched, the time and dates certain movies are watched, and the number of times a user has viewed a movie, to predict to the user what other movies they should try out. Before using the Flix2You software, the customer must agree to an End User Licence agreement explaining to them how their data will be used and how it will be protected in greater detail. To further ensure that there will be no breaches of privacy on our end, employees will only have access to the data they need. The data will just be facts and figures with no personally identifying information available. Customer service workers for Flix2You when dealing with customers will have to ask for their account numbers to view any information on their account, this ensures that they cannot access a customer's account without permission. Even then confidential information such as credit card numbers, the account number will not be fully visible only the last 4 digits of each will be viewable by the customer service agent.

Legal Issue

Since our Flix2You database deals with sensitive customer information both parties meaning the Flix2You employees and the Flix2You customers will have to sign a contract. Customers will have to sign a Terms and Conditions Agreement letting them

exactly how their data will be used and giving Flix2You permission the access data before being able to use the service. In addition, the site will contain a disclaimer under the accounts section once again warning the user that data may be access by Flix2You for recommendation analytics for other movies on the service but will not be sold for profit. Moreover, the employees will have to sign a contract stating the will not sell, misuse, breach or be complicit in the breaching of customer data. If caught, they risk legal action, being taken against them by both the customer and Flix2You and jail time if convicted.

Dataload

We will create a new read-only database that will pull information from the existing operational database. The database will be normalized to allow it to run with more efficiency. A read-only database is one where data cannot be edited by the user. This database design will prevent data breaches and tampering, keeping the customer's information safer. Editing rights for the database will be given to the database administration team. Since most employees can only read but not edit the data, information received will be sent to a separate repository that will update information overnight and send the changed to database administration team to approved in the morning keeping the repository refreshed on daily basis.

VII. Database Dashboard and Analytics

For security reasons, we will not be displaying any actual Flix2You data in this proposal, but we have inserted data to simulate what a report from this database dashboard would look like. This database will be available from the SQL server, which allows you to link your data to an Excel worksheet by accessing the 'Data' tab from the Excel app. From there, you click on 'Get Data' and access the appropriately named database. Once you click on that, it will open up a 'Connect to Database Server' dialog box, in which you type in the server name as well as your credentials, which will only be accessible to the managerial employees of Flix2You. All other credentials will be locked out from the database upon entering their credentials.

Once you connect and access the navigator, you may select the database you intend to work with and click on 'Load' to transfer the data from there to the excel sheet. You may also create pivot charts with this strategy by clicking on 'load to' instead of 'Load,' then clicking on 'PivotChart.' It will then give you the option to choose which data columns you wish to include in this chart. While there are many other functions that our dashboard will allow you to access by being linked to Excel, these were some the basics (Joseidz, 2017). The dashboard also allows to export data to PDF. This will be accessible from the header of the dashboard, where you may click on 'File' then 'Export.' then click 'PDF' from the drop-down menu. All that this requires is selecting the desired columns and SQL will release the needed commands. However, in order to export the report it will require inputting your credentials again to ensure that authorized personnel are handling this information. In addition, the database dashboard will also be accessible on table devices such as iPads or Androids.

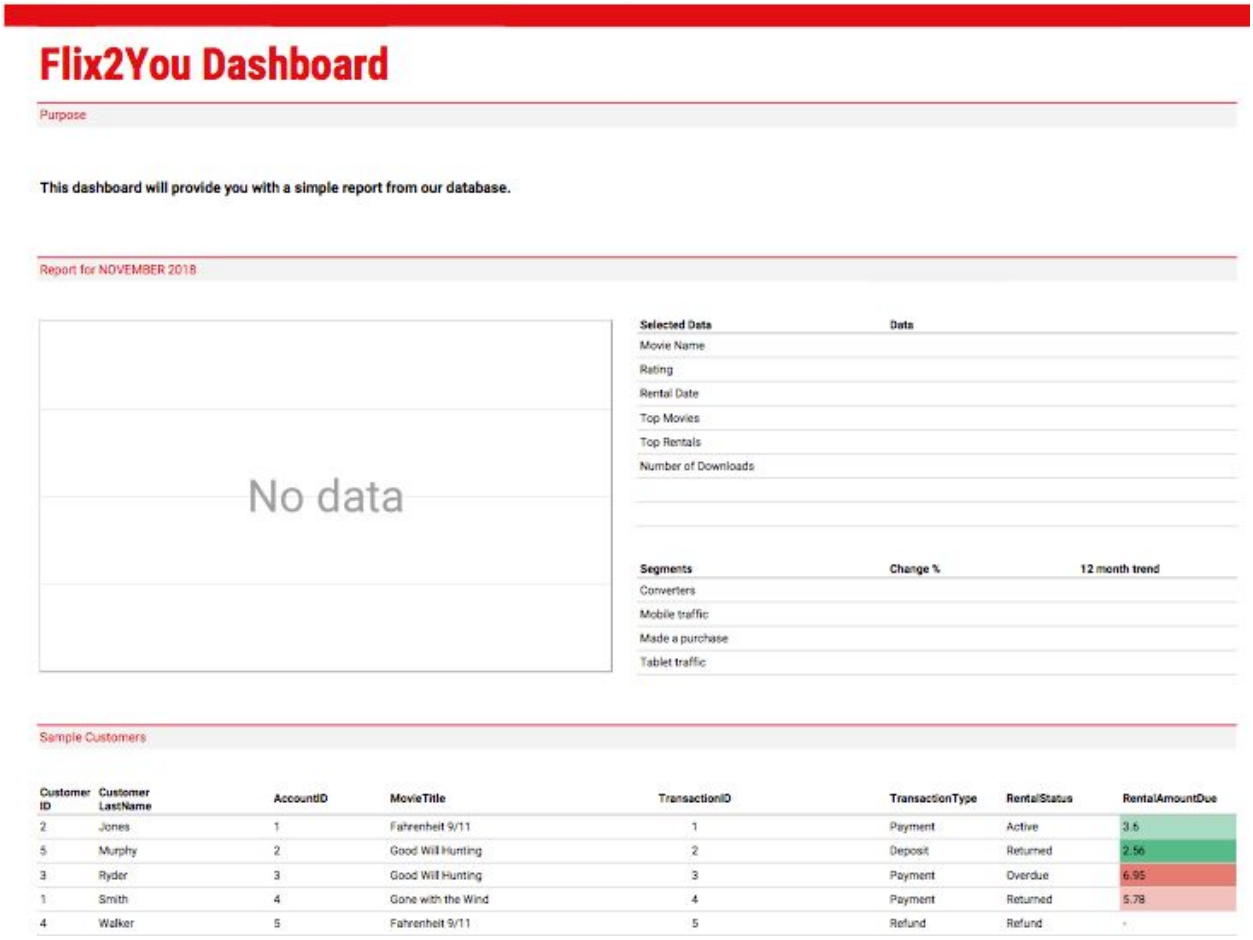
In our example report, we're including information such as customer name, their account identification, movie identification, transaction identification, transaction type, rental status code, and rental amount due. We have included an example command.

```
SELECT customers.customer_id AS CustomerID, customer_last_name AS
CustomerLastName, account_id AS AccountID, movie_title AS MovieTitle,
transaction_id AS TransactionID, transaction_type_description AS TransactionType,
rental_status_description AS RentalStatus, rental_amount_due RentalAmountDue
FROM customers, customer_rentals, financial_transactions, movies,
transaction_types, rental_status_code WHERE
customer_rentals.customer_id = financial_transactions.account_id ORDER BY
customer_last_name ASC
```

```
CustomerID  CustomerLastName              AccountID   MovieTitle     TransactionID
TransactionType RentalStatus RentalAmountDue
----------- ------------------------------ ----------- ----------- ------------ --------------- ----------------
-------------------------------------
2           Jones                          1           Fahrenheit 9/11          1           Payment
Active              3.60
```

5	Murphy	2	Good Will Hunting	2	Deposit	Returned 2.56
3	Ryder	3	Good Will Hunting	3	Payment	Overdue 6.95
1	Smith	4	Gone With the Wind	4	Payment	Returned 5.78
4	Walker	5	Fahrenheit 9/11	5	Refund	Returned

(5 row(s) affected)



Flix2You Dashboard

Purpose

This dashboard will provide you with a simple report from our database.

Report for NOVEMBER 2018

No data

Selected Data	Data
Movie Name	
Rating	
Rental Date	
Top Movies	
Top Rentals	
Number of Downloads	

Segments	Change %	12 month trend
Converters		
Mobile traffic		
Made a purchase		
Tablet traffic		

Sample Customers

Customer ID	Customer LastName	AccountID	MovieTitle	TransactionID	TransactionType	RentalStatus	RentalAmountDue
2	Jones	1	Fahrenheit 9/11	1	Payment	Active	3.6
5	Murphy	2	Good Will Hunting	2	Deposit	Returned	2.56
3	Ryder	3	Good Will Hunting	3	Payment	Overdue	6.95
1	Smith	4	Gone with the Wind	4	Payment	Returned	5.78
4	Walker	5	Fahrenheit 9/11	5	Refund	Refund	-

VIII. Legal Issues

Privacy Statement

What information do we collect from you?

The data we collect from you includes your internet protocol (IP) address, geographical location, navigation location, user agent (such as your browser or operating system). We also collect information about your preferences based on your search and viewing history within Flix2You, and any feedback you have provided on our content, such as ratings.

In order to subscribe to our service, we also require your name, email address, billing address, payment method(s), and your phone number.

How do we collect this information?

We collect this information through cookies, service providers, and payment service providers.

What do we use this information for and can other people see it?

The data provided is used for the following reasons: to provide access to Flix2U, personalize your viewing experience, send you notices of relevant communication, interact with features of the websites, analyze our audience based on demographics, and comply with legal requests by law enforcement agencies.

None of your information is displayed to other users and any changes to your account settings require inputting your password.

Will I be informed of any changes in this policy?

You will be notified of any changes to our privacy statement via email.

Terms and Conditions

Membership. Although membership to our service is free, you may be charged for certain movies. If a movie needs to be purchased, it will be indicated in the description and your purchase will be automatically charged upon confirmation.

Refunds. Once you stream your title, it is nonrefundable. A title is only eligible for refund if the claim was made within 24 hours after the purchase was made and the title has not been streamed or downloaded.

Violations. Refusal to follow these terms will result in immediate ban of your account.

IX. References

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