National University of Computer and Emerging Sciences

In Lab 3

"Introduction to Set Operations and Joins"

Database Systems Lab

Course Instructor	
Lab Instructor (s)	
Section	
Date	
Semester	

Department of Computer Science
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Exercise

Consider the project like Netflix where users can purchase/rent online movies

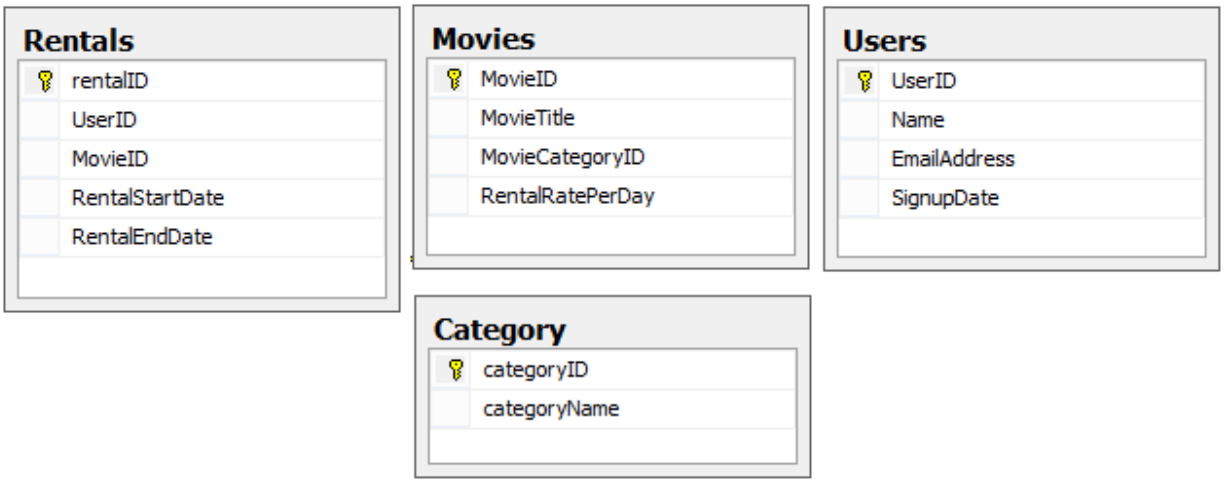
>>User has to Signup to use netflix, following information of account holder is save

- UserID
- Name
- EmailAddress
- SignupDate

>>A user can rent movies from the available list of movies, following information of movies is maintained

- MovieID
- MovieTitle
- MovieCategoryID (this can be null a movie might not have nay category)
- RentalRatePerDay
- >>List of categories/ Genre of movie will be kept in this separate table
  - categoryID
  - categoryName
- >>Following information of rentals is mantained
  - RentalID
  - UserID (who rented the movie)
  - MovieID
  - RentalStartDate
  - RentalEndDate

Following diagram shows schema


Rentals
rentalID
UserID
MovieID
RentalStartDate
RentalEndDate
Movies
MovieID
MovieTitle
MovieCategoryID
RentalRatePerDay
Users
UserID
Name
EmailAddress
SignupDate
Category
categoryID
categoryName

Task-I

Create the tables for given schema, Also identify and apply FK relationships. Insert the data as given in Appendix A

Task-II

Write the queries for following statements

1) Display the user ID and name of users from table Users. The names of users should be in uppercase.
2) Show the movie titles and their Rental Rate Per Week.
3) Display the movie Ids that user Id 3 has rented.
4) Display all the users who have rented any movie but no user Id should be repeated in the result. (Hint: 'Distinct' keyword).
5) Display the users who have signed up in the year 2017.
6) Display the names and the rental rate of the movies whose rental rate is less than 5.
7) Show the users who have never rented any movie. (Hint: Set Operations).
8) Display the user Ids of those who have rented movies with id 1 and 5.
9) Display the category IDs with no movie listings.
10) Find the Category IDs that have character 'c' in category name. Display the index number of character 'c' in the name.
11) Display the users who have account on gmail.
12) Display All the category IDs from Movies' record and their titles. In case a category Id is null, show zero instead.
13) Find the number of days UserId 1 rented movie Id 2.

Task-III

For this exercise use the following schema, the script to create this schema and populate data is given in ATM.SQL file

	userId	name	phoneNum	city
1	1	Ali	03036067000	Narowal
2	2	Ahmed	03036047000	Lahore
3	3	Aqeel	03036063000	Karachi
4	4	Usman	03036062000	Sialkot
5	5	Hafeez	03036061000	Lahore

User

	userID	cardNum
1	1	1234
2	1	1235
3	2	1236
4	3	1238

UserCard

	cardNum	cardTypeID	PIN	expireDate	balance
1	1234	1	1770	2022-07-01	43025.31
2	1235	1	9234	2020-03-02	14425.62
3	1236	1	1234	2019-02-06	34325.52
4	1237	2	1200	2021-02-05	24325.3
5	1238	2	9004	2020-09-02	34025.12

Card

	cardTypeID	name	description
1	1	Debit	Spend Now, Pay Now
2	2	Credit	Spend Now, Pay later

CardType

	transId	transDate	cardNum	amount
1	1	2017-02-02	1234	500
2	2	2018-02-03	1235	3000
3	3	2017-05-06	1236	2500
4	4	2016-09-09	1238	2000
5	5	2015-02-10	1234	6000

Transaction

Task-IV (Using Joins)

1- Show the User names and their Card Numbers.
2- Display the balance of all the card numbers. Also show the card Types(Credit/Debit).
3- Display the card numbers and the transactions. If a card has not done any transaction, show Null.
4- Display all the users, their cards numbers and respective transactions. If a user has not done any transaction, show Null; if a user has no cards, Show Null.
5- Show the name of those users who do not possess any card.
6- Show the number of that card with user name whose balance is in the range (Min: 2000, Max: 4000)
7- List the user id, name, phone number, city of those users whose card is expiring within the next 3 months. Also show the card number along with card type name. (Do not hardcode months)

Appendix A

Data for Exercise Questions

```
insert into Users values
(1,'bob','bob@gmail.com','1-1-2016'),
(2,'Tom','tom@yahoo.com','1-2-2017'),
(3,'Alice','alice@gmail.com','1-6-2014'),
(4,'Jim','Jim@ymail.com','1-6-2017')

insert into Category values
(1,'Horror'),(2,'Comedy')
,(3,'Animated')
,(4,'Action')

Insert into Movies
values
(1,'MI-I',4,3.3),
(2,'MI-II',4,4.3),
(3,'MI-III',4,5),
(4,'horton hears a who',3,5.0),
(5,'sherk-2',3,5.0)
Insert into Movies values (6,'xyz',null,10)

Insert into rentals values (1,1,1,'1-6-2019','1-10-2019')
Insert into rentals values (2,1,1,'2-7-2018','2-10-2018')
Insert into rentals values (3,1,2,'3-8-2018','2-13-2019')
Insert into rentals values (4,2,3,'4-9-2019','4-15-2019')
Insert into rentals values (5,3,1,'1-7-2018','1-30-2018')
Insert into rentals values (6,3,5,'2-8-2018','2-21-2018')
```

Insert into rentals values (7,3,6,'2-8-2019','2-21-2019')