PROJECT #1
Investigate a Relational Database
Text File with SQL queries
Sami Muhammad Omar Haji

Q1.1: Create a query that lists each movie, the film category it is classified in, and the number of times it has been rented out

SOL:

```
SELECT DATE_PART('month',rental_date) AS rental_month,
 DATE_PART('year',rental_date) AS rental_year,
 st.store_id AS store_id,
 COUNT(r.rental_id) AS count_rentals
FROM rental r
JOIN staff st ON r.staff_id = st.staff_id
JOIN store s ON st.store_id = s.store_id
GROUP BY
 rental_month, rental_year, st.store_id
ORDER BY count_rentals DESC,rental_year, rental_month, store_id;
```

Q2.1: Write a query that returns the store ID for the store, the year and month and the number of rental orders each store has fulfilled for that month. Your table should include a column for each of the following: year, month, store ID and count of rental orders fulfilled during that month.

SOL:

```
SELECT DATE_PART('month',rental_date) AS rental_month,
  DATE_PART('year',rental_date) AS rental_year,
  i.store_id AS store_id,
  COUNT(r.rental_id) AS count_rentals
FROM rental r
JOIN inventory i ON r.inventory_id = i.inventory_id
GROUP BY 1,2,3
ORDER BY count_rentals DESC;
```

Q2.2: Can you write a query to capture the customer name, month and year of payment, and total payment amount for each month by these top 10 paying customers?

SOL:

WITH top_ten_customers AS (
 SELECT p.customer_id AS customer_id,
 c.first_name || ' ' || c.last_name AS full_name,
 SUM(p.amount) AS pay_amount
 FROM payment p
 JOIN customer c ON p.customer_id = c.customer_id
 WHERE DATE_PART('year',p.payment_date)=2007
 GROUP BY 1,2
 ORDER BY pay_amount DESC
 LIMIT 10),

 monthly_payment AS(
  SELECT p.customer_id AS customer_id,
 c.first_name || ' ' || c.last_name AS full_name,
 DATE_PART('month',p.payment_date) AS payment_month,
 DATE_PART('year',p.payment_date) AS payment_year,
 SUM(p.amount) AS monthly_total,
 COUNT(p.amount) AS pay_countpermon
 FROM payment p
 JOIN customer c ON p.customer_id = c.customer_id
 WHERE DATE_PART('year',p.payment_date)=2007
 AND p.customer_id IN (
  SELECT customer_id
  FROM top_ten_customers)
 GROUP BY 1,2,3,4)
 SELECT payment_year,
 payment_month,
 full_name, pay_countpermon, monthly_total
 FROM monthly_payment
 ORDER BY 3,1,2

Q2.3: write a query to compare the payment amounts in each successive month.

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SOL:

```
WITH top_ten_customers AS (
 SELECT p.customer_id AS customer_id,
 c.first_name || ' ' || c.last_name AS full_name,
 SUM(p.amount) AS pay_amount
 FROM payment p
 JOIN customer c ON p.customer_id = c.customer_id
 WHERE DATE_PART('year',p.payment_date)=2007
 GROUP BY 1,2
 ORDER BY pay_amount DESC
 LIMIT 10 ),

 monthly_payment AS(
  SELECT p.customer_id AS customer_id,
 c.first_name || ' ' || c.last_name AS full_name,
 DATE_PART('month',p.payment_date) AS payment_month,
 DATE_PART('year',p.payment_date) AS payment_year,
 SUM(p.amount) AS monthly_total,
 COUNT(p.amount) AS pay_countpermon
 FROM payment p
 JOIN customer c ON p.customer_id = c.customer_id
 WHERE DATE_PART('year',p.payment_date)=2007
 AND p.customer_id IN (
  SELECT customer_id
  FROM top_ten_customers)
 GROUP BY 1,2,3,4 ),
 monthly_difference AS (
 SELECT payment_year,
  payment_month,
  full_name,
  monthly_total,
  LAG(monthly_total) OVER (
   PARTITION BY customer_id
   -- the window is partitioned and set by customer_id which helps me do it separately for each of the
top 10
   ORDER BY payment_year, payment_month)
  AS previous_monthly_total,
  -- column separator
  monthly_total - LAG(monthly_total) OVER (
   PARTITION BY customer_id
   ORDER BY payment_year, payment_month)
  AS monthly_diff
  -- end of select
  FROM monthly_payment )
```

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```
SELECT * FROM monthly_difference
WHERE monthly_diff IS NOT NULL
ORDER BY monthly_diff DESC
LIMIT 1; -- to get the top as required
```