

Programming Assignment 2 Report

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1. Project Idea

For this assignment, the project idea was inspired by my apartment rent invoices, so I have designed and implemented a system to store data about clients and their personal information and their rent invoices need to pay or has been paid. The data is generated in this website <https://www.mockaroo.com/>. The project enables users to extract some useful information about the clients and financial status in order for the rental company manager to estimate the current situation and make better business decisions.

2. Schema Design

The relations are presented as:

```
clients(client_id, first_name, last_name, address, phone)
invoices(invoice_id, reference_no, client_id, invoice_total, invoice_date, due_date,
         payment_date, payment_method)
paymentmethods(payment_method_id, method)
```

Each client may have one or more invoices, each invoice has only one client; Each invoice was paid only by one payment method, each payment method can be with more invoices.

3. SQL Queries

Here you present and discuss the most interesting queries. Make sure you have 5 of them at least and check the specification in the assignment sheet. One example is found below:

Q1: Count how many clients who paid the rent

This query is a single relation query using aggregation COUNT, passing the argument of the payment date and the query should give us the number of clients who has paid the rent bill.

```
SELECT COUNT(payment_date)
```

```
FROM invoices
```

WHERE payment_date IS NOT NULL;

Q2: Count the total rent of each month

This query is a single relation query using aggregation SUM, and GROUP BY. The query should give us the total rent of each month grouped by *invoice_date*, which only at one date in each month.

```
SELECT invoice_date, SUM(invoice_total) AS total_rent
```

```
FROM invoices
```

```
GROUP BY invoice_date;
```

Q3: List the payment method for each invoice

This query is a multirelation query using JOIN. The query should give us the payment_method for each invoice. We join table *invoices* on *paymentmethods* by matching the *invoice.payment_method* to the *paymentmethods.method_id*.

```
SELECT inv.invoice_id, inv.reference_no, pm.method AS payment_method
```

```
FROM invoices AS inv
```

```
JOIN paymentmethods AS pm
```

```
ON inv.payment_method = pm.payment_method_id;
```

Q4:List the name and address of people who has not pay the rent

This query is a multirelation query using JOIN. The query should give us all the clients' name and address who has not pay the rent. We join table *clients* on *invoices* by matching the *invoices.client_id* to the *clients.client_id*.

```
SELECT cl.first_name, cl.last_name, cl.address
```

```
FROM clients AS cl
```

```
JOIN invoices AS inv ON invoices.client_id = clients.client_id
```

```
WHERE invoices.payment_date IS NULL;
```

Q5:List the the phone number that the invoice payment method is Swish

The query is a multirelation query using JOIN, passing the argument *paymentmethod.method* and *clients.phone*. The query should give us all the phone number

of the clients pay the invoice by the method using Swish. We join table *clients* and *invoices* by matching *clients.client_id* to *invoices.client_id*, and join table *invoices* on *paymentmethods* by matching *invoice.payment_method* and *paymentmethod.payment_method_id*.

```
SELECT cl.phone  
  
FROM clients AS cl  
  
JOIN invoices AS inv ON cl.client_id = inv.client_id  
  
JOIN paymentMethods AS pm ON inv.payment_method = pm.payment_method_id  
  
WHERE pm.method = 'Swish' AND cl.phone IS NOT NULL;
```

Q6: Create VIEW that only shows the invoices of February

The query uses CREATE VIEW with only the invoices of February, passing the argument *invoices.due_date*. Then use the view with *SELECT*.

```
CREATE VIEW Feb_bills AS  
  
SELECT invoices.reference_no, invoices.invoice_date, invoices.due_date  
  
FROM invoices  
  
WHERE invoices.due_date = '2022/2/28';  
  
  
SELECT reference_no, due_date  
  
FROM Feb_bills;
```

4. Discussion and Resources

With the corrupted data, I firstly replaced them all with "", and then insert NULL in the attributes with "" for a better following implementation.

The project only use terminal to show the queries.

Video demonstration:

<https://www.youtube.com/watch?v=bIOiy2EvNOA>

Changelog

Person	Task	Date
Zejian	Coming up with the project idea and the basic schema	2022-03-12
Zejian	Generated data from online website	2022-03-13
Zejian	Write programming code based on PA-assignment 1 and insert the data to the database	2022-03-14
Zejian	Write queries code and make a demonstration video and upload it on youtube.	2022-03-15
Zejian	Write the report and submit it	2022-03-16