# UNIVERSITY OF LAYYAH

***DEPARTMENT OF INFORMATION TECHNOLOGY***

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***SQL MURDER MYSTERY INVESTIGATION REPORT***

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## 1. Introduction

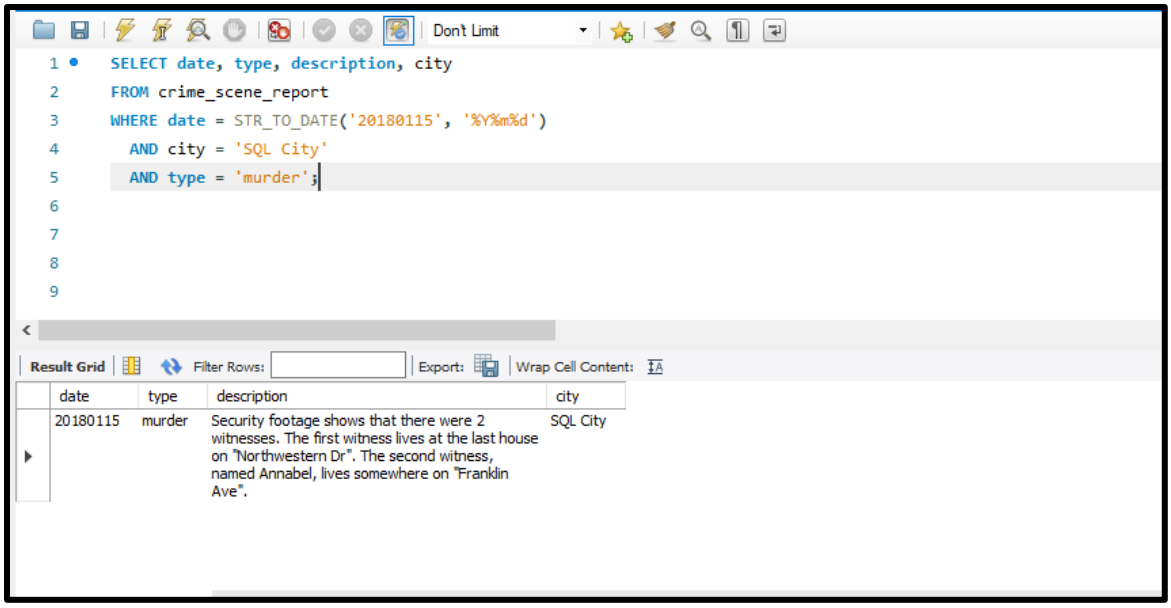
This report documents the investigation of a murder that occurred on January 15, 2018, in SQL City. Using MySQL Workbench, I explored a relational police database containing more than 15 interrelated tables. The goal was to identify the killer and uncover any possible mastermind behind the crime. Through sequential logical reasoning and the use of SQL queries, I was able to solve the mystery using clues from witness interviews, forensic details, and digital data like gym logs and event check-ins.

## 2. Crime Scene Analysis

### Initial Report Retrieval

***Query:***

```
SELECT date, type, description, city
FROM crime_scene_report
WHERE date = STR_TO_DATE('20180115','%Y%m%d')
AND city = 'SQL City'
AND type = 'murder';
```




### Explanation & Reasoning:

I begin by isolating the murder case report using the specific date (January 15, 2018), the city (SQL City), and the crime type (murder). This filters out all unrelated cases.

### Findings:

- Two eyewitnesses were present:
    - ✓ One lives on *Northwestern Dr* (last house)
    - ✓ The other is a *female named Annabel* living on *Franklin Ave*

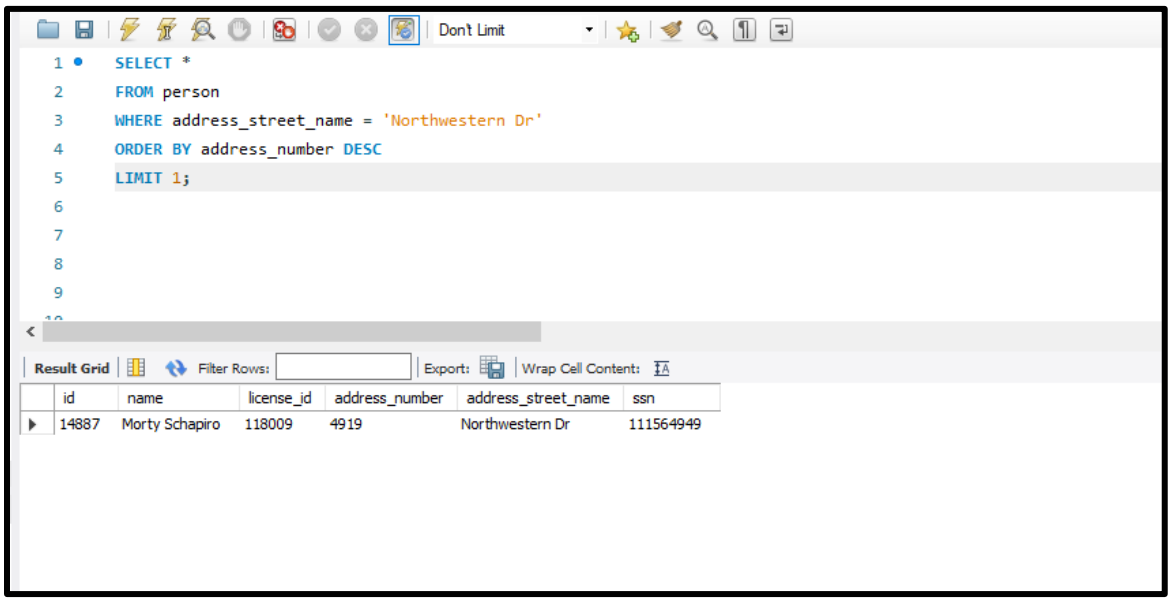
These clues formed the foundation for identifying the witnesses and gathering further testimony.

## 3. Witness Identification & Interviews

### Step 1: First Witness (Last house on Northwestern Dr)

***Query:***

```
SELECT * FROM person

WHERE address_street_name = 'Northwestern Dr'

ORDER BY address_number

DESC LIMIT 1;
```




## Explanation:

To locate the resident of the last house, I sort people living on *Northwestern Dr* in descending order by house number and select the first result.

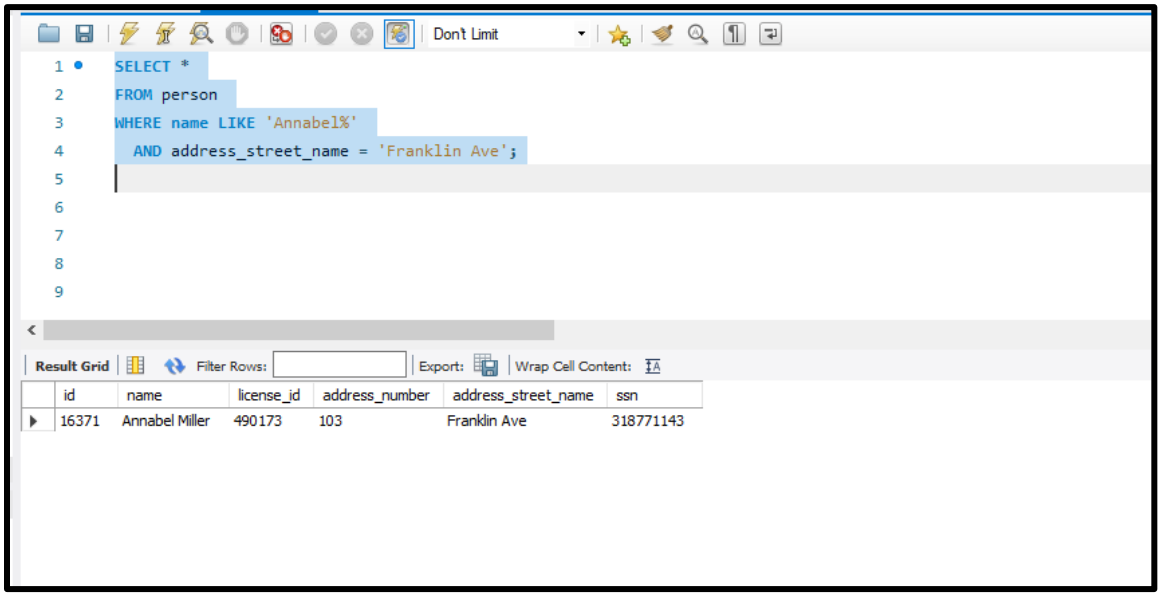
## Finding:

- **Witness Identified:** *Morty Schapiro*
- This person is critical as he observed the suspect closely.

## Step 2: Second Witness (Annabel on Franklin Ave)

***Query:***

```
SELECT id, name, address_street_name

FROM person WHERE

name LIKE 'Annabel%' AND

address_street_name = 'Franklin Ave';
```




## Explanation:

I search for any *Annabel* residing on *Franklin Ave* using pattern matching with LIKE.

## Finding:

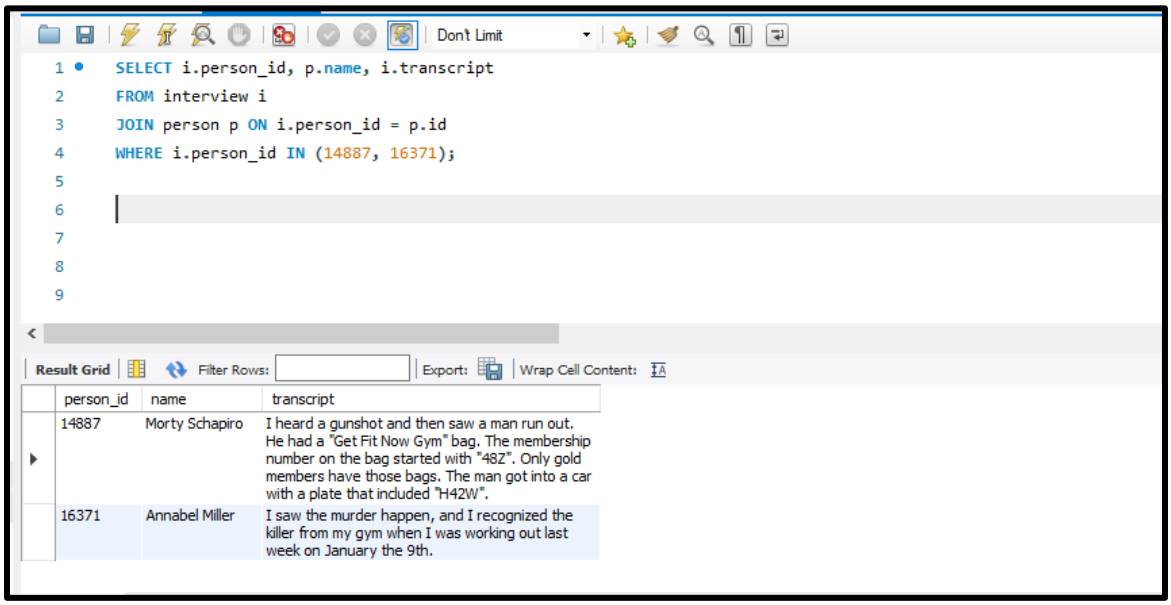
- **Witness Identified:** *Annabel Miller*
- She is the second confirmed eyewitness.

## Step 3: Witness Interview Analysis

***Query:***

```
SELECT i.person_id, p.name, i.transcript
```

```
FROM interview i
JOIN person p ON i.person_id = p.id
WHERE i.person_id IN (14887, 16371);
```




### Explanation:

I retrieve the interview transcripts of both witnesses using their person_id.

### Key Clues from Transcripts:

- The suspect checked in at the *Get Fit Now* gym on **January 9**
- They had a **Gold Membership**, ID starting with *48Z*
- The suspect's **license plate** contains *H42W*

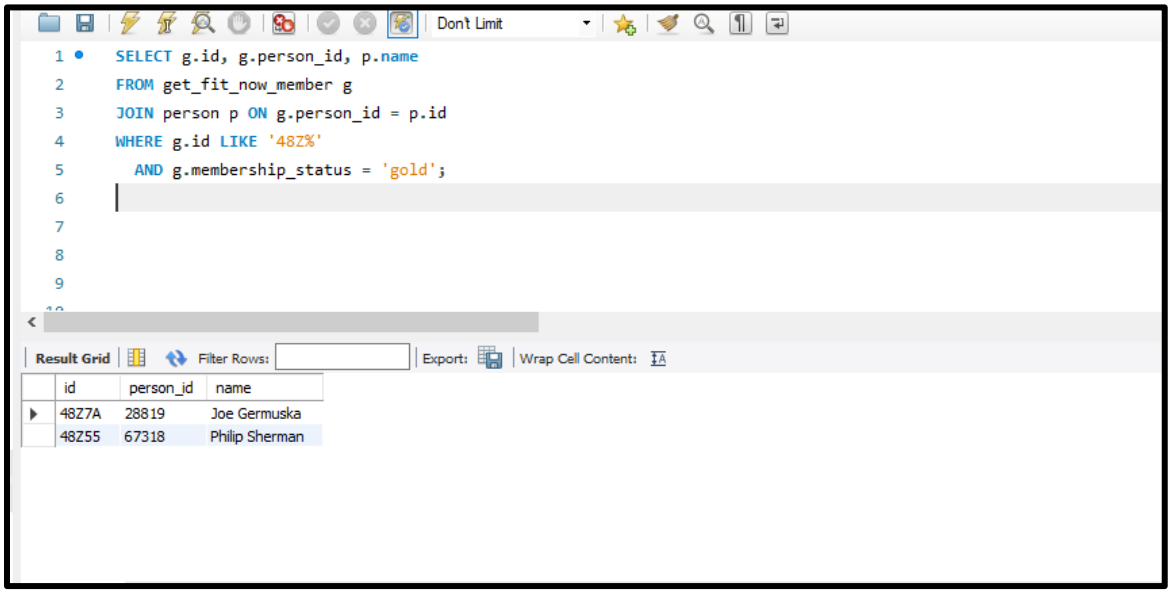
These clues narrow my search to gym members with gold status and link the suspect to a specific vehicle.

## 4. Suspect Identification Process

### Step 1: Gym Member Filtering

***Query:***

```
SELECT g.id, p.name, g.membership_status

FROM get_fit_now_member g

JOIN person p ON g.person_id = p.id

WHERE g.id LIKE '48Z%' AND g.membership_status = 'gold';
```




## Explanation:

I filter all gym members with an ID starting with “48Z” and a “Gold” membership.

## Finding:

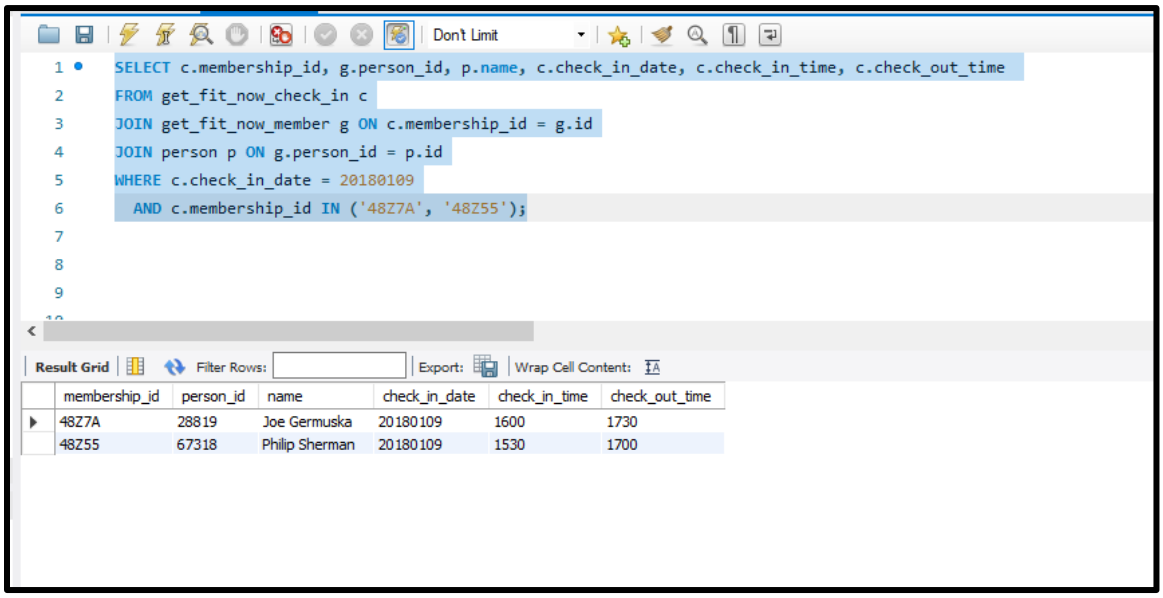
- Two matches found: **48Z7A (Joe Germuska)** and **48Z55 (Philip Sherman)**

I now need to verify which of them was present at the gym on **January 9**.

## Step 2: Gym Check-in Records

***Query:***

```
SELECT c.membership_id, g.person_id, p.name, c.check_in_date,
c.check_in_time, c.check_out_time

FROM get_fit_now_check_in c

JOIN get_fit_now_member g ON c.membership_id = g.id

JOIN person p ON g.person_id = p.id

WHERE c.check_in_date = 20180109

AND c.membership_id IN ('48Z7A','48Z55');
```




## Explanation:

I check which of the two suspects actually visited the gym on the date mentioned by the witness.

## Finding:

- Both **Philip Sherman** (48Z55) and **Jeo Germuska** (48Z7A) checked in on **January 9, 2018**

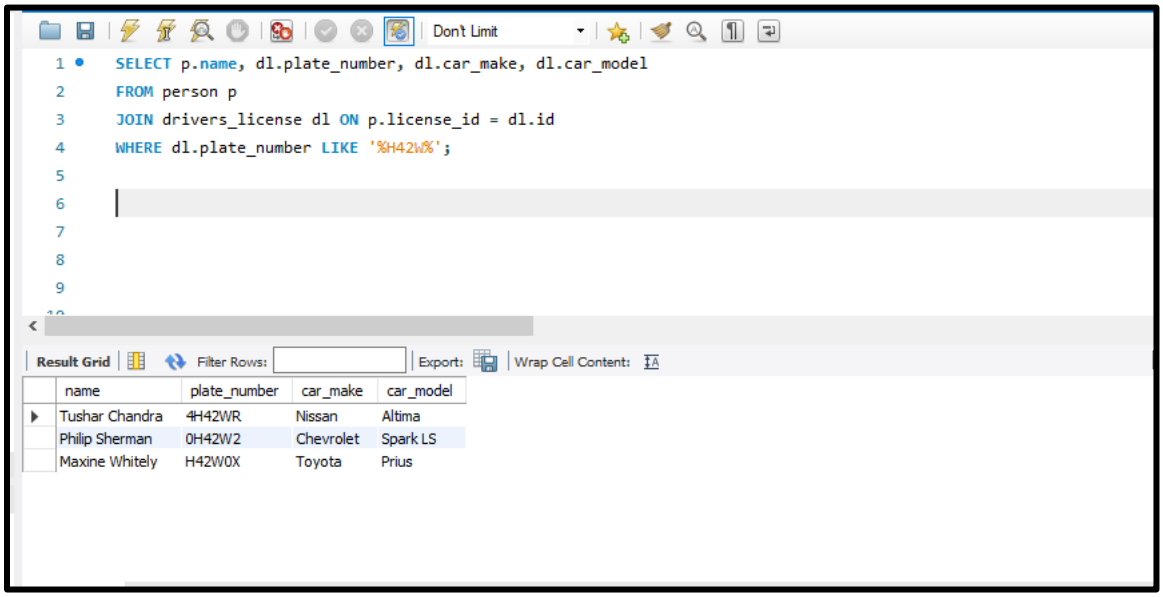
- This aligns with the witness statement

# 5. Forensic Evidence Correlation

## Vehicle License Plate Search

***Query:***

```
SELECT p.name, dl.plate_number, dl.car_make, dl.car_model
FROM person p
JOIN drivers_license dl ON p.license_id = dl.id
WHERE dl.plate_number LIKE '%H42W%';
```




## Explanation:

The witness mentioned a vehicle with plate containing “H42W”. I search all license plates containing that substring.

## Finding:

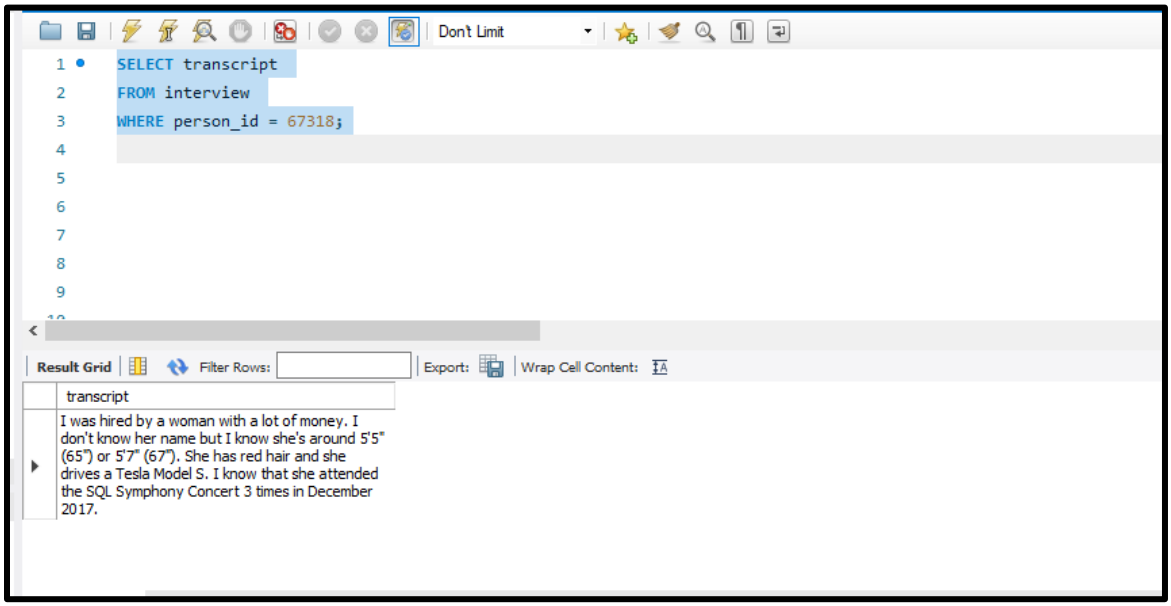
- **Philip Sherman** owns a car with the matching plate number.

- This confirms both witness clues (gym & vehicle).

## Killer's Confession

***Query:***

```
SELECT transcript
FROM interview
WHERE person_id = 67318;
```




## Explanation:

I verify if the suspect confessed.

## Finding:

- **Philip Sherman** confessed to the crime.
- He also stated that he was hired by a woman to commit the murder.

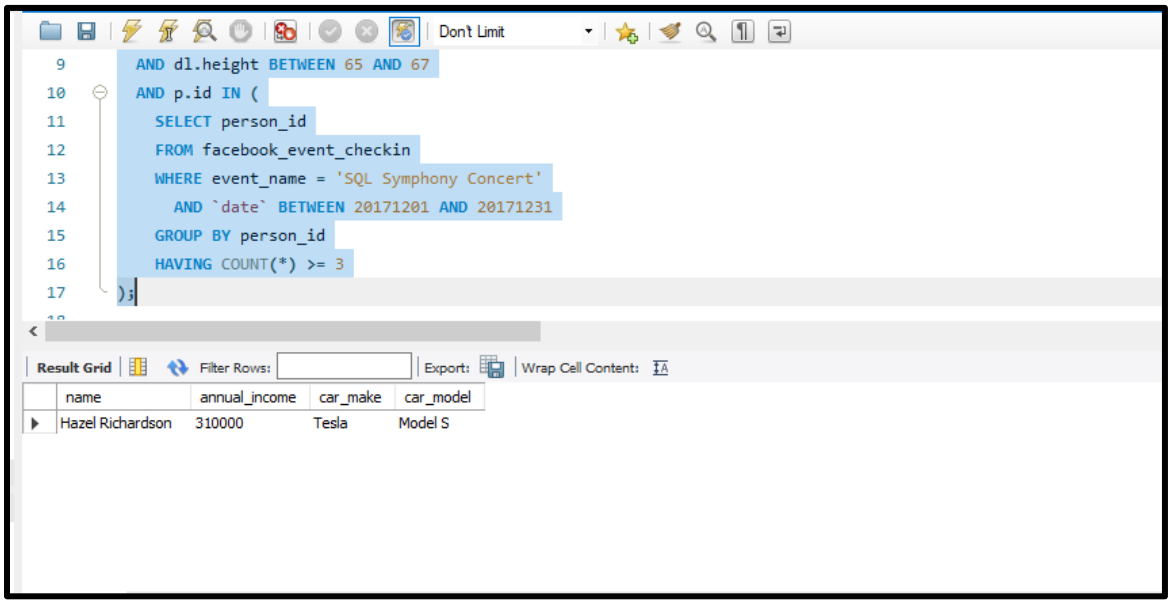
This introduces the possibility of a **mastermind** behind the crime.

# 6. Mastermind Identification

## Query to Find the Mastermind

***Query:***

```
SELECT p.name, i.annual_income, dl.car_make, dl.car_model
FROM person p
JOIN drivers_license dl ON p.license_id = dl.id
JOIN income i ON p.ssn = i.ssn
WHERE dl.gender = 'female'
  AND dl.hair_color = 'red'
  AND dl.car_make = 'Tesla'
  AND dl.car_model = 'Model S'
  AND dl.height BETWEEN 65 AND 67
  AND p.id IN (
SELECT person_id
FROM facebook_event_checkin
WHERE event_name = 'SQL Symphony Concert'
  AND `date` BETWEEN 20171201 AND 20171231
  GROUP BY person_id HAVING COUNT(*) >= 3);
```



### Explanation:

Using the suspect's confession, I search for a **red-haired female** who:

- Drives a **Tesla Model S**
- Frequently attended a **concert event in December 2017** (at least 3 times)

### Finding:

- The only match: **Hazel Richardson**
- She fits all criteria and is identified as the **mastermind**.

# 7. Summary

#### 1. Starting Point – The Crime Report

The investigation began with a **murder case reported on January 15, 2018**, in **SQL City**. By querying the crime_scene_report table, I identified the type of crime (murder) and found that **two key witnesses** were mentioned in the report:

- One lived at the **last house on Northwestern Dr**.
- The other, named **Annabel**, lived on **Franklin Ave**.

#### 2. Witness Interviews – Clues about the Suspect

I located both witnesses using the person table and accessed their statements from the interview table. Their testimonies revealed several vital clues about the suspect:

- He **carried a gym bag** with a **membership ID starting with "48Z"**.
- He had a **Gold-level gym membership**.
- He drove a car with a **license plate containing "H42W"**.
- He was seen at the **gym on January 9**.

## 3. Filtering Suspects – Matching Gym and Vehicle Clues

Using the get_fit_now_member table, I filtered for **Gold-level members** whose **membership IDs started with "48Z"**. This gave me two suspects:

- **Joe Germuska**
- **Philip Sherman**

Next, I checked the get_fit_now_check_in table to see which of them checked into the gym on **January 9**. Only **Philip Sherman** was present on that date, which narrowed the suspect list down to one.

To confirm, I cross-referenced vehicle data in the drivers_license table and found that **Philip Sherman's license plate contained "H42W"**, as described by the witness.

All the evidence — gym ID, Gold membership, gym check-in date, and car plate — pointed to **Philip Sherman**. I then checked his interview record, and **he confessed** to the murder.

## 4. Identifying the Mastermind Behind the Murder

Philip Sherman confessed that he **was hired by a woman** to carry out the murder. Based on his statement, I looked for a person with these characteristics:

- **Female**
- **Red hair**
- Drives a **Tesla Model S**
- Attended the **SQL Symphony Concert at least 3 times in December 2017**

I joined the person, drivers_license, and facebook_event_checkin tables to apply all these filters. Only **one person** matched every condition:

**Mastermind: Hazel Richardson**

She fit all criteria: red-haired woman, owned a Tesla Model S, and had a history of attending the concert multiple times in the given timeframe.

## 8. Conclusion

**Murderer:** Philip Sherman

**Mastermind:** Hazel Richardson.

Through this investigation, I learned how to logically link different relational datasets to uncover hidden insights. The use of SQL joins, pattern matching, subqueries, and date filtering was critical. The mystery was solved by correlating physical clues, digital records, and witness accounts, ultimately identifying both the murderer and the person who orchestrated the crime.