SQL MURDER MYSTERY INVESTIGATION REPORT

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By executing SQL Queries, I found out that the primary killer was **Jeremy Bowers,** but the mastermind behind the crime was **Miranda Priestly.**

Step 1: Exploring the Database

To start, I identified all the tables in the database using this query:

```
SELECT name
  FROM sqlite_master
 where type = 'table'
```

Result

name
crime_scene_report
drivers_license
facebook_event_checkin
interview
get_fit_now_member
get_fit_now_check_in
solution
income
person

Step 2: Understanding Table Structures

I then examined the structure of each table to understand their columns and data types. Here is the code, and the structures (result):

```
SELECT sql
  FROM sqlite_master
 where name = 'table_name'
```

I replaced table_name with the names of the table from the previous output.

Results

Table Name	*Column Name*	*Data Type*	*Key/Notes*
crime_scene_report	date	integer	
	type	text	
	description	text	
	city	text	
drivers_license	id	integer	Primary Key
	age	integer	
	height	integer	
	eye_color	text	
	hair_color	text	
	gender	text	
	plate_number	text	
	car_make	text	
	car_model	text	
facebook_event_checkin	person_id	integer	Foreign Key (references id in the person table)
	event_id	integer	
	event_name	text	
	date	integer	
interview	person_id	integer	Foreign Key (references id in the person table)
	transcript	text	

get_fit_now_member	id	text	Primary Key
	person_id	integer	Foreign Key (references id in the person table)
	name	text	
	membership_start_date	integer	
	membership_status	text	
get_fit_now_check_in	membership_id	text	Foreign Key (references id in get_fit_now_member table)
	check_in_date	integer	
	check_in_time	integer	
	check_out_time	integer	
solution	user	integer	
	value	text	
income	ssn	CHAR	Primary Key
	annual_income	integer	
person	id	integer	Primary Key
	name	text	
	license_id	integer	Foreign Key (references id in drivers_license table)
	address_number	integer	
	address_street_name	text	
	ssn	CHAR	Foreign Key (references ssn in income table)

Step 3: Retrieving Crime Scene Report Details

Since the crime was a murder that occurred on January 15, 2018, in SQL City, I queried the crime_scene_report table for more information.

```sql
SELECT *
FROM crime_scene_report
WHERE date = 20180115
AND type = 'murder'
AND city = 'SQL City';
```

Result

date	type	description	city
20180115	murder	Security footage shows that there were 2 witnesses. The first witness lives at the last house on "Northwestern Dr". The second witness, named Annabel, lives somewhere on "Franklin Ave".	SQL City

Step 4: Identifying the Witnesses

Finding Annabel Miller:

I looked up Annabel Miller using her partial address in the person table.

```sql
SELECT *
FROM person
WHERE name LIKE 'Annabel%'
AND address_street_name LIKE '%Franklin Ave%';
```

Result

id	name	license_id	address_number	address_street_name	ssn
16371	Annabel Miller	490173	103	Franklin Ave	318771143

Finding the Second Witness (last house on Northwestern Dr.):

I found the person at the highest house number on Northwestern Dr.

```sql
SELECT *
FROM person
WHERE address_street_name = 'Northwestern Dr'
ORDER BY address_number DESC
LIMIT 1;
```

Result

id	name	license_id	address_number	address_street_name	ssn
14887	Morty Schapiro	118009	4919	Northwestern Dr	111564949

Step 5: Retrieving Witness Interview Transcripts

I checked the interview table for transcripts from both witnesses.

```sql
SELECT *
FROM interview
WHERE person_id IN (16371, 14887);
```

Result

person_id	transcript
14887	I heard a gunshot and then saw a man run out. He had a "Get Fit Now Gym" bag. The membership number on the bag started with "48Z". Only gold members have those bags. The man got into a car with a plate that included "H42W".
16371	I saw the murder happen, and I recognized the killer from my gym when I was working out last week on January the 9th.

Step 6: Identifying the Killer's Gym Membership

I used the get_fit_now_member table to identify gold members with IDs starting with "48Z."

```sql
SELECT *
FROM get_fit_now_member
WHERE id LIKE '48Z%'
AND membership_status = 'gold';
```

Result

id	person_id	name	membership_start_date	membership_status
48Z7A	28819	Joe Germuska	20160305	gold
48Z55	67318	Jeremy Bowers	20160101	gold

Step 7: Confirming the Killer Using the License Plate

I obtained their license IDs from the person table.

```sql
SELECT *
FROM person
WHERE id IN (28819, 67318);
```

Result

id	name	license_id	address_number	address_street_name	ssn
28819	Joe Germuska	173289	111	Fisk Rd	138909730
67318	Jeremy Bowers	423327	530	Washington Pl, Apt 3A	871539279

Then, I verified the plate number in the drivers_license table:

```sql
SELECT *
FROM drivers_license
WHERE id IN (173289, 423327)
AND plate_number LIKE '%H42W%';
```

Result

id	age	height	eye_color	hair_color	gender	plate_number	car_make	car_model
423327	30	70	brown	brown	male	0H42W2	Chevrolet	Spark LS

Jeremy Bowers had the matching license plate.

Step 8: Confirming the Result

I inputted the name to the code given to confirm the killer:

Did you find the killer?

```
1 INSERT INTO solution VALUES (1, 'Jeremy Bowers');
2
3         SELECT value FROM solution;
```

Result

value
Congrats, you found the murderer! But wait, there's more... If you think you're up for a challenge, try querying the interview transcript of the murderer to find the real villain behind this crime. If you feel especially confident in your SQL skills, try to complete this final step with no more than 2 queries. Use this same INSERT statement with your new suspect to check your answer.

So, it is confirmed that the killer is Jeremy Bowers. But now, we have to find out the real mastermind behind the murder, that is, **the person who recruited Jeremy Bowers to kill the deceased.**

FINDING THE MASTERMIND BEHIND THE MURDER: NEXT PAGE

Step 8: Discovering the Mastermind Behind the Crime in Two Queries

I checked Jeremy Bowers' interview transcript:

```sql
SELECT *
FROM interview
WHERE person_id = 67318;
```

Result

person_id	transcript
67318	I was hired by a woman with a lot of money. I don't know her name but I know she's around 5'5" (65") or 5'7" (67"). She has red hair and she drives a Tesla Model S. I know that she attended the SQL Symphony Concert 3 times in December 2017.

Now, we'll join the *drivers_license* table with *facebook_event_checkin* to directly identify the person who matches the description and attended the SQL Symphony Concert 3 times in December 2017.

```sql
SELECT p.id, p.name
FROM person p
JOIN drivers_license d ON p.license_id = d.id
JOIN facebook_event_checkin f ON p.id = f.person_id
WHERE d.height BETWEEN 65 AND 67
AND d.hair_color = 'red'
AND d.car_make = 'Tesla'
AND d.car_model = 'Model S'
AND f.event_name = 'SQL Symphony Concert'
AND f.date BETWEEN 20171201 AND 20171231
GROUP BY p.id, p.name
HAVING COUNT(f.event_name) = 3;
```

Result

id	name
99716	Miranda Priestly

Final Result

The primary killer was **Jeremy Bowers**, but the mastermind behind the crime was **Miranda Priestly.**