Roland Greene Murder Investigation

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Data Analyst

Tools Used: PostgreSQL

Unraveling the Murder of Roland Greene

- On June 1, 2025, Roland Greene, a prominent art collector, was shot dead at 20:00:00 in the Vault Room during an exclusive art auction attended by 30 elite guests.

- A mysterious phone call at 19:56:39 distracted Roland moments before the fatal shot.

- As an analyst, I used PostgreSQL to analyze large datasets; suspect profiles, access logs, call records, and forensic events to uncover the killer.

- This project showcases SQL proficiency and data synthesis as part of my portfolio.

Datasets: The Evidence

- **Purpose**: Structured datasets traced suspects' actions to pinpoint the killer.

- Datasets:

  - **Suspects**: IDs, names, roles, alibis (e.g., "Left early," "At hospital").

  - **Access Logs**: Room entries (e.g., Vault Room) with timestamps and success flags.

  - **Call Records**: Phone call timestamps, durations, and directions.

  - **Forensic Timeline**: Key events (e.g., gunshot at 20:00:00).

- Stored in PostgreSQL; analysis focused on 19:50:00–20:10:00 on June 1, 2025.

Database Setup: Building the Foundation

- **Purpose**: A robust PostgreSQL database ensured data integrity and fast querying.

- Setup:

  - Created tables: **suspects**, **access_logs**, **call_records**, **forensic_events**.

  - Used foreign keys for referential integrity.

  - Applied indexes (**idx_access_time**, **idx_suspect_id**, **idx_call_timestamp**) for performance.

  - Imported large CSV files with **COPY** command.

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```sql
CREATE TABLE suspects (
    suspect_id INTEGER PRIMARY KEY,
    name TEXT NOT NULL,
    role TEXT,
    alibi TEXT
);
CREATE TABLE access_logs (
    access_id INTEGER PRIMARY KEY,
    suspect_id INTEGER REFERENCES suspects(suspect_id),
    access_time TIMESTAMP,
    door_accessed TEXT,
    success_flag BOOLEAN
);
CREATE TABLE call_records (
    call_id INTEGER PRIMARY KEY,
    suspect_id INTEGER REFERENCES suspects(suspect_id),
    call_timestamp TIMESTAMP,
    call_duration INTEGER,
    call_direction TEXT
);
CREATE TABLE forensic_events (
    event_id INTEGER PRIMARY KEY,
    event_time TIMESTAMP,
    event_description TEXT
);
```

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```sql
COPY suspects
FROM 'C:\Users\USER\Desktop\PORTFOLIO PROJECT\SQL\Forensic Analysis\datasets\suspects_large.csv'
WITH CSV HEADER;
COPY access_logs
FROM 'C:\Users\USER\Desktop\PORTFOLIO PROJECT\SQL\Forensic Analysis\datasets\access_logs_large.csv'
WITH CSV HEADER;
COPY call_records
FROM 'C:\Users\USER\Desktop\PORTFOLIO PROJECT\SQL\Forensic Analysis\datasets\call_records_large.csv'
WITH CSV HEADER;
COPY forensic_events
FROM 'C:\Users\USER\Desktop\PORTFOLIO PROJECT\SQL\Forensic Analysis\datasets\forensic_events_large.csv'
WITH CSV HEADER;
```

Crime Timeline: Key Moments

- **Purpose**: Establishes the sequence of critical events.

- Timeline:

  - 19:56:39: Mysterious phone call begins, distracting Roland.

  - 20:00:00: Gunshot in the Vault Room, marking the murder.

  - 20:02:39: Phone call ends, likely dropped by the victim.

  - 20:03:00: Security feed is cut, obscuring movements.

  - 20:05:45: Emergency call alerts authorities.

- Vault Room is the primary crime scene with strict entry/exit checks.

Query 1: Vault Room Access

- **Purpose**: Identifies suspects in the Vault Room at 20:00:00.

- SQL Query:

```sql
SELECT a.suspect_id, s.name, a.access_time
FROM access_logs a
JOIN suspects s ON a.suspect_id = s.suspect_id
WHERE a.door_accessed = 'Vault Room'
AND a.access_time BETWEEN '2025-06-01 19:50:00' AND '2025-06-01 20:10:00'
AND a.success_flag = 'True'
ORDER BY a.access_time;
```

Query 1: Results

Name	Access Time
Victor Shaw	2025-06-01 19:50:39
Samira Shaw	2025-06-01 19:52:00
Robin Ahmed	2025-06-01 19:56:35
Jamie Bennett	2025-06-01 20:00:55
Victor Shaw	2025-06-01 20:04:53
Evan Ahmed	2025-06-01 20:09:14

Query 1: Analysis

- Robin Ahmed entered at 19:56:35, remaining in the Vault Room at 20:00:00 with no recorded exit, strongly suggesting presence during the murder.

- Samira Shaw entered at 19:52:00 and stayed through 20:00:00, raising questions about her role as a potential witness or passive participant.

- Victor Shaw left at 19:52:36, absent during the murder, while Jamie Bennett and Evan Ahmed arrived post-incident, ruling them out.

- The proximity of Robin's entry to the gunshot time, combined with Samira's prolonged presence, focuses suspicion on these two.

Query 2: Suspect Movements

- **Purpose**: Tracks movements of Vault Room suspects using exit checks.

- SQL Query:

```sql
SELECT s.name, a.access_time, a.door_accessed, a.success_flag
FROM access_logs a
JOIN suspects s ON a.suspect_id = s.suspect_id
WHERE a.suspect_id IN (
    SELECT DISTINCT suspect_id
    FROM access_logs
    WHERE door_accessed = 'Vault Room'
    AND access_time BETWEEN '2025-06-01 19:50:00' AND '2025-06-01 20:10:00'
    AND success_flag = 'True'
)
AND a.access_time BETWEEN '2025-06-01 19:50:00' AND '2025-06-01 20:10:00'
ORDER BY a.access_time;
```

Query 2: Results (Part 1)

Name	Access Time	Door Accessed	Success Flag
Victor Shaw	2025-06-01 19:50:39	Vault Room	True
Samira Shaw	2025-06-01 19:52:00	Vault Room	True
Victor Shaw	2025-06-01 19:52:36	Kitchen	True
Robin Ahmed	2025-06-01 19:54:05	Office	True
Jamie Bennett	2025-06-01 19:54:40	Vault Room	False
Evan Ahmed	2025-06-01 19:55:17	Kitchen	True

Query 2: Results (Part 2)

Name	Access Time	Door Accessed	Success Flag
Robin Ahmed	2025-06-01 19:56:35	Vault Room	True
Evan Ahmed	2025-06-01 19:59:06	Office	False
Jamie Bennett	2025-06-01 20:00:09	Office	True
Evan Ahmed	2025-06-01 20:00:20	Library	True
Jamie Bennett	2025-06-01 20:00:55	Vault Room	True
Victor Shaw	2025-06-01 20:01:03	Master Bedroom	True

Query 2: Results (Part 3)

Name	Access Time	Door Accessed	Success Flag
Victor Shaw	2025-06-01 20:01:47	Library	False
Evan Ahmed	2025-06-01 20:02:58	Office	False
Robin Ahmed	2025-06-01 20:03:51	Master Bedroom	False
Victor Shaw	2025-06-01 20:04:53	Vault Room	True
Evan Ahmed	2025-06-01 20:09:14	Vault Room	True

Query 2: Analysis

- Robin Ahmed entered the Vault Room at 19:56:35 and had no successful exit until a failed attempt at 20:03:51, indicating presence during the murder.

- Samira Shaw remained in the Vault Room from 19:52:00 with no exit, suggesting she could have observed the crime or been involved.

- Victor Shaw exited to the Kitchen at 19:52:36 and returned later, ruling him out at 20:00:00; his failed Library access at 20:01:47 might hint at alibi-building.

- Jamie Bennett and Evan Ahmed's post-murder movements exclude them, with Jamie's failed entry at 19:54:40 showing limited access.

Query 3: Phone Calls

- **Purpose**: Examines calls to identify the distracting call at 19:56:39.

- SQL Query:

```sql
SELECT c.suspect_id, s.name, c.call_timestamp,
       c.call_timestamp + (c.call_duration || ' seconds')::interval AS call_end,
       c.call_duration
FROM call_records c
JOIN suspects s ON c.suspect_id = s.suspect_id
WHERE c.call_timestamp BETWEEN '2025-06-01 19:50:00' AND '2025-06-01 20:10:00'
ORDER BY c.call_timestamp;
```

Query 3: Results

Name	Call Timestamp	End Time	Duration
Emerson Smith	2025-06-01 19:53:33	2025-06-01 19:58:33	5 min
Victor Hale	2025-06-01 19:55:45	2025-06-01 19:56:45	1 min
Susan Knight	2025-06-01 19:56:39	2025-06-01 20:02:39	6 min

Query 3: Analysis

- Susan Knight's call from 19:56:39 to 20:02:39 overlapped the murder at 20:00:00, likely distracting Roland during the critical moment.

- The call started 4 seconds after Robin Ahmed's Vault Room entry at 19:56:35, suggesting Robin may have exploited this timing, though he made no call.

- Emerson Smith's and Victor Hale's calls ended before 20:00:00, rendering them unrelated; Susan's prolonged call post-murder raises suspicion of aiding the killer.

Query 4: False Alibis

- **Purpose**: Detects deceptive alibis contradicting access logs.

- SQL Query:

```sql
SELECT s.name, s.alibi, a.access_time, a.door_accessed
FROM suspects s
JOIN access_logs a ON s.suspect_id = a.suspect_id
WHERE a.access_time BETWEEN '2025-06-01 19:50:00' AND '2025-06-01 20:10:00'
AND (s.alibi = 'Left early' AND a.access_time >= '2025-06-01 19:50:00'
    OR s.alibi = 'At hospital' AND a.door_accessed = 'Vault Room')
AND a.success_flag = 'True'
ORDER BY s.name, a.access_time;
```

Query 4: Results

Name	Alibi	Access Time	Door Accessed
Morgan Bennett	At hospital	2025-06-01 19:56:35	Vault Room
Peter Nguyen	Left early	2025-06-01 19:52:00	Vault Room
Robin Ahmed	Left early	2025-06-01 19:56:35	Vault Room
Victor Shaw	At hospital	2025-06-01 19:50:39	Vault Room
Victor Shaw	At hospital	2025-06-01 20:04:53	Vault Room

Query 4: Analysis

- Robin Ahmed's "Left early" alibi is false given his 19:56:35 Vault Room entry, indicating an attempt to mislead investigators.

- Victor Shaw's "At hospital" alibi contradicts his 19:50:39 and 20:04:53 entries, suggesting deception but not presence at the murder.

- Samira Shaw offered no alibi, aligning with her recorded presence; Morgan Bennett and Peter Nguyen's false alibis lack murder-time relevance.

- Robin's deception, tied to his Vault Room presence, marks him as the prime suspect.

Q1: Who Was the Killer?

Finding: Robin Ahmed is the most likely killer.

- **Evidence**:
  - Present in the Vault Room at 20:00:00 (entered 19:56:35, no exit).
  - False alibi ("Left early") contradicts access logs, suggesting intent to mislead.
  - Susan Knight's call (19:56:39–20:02:39) began 4 seconds after Robin's entry, likely used to distract Roland.

- **Eliminations**:
  - Samira Shaw was present but showed no deception, making her less likely.
  - Victor Shaw exited to the Kitchen at 19:52:36, absent during the murder.
  - Other suspects (Jamie, Evan) entered post-murder or were elsewhere.

Q2: Prime Suspects

Finding: The suspects are prioritized based on their presence and behavior.

- **Primary**: Robin Ahmed—in Vault Room, false alibi, linked to distraction call.

- **Secondary**: Samira Shaw—in Vault Room at 20:00:00, but no deceptive behavior.

- **Tertiary**: Victor Shaw—false "At hospital" alibi, but exited Vault Room before murder.

- Other suspects (e.g., Jamie, Evan, Morgan) were not in the Vault Room at 20:00:00.

- Robin's presence and deception make them the strongest suspect.

Q3: Killer's Motive

Finding: The motive was likely a personal or financial grudge.

- The high-stakes auction involved valuable artworks, creating a competitive environment.

- Robin Ahmed's false alibi and strategic timing suggest a deliberate plan, possibly driven by betrayal or a disputed art deal.

- Samira Shaw and Victor Shaw lack clear motives, with no deceptive behavior (Samira) or presence (Victor).

- While no direct motive evidence exists, the auction's context and Robin's actions point to personal or financial gain.

Q4: Evasion Tactics

Finding: Robin Ahmed employed multiple tactics to avoid detection.

- **Tactics**:
  - Provided a false "Left early" alibi to mislead investigators.
  - Likely exploited Susan Knight's call (19:56:39–20:02:39) to distract Roland during the murder.
  - Blended into the auction's chaotic guest movements, avoiding immediate suspicion.
  - Benefited from the security feed cut at 20:03:00, obscuring post-murder actions.
- Attempted a strategic Master Bedroom access (20:03:51, failed), possibly to establish a false location.

Q5: Was There an Accomplice?

Finding: Susan Knight is a possible accomplice, but Robin likely acted alone.

- **Evidence**:
  - Susan's call (19:56:39–20:02:39) coincided with the murder, distracting Roland and aiding the killer.
  - The call's timing (4 seconds after Robin's entry) is suspicious but lacks direct coordination evidence.
- Samira Shaw was present in the Vault Room but likely a bystander, with no deceptive actions.
- No conclusive evidence confirms an accomplice, suggesting Robin executed the murder independently.

Skills Highlighted

Purpose: This project demonstrates a robust skill set in data analysis and forensic investigation.

- **PostgreSQL Expertise**: Designed relational tables, implemented indexes, and crafted complex queries to extract actionable insights.

- **Data Analysis**: Synthesized timelines, cross-referenced access logs with alibis, and conducted exit checks to pinpoint suspects.

- **Problem-Solving**: Resolved data discrepancies (e.g., false alibis).

- **Communication**: Presented a compelling narrative, translating complex data into an accessible murder investigation story.

- This project showcases my ability to tackle real-world data challenges.

Project Impact

Purpose: The investigation highlights the power of data-driven forensics and its value for professional growth.

- Analyzed large, complex datasets to uncover critical evidence.

- Optimized query performance using indexes, ensuring efficient analysis.

- Solved a high-profile murder case through rigorous data synthesis.

- Demonstrates proficiency in PostgreSQL and data analysis.

- Future enhancements could include clustering, NLP, or interactive dashboards.

- This project is a compelling addition to my portfolio, showcasing my readiness for data-driven roles.

Conclusion

- Robin Ahmed is the primary suspect, present in the Vault Room at 20:00:00, with a false "Left early" alibi and likely used Susan's call to distract the victim.

- Samira Shaw was present but showed no deception, likely a bystander.

- Victor Shaw provided a false "At hospital" alibi but was absent from the Vault Room during the murder.

- Susan Knight's call timing suggests a possible accomplice role, though no direct evidence confirms this, but evidence suggests Robin acted alone

- As a Analyst, this investigation leveraged PostgreSQL to deliver a solid conclusion, showcasing my problem-solving to derive solutions for data analytics roles.