Coding Challenge - MySQL
Crime Management
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Creating DataBase :

```
CREATE DATABASE IF NOT EXISTS CrimeManagement;
```

```
Query OK, 1 row affected (0.00 sec)
```

Using DataBase :

```
USE CrimeManagement;
```

```
Database changed
```

Creating Tables:

1. Crime

```
CREATE TABLE IF NOT EXISTS Crime (
CrimeID INT PRIMARY KEY,
IncidentType VARCHAR(255),
IncidentDate DATE,
Location VARCHAR(255),
Description TEXT,
Status VARCHAR(20)
);
```

```
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| CrimeID      | int          | NO   | PRI | NULL    |       |
| IncidentType | varchar(255) | YES  |     | NULL    |       |
| IncidentDate | date         | YES  |     | NULL    |       |
| Location     | varchar(255) | YES  |     | NULL    |       |
| Description  | text         | YES  |     | NULL    |       |
| Status       | varchar(20)  | YES  |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
6 rows in set (0.01 sec)
```

2. Victim

```sql
CREATE TABLE IF NOT EXISTS Victim (
VictimID INT PRIMARY KEY,
CrimeID INT,
Name VARCHAR(255),
age INT,
ContactInfo VARCHAR(255),
Injuries VARCHAR(255),
FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
);
```

```
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| VictimID    | int          | NO   | PRI | NULL    |       |
| CrimeID     | int          | YES  | MUL | NULL    |       |
| Name        | varchar(255) | YES  |     | NULL    |       |
| Age         | int          | YES  |     | NULL    |       |
| ContactInfo | varchar(255) | YES  |     | NULL    |       |
| Injuries    | varchar(255) | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

3. Suspect

```sql
CREATE TABLE IF NOT EXISTS Suspect (
SuspectID INT PRIMARY KEY,
CrimeID INT,
Name VARCHAR(255),
Description TEXT,
CriminalHistory TEXT,
FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
);
```

```
+-----------------+--------------+------+-----+---------+-------+
| Field           | Type         | Null | Key | Default | Extra |
+-----------------+--------------+------+-----+---------+-------+
| SuspectID       | int          | NO   | PRI | NULL    |       |
| CrimeID         | int          | YES  | MUL | NULL    |       |
| Name            | varchar(255) | YES  |     | NULL    |       |
| Age             | int          | YES  |     | NULL    |       |
| Description     | text         | YES  |     | NULL    |       |
| CriminalHistory | text         | YES  |     | NULL    |       |
+-----------------+--------------+------+-----+---------+-------+
6 rows in set (0.01 sec)
```

Inserting Values Into Tables:

```sql
INSERT INTO Crime (CrimeID, IncidentType, IncidentDate,
Location, Description, Status) VALUES
(1, 'Robbery', '2023-09-15', '123 Main St, Cityville',
'Armed robbery at a convenience store', 'Open'),
(2, 'Homicide', '2023-09-20', '456 Elm St, Townsville',
'Investigation into a murder case', 'Under
Investigation'),
(3, 'Theft', '2023-09-10', '789 Oak St, Villagetown',
'Shoplifting incident at a mall', 'Closed'),
(4, 'Assault', '2023-09-25', '321 Pine St, Suburbia',
'Physical altercation between two individuals', 'Open'),
(5, 'Burglary', '2023-09-05', '555 Cedar Ave, Downtown',
'Break-in and theft at a residential property', 'Closed'),
(6, 'Vandalism', '2023-09-12', '777 Oak St, Villagetown',
'Property damage incident', 'Open'),
(7, 'Arson', '2023-09-08', '999 Maple Ave, Countryside',
'Fire deliberately set to property', 'Under
Investigation');
```

```
+---------+--------------+--------------+----------------------------+----------------------------------------------+---------------------+
| CrimeID | IncidentType | IncidentDate | Location                   | Description                                  | Status              |
+---------+--------------+--------------+----------------------------+----------------------------------------------+---------------------+
|       1 | Robbery      | 2023-09-15   | 123 Main St, Cityville     | Armed robbery at a convenience store         | Open                |
|       2 | Homicide     | 2023-09-20   | 456 Elm St, Townsville     | Investigation into a murder case             | Under Investigation |
|       3 | Theft        | 2023-09-10   | 789 Oak St, Villagetown    | Shoplifting incident at a mall               | Closed              |
|       4 | Assault      | 2023-09-25   | 321 Pine St, Suburbia      | Physical altercation between two individuals | Open                |
|       5 | Burglary     | 2023-09-05   | 555 Cedar Ave, Downtown    | Break-in and theft at a residential property | Closed              |
|       6 | Vandalism    | 2023-09-12   | 777 Oak St, Villagetown    | Property damage incident                     | Open                |
|       7 | Arson        | 2023-09-08   | 999 Maple Ave, Countryside | Fire deliberately set to property            | Under Investigation |
+---------+--------------+--------------+----------------------------+----------------------------------------------+---------------------+
7 rows in set (0.00 sec)
```

```sql
INSERT INTO Victim (VictimID, CrimeID, Name,age,
ContactInfo, Injuries) VALUES
(1, 1, 'John Doe', 25 , 'johndoe@example.com', 'Minor
injuries'),
(2, 2, 'Jane Smith', 32 , 'janesmith@example.com',
'Deceased'),
(3, 3, 'Alice Johnson', 40 , 'alicejohnson@example.com',
'None'),
(4, 4, 'Michael Brown', 35 , 'michaelbrown@example.com',
'Bruises'),
```

```sql
(5, 5, 'Emily Johnson', 28 , 'emilyjohnson@example.com',
'None'),
(6, 6, 'Sarah Johnson', 22 , 'sarahjohnson@example.com',
'None'),
(7, 6, 'David Brown', 41 , 'davidbrown@example.com',
'Property damage'),
(8, 7, 'Mark Wilson', 29 , 'markwilson@example.com',
'None'),
(9, 7, 'Jessica Lee', 26 , 'jessicalee@example.com',
'Smoke inhalation');
```

```
+----------+---------+---------------+------+----------------------------+------------------+
| VictimID | CrimeID | Name          | Age  | ContactInfo                | Injuries         |
+----------+---------+---------------+------+----------------------------+------------------+
|        1 |       1 | John Doe      |   25 | johndoe@example.com        | Minor injuries   |
|        2 |       2 | Jane Smith    |   32 | janesmith@example.com      | Deceased         |
|        3 |       3 | Alice Johnson |   40 | alicejohnson@example.com   | None             |
|        4 |       4 | Michael Brown |   35 | michaelbrown@example.com   | Bruises          |
|        5 |       5 | Emily Johnson |   28 | emilyjohnson@example.com   | None             |
|        6 |       6 | Sarah Johnson |   22 | sarahjohnson@example.com   | None             |
|        7 |       6 | David Brown   |   41 | davidbrown@example.com     | Property damage  |
|        8 |       7 | Mark Wilson   |   29 | markwilson@example.com     | None             |
|        9 |       7 | Jessica Lee   |   26 | jessicalee@example.com     | Smoke inhalation |
+----------+---------+---------------+------+----------------------------+------------------+
9 rows in set (0.00 sec)
```

```sql
INSERT INTO Suspect (SuspectID, CrimeID, Name,age,
Description, CriminalHistory) VALUES
(1, 1, 'Robber 1',30 , 'Armed and masked robber',
'Previous robbery convictions'),
(2, 2, 'Unknown',, 'Investigation ongoing', NULL),
(3, 3, 'Suspect 1',35 , 'Shoplifting suspect', 'Prior
shoplifting arrests'),
(4, 4, 'Suspect 2',40 , 'Physical assault suspect',
'Prior assault charges'),
(5, 5, 'Burglar 1',45 , 'Suspected burglar', 'Previous
burglary convictions'),
(6, 6, 'Scammer 1',50 , 'Mastermind behind the fraud
scheme', 'Previous fraud convictions'),
(7, 7, 'Arsonist 1',55 , 'Primary suspect believed to
have started the fire', 'No prior criminal history');
```

```
+-----------+----------+-----------+------+-----------------------------------------------+----------------------------------+
| SuspectID | CrimeID  | Name      | Age  | Description                                   | CriminalHistory                  |
+-----------+----------+-----------+------+-----------------------------------------------+----------------------------------+
|         1 |        1 | Robber 1  |   30 | Armed and masked robber                       | Previous robbery convictions     |
|         2 |        2 | Unknown   | NULL | Investigation ongoing                         | NULL                             |
|         3 |        3 | Suspect 1 |   35 | Shoplifting suspect                           | Prior shoplifting arrests        |
|         4 |        4 | Suspect 2 |   40 | Physical assault suspect                      | Prior assault charges            |
|         5 |        5 | Burglar 1 |   45 | Suspected burglar                             | Previous burglary convictions    |
|         6 |        6 | Scammer 1 |   50 | Mastermind behind the fraud scheme            | Previous fraud convictions       |
|         7 |        7 | Arsonist 1|   55 | Primary suspect believed to have started the fire | No prior criminal history    |
+-----------+----------+-----------+------+-----------------------------------------------+----------------------------------+
7 rows in set (0.00 sec)
```

Queries:

1. Select all open incidents.

```
SELECT * FROM Crime WHERE Status = 'Open';
```

```
+---------+--------------+--------------+-------------------------+----------------------------------------+--------+
| CrimeID | IncidentType | IncidentDate | Location                | Description                            | Status |
+---------+--------------+--------------+-------------------------+----------------------------------------+--------+
|       1 | Robbery      | 2023-09-15   | 123 Main St, Cityville  | Armed robbery at a convenience store   | Open   |
|       4 | Assault      | 2023-09-25   | 321 Pine St, Suburbia   | Physical altercation between two individuals | Open |
|       6 | Vandalism    | 2023-09-12   | 777 Oak St, Villagetown | Property damage incident               | Open   |
+---------+--------------+--------------+-------------------------+----------------------------------------+--------+
3 rows in set (0.00 sec)
```

2. Find the total number of incidents.

```
SELECT COUNT(crime_id) AS TotalIncidents FROM Crime;
```

```
+----------------+
| TotalIncidents |
+----------------+
|              7 |
+----------------+
1 row in set (0.00 sec)
```

3. List all unique incident types.

```
SELECT DISTINCT IncidentType FROM Crime;
```

```
+--------------+
| IncidentType |
+--------------+
| Robbery      |
| Homicide     |
| Theft        |
| Assault      |
| Burglary     |
| Vandalism    |
| Arson        |
+--------------+
7 rows in set (0.00 sec)
```

4. Retrieve incidents that occurred between '2023-09-01' and '2023-09-10'.

```sql
SELECT * FROM Crime WHERE IncidentDate BETWEEN '2023-09-01' AND '2023-09-10';
```

```
+---------+-------------+-------------+-------------------------+-----------------------------------------+--------------------+
| CrimeID | IncidentType| IncidentDate| Location                | Description                             | Status             |
+---------+-------------+-------------+-------------------------+-----------------------------------------+--------------------+
|       3 | Theft       | 2023-09-10  | 789 Oak St, Villagetown | Shoplifting incident at a mall          | Closed             |
|       5 | Burglary    | 2023-09-05  | 555 Cedar Ave, Downtown | Break-in and theft at a residential property | Closed        |
|       7 | Arson       | 2023-09-08  | 999 Maple Ave, Countryside | Fire deliberately set to property    | Under Investigation|
+---------+-------------+-------------+-------------------------+-----------------------------------------+--------------------+
3 rows in set (0.00 sec)
```

5. List persons involved in incidents in descending order of age.

```sql
SELECT Name, Age
FROM (SELECT Name, Age FROM Victim
UNION ALL
SELECT Name, Age FROM Suspect
) AS temp
ORDER BY Age DESC;
```

```
+---------------+------+
| Name          | Age  |
+---------------+------+
| Arsonist 1    |   55 |
| Scammer 1     |   50 |
| Burglar 1     |   45 |
| David Brown   |   41 |
| Alice Johnson |   40 |
| Suspect 2     |   40 |
| Michael Brown |   35 |
| Suspect 1     |   35 |
| Jane Smith    |   32 |
| Robber 1      |   30 |
| Mark Wilson   |   29 |
| Emily Johnson |   28 |
| Jessica Lee   |   26 |
| John Doe      |   25 |
| Sarah Johnson |   22 |
| Unknown       | NULL |
+---------------+------+
16 rows in set (0.00 sec)
```

6. Find the average age of persons involved in incidents.

```sql
SELECT ROUND(AVG(Age),0) AS AverageAge
FROM (SELECT Name, Age FROM Victim
UNION ALL
SELECT Name, Age FROM Suspect
) AS temp;
```

```
+------------+
| AverageAge |
+------------+
|         36 |
+------------+
1 row in set (0.00 sec)
```

7. List incident types and their counts, only for open cases.

```
SELECT IncidentType, COUNT(*) AS IncidentCount FROM Crime
WHERE Status = 'Open' GROUP BY IncidentType;
```

```
+--------------+---------------+
| IncidentType | IncidentCount |
+--------------+---------------+
| Robbery      |             1 |
| Assault      |             1 |
| Vandalism    |             1 |
+--------------+---------------+
3 rows in set (0.00 sec)
```

8. Find persons with names containing 'Doe'.

```
SELECT name FROM Victim WHERE Name LIKE '%Doe%'
UNION ALL
SELECT name FROM Suspect WHERE Name LIKE '%Doe%';
```

```
+----------+
| name     |
+----------+
| John Doe |
+----------+
1 row in set (0.00 sec)
```

9. Retrieve the names of persons involved in open cases and closed cases.

```
SELECT Name FROM (
SELECT Name FROM Victim
WHERE CrimeID IN (SELECT CrimeID FROM Crime WHERE Status
= 'Open' or Status = 'Closed' )
UNION
SELECT Name FROM Suspect
WHERE CrimeID IN (SELECT CrimeID FROM Crime WHERE Status
= 'Open' or Status = 'Closed' )
) AS temp;
```

```
+---------------+
| Name          |
+---------------+
| John Doe      |
| Alice Johnson |
| Michael Brown |
| Emily Johnson |
| Sarah Johnson |
| David Brown   |
| Robber 1      |
| Suspect 1     |
| Suspect 2     |
| Burglar 1     |
| Scammer 1     |
+---------------+
11 rows in set (0.00 sec)
```

10. List incident types where there are persons aged 30 or 35 involved.

```sql
SELECT DISTINCT c.IncidentType
FROM Crime c
JOIN Victim v ON c.CrimeID = v.CrimeID
WHERE v.age IN (30, 35);
```

```sql
SELECT c.IncidentType
FROM Crime c
WHERE c.CrimeID in
(SELECT v.CrimeID FROM Victim v WHERE age=30 or age=35)
```

```
+--------------+
| IncidentType |
+--------------+
| Assault      |
+--------------+
1 row in set (0.00 sec)
```

11. Find persons involved in incidents of the same type as 'Robbery'.

```sql
SELECT Name FROM (
SELECT Name FROM Victim
WHERE CrimeID IN (SELECT CrimeID FROM Crime WHERE
IncidentType = 'Robbery')
UNION
SELECT Name FROM Suspect
WHERE CrimeID IN (SELECT CrimeID FROM Crime WHERE
IncidentType = 'Robbery')
) AS temp;
```

```
+-----------+
| Name      |
+-----------+
| John Doe  |
| Robber 1  |
+-----------+
2 rows in set (0.00 sec)
```

12. List incident types with more than one open case.

```sql
SELECT IncidentType, COUNT(*)
FROM Crime
WHERE Status = 'Open'
GROUP BY IncidentType
HAVING COUNT(*) > 1;
```

```
Empty set (0.00 sec)
```

13. List all incidents with suspects whose names also appear as victims in other incidents.

```sql
SELECT c.*, v.Name AS VictimName, s.Name AS SuspectName
FROM Crime c
JOIN Victim v ON c.CrimeID = v.CrimeID
JOIN Suspect s ON c.CrimeID = s.CrimeID AND v.Name =
s.Name;
```

```
Empty set (0.00 sec)
```

14. Retrieve all incidents along with victim and suspect details.

```sql
SELECT c.*, v.Name AS VictimName, s.Name AS SuspectName
FROM Crime c
LEFT JOIN Victim v ON c.CrimeID = v.CrimeID
LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID;
```

CrimeID	IncidentType	IncidentDate	Location	Description	Status	VictimName	SuspectName
1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open	John Doe	Robber 1
2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Investigation	Jane Smith	Unknown
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	Alice Johnson	Suspect 1
4	Assault	2023-09-25	321 Pine St, Suburbia	Physical altercation between two individuals	Open	Michael Brown	Suspect 2
5	Burglary	2023-09-05	555 Cedar Ave, Downtown	Break-in and theft at a residential property	Closed	Emily Johnson	Burglar 1
6	Vandalism	2023-09-12	777 Oak St, Villagetown	Property damage incident	Open	Sarah Johnson	Scammer 1
6	Vandalism	2023-09-12	777 Oak St, Villagetown	Property damage incident	Open	David Brown	Scammer 1
7	Arson	2023-09-08	999 Maple Ave, Countryside	Fire deliberately set to property	Under Investigation	Mark Wilson	Arsonist 1
7	Arson	2023-09-08	999 Maple Ave, Countryside	Fire deliberately set to property	Under Investigation	Jessica Lee	Arsonist 1

```
9 rows in set (0.00 sec)
```

15. Find incidents where the suspect is older than any victim.

```sql
SELECT c.* FROM Crime c
INNER JOIN Suspect s ON c.CrimeID = s.CrimeID
WHERE s.Age > ANY (SELECT v.Age FROM Victim v WHERE
v.CrimeID = c.CrimeID);
```

```
+---------+--------------+--------------+---------------------------+------------------------------------------+--------------------+
| CrimeID | IncidentType | IncidentDate | Location                  | Description                              | Status             |
+---------+--------------+--------------+---------------------------+------------------------------------------+--------------------+
|       1 | Robbery      | 2023-09-15   | 123 Main St, Cityville     | Armed robbery at a convenience store     | Open               |
|       4 | Assault      | 2023-09-25   | 321 Pine St, Suburbia      | Physical altercation between two individuals | Open           |
|       5 | Burglary     | 2023-09-05   | 555 Cedar Ave, Downtown    | Break-in and theft at a residential property | Closed         |
|       6 | Vandalism    | 2023-09-12   | 777 Oak St, Villagetown    | Property damage incident                 | Open               |
|       7 | Arson        | 2023-09-08   | 999 Maple Ave, Countryside | Fire deliberately set to property        | Under Investigation |
+---------+--------------+--------------+---------------------------+------------------------------------------+--------------------+
5 rows in set (0.00 sec)
```

16. Find suspects involved in multiple incidents:

```sql
SELECT SuspectID, Name
FROM Suspect
GROUP BY SuspectID, Name
HAVING COUNT(DISTINCT CrimeID) > 1;
```

```
Empty set (0.00 sec)
```

17. List incidents with no suspects involved.

```sql
SELECT c.*
FROM Crime c
LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID
WHERE s.SuspectID IS NULL;
```

```
Empty set (0.00 sec)
```

18. List all cases where at least one incident is of type 'Homicide' and all other incidents are of type 'Robbery'.

```sql
SELECT * FROM Crime WHERE IncidentType = 'Homicide';
```

```
+---------+--------------+--------------+-----------------------+------------------------------+--------------------+
| CrimeID | IncidentType | IncidentDate | Location              | Description                  | Status             |
+---------+--------------+--------------+-----------------------+------------------------------+--------------------+
|       2 | Homicide     | 2023-09-20   | 456 Elm St, Townsville | Investigation into a murder case | Under Investigation |
+---------+--------------+--------------+-----------------------+------------------------------+--------------------+
1 row in set (0.00 sec)
```

19. Retrieve a list of all incidents and the associated suspects, showing suspects for each incident, or 'No Suspect' if there are none.

```sql
SELECT c.CrimeID, c.IncidentType, c.IncidentDate,
c.Location, c.Description,
COALESCE(s.Name, 'No Suspect') AS SuspectName
FROM Crime c
LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID;
```

```
+---------+--------------+--------------+---------------------------+-------------------------------------------+-------------+
| CrimeID | IncidentType | IncidentDate | Location                  | Description                               | SuspectName |
+---------+--------------+--------------+---------------------------+-------------------------------------------+-------------+
|       1 | Robbery      | 2023-09-15   | 123 Main St, Cityville    | Armed robbery at a convenience store      | Robber 1    |
|       2 | Homicide     | 2023-09-20   | 456 Elm St, Townsville    | Investigation into a murder case          | Unknown     |
|       3 | Theft        | 2023-09-10   | 789 Oak St, Villagetown   | Shoplifting incident at a mall            | Suspect 1   |
|       4 | Assault      | 2023-09-25   | 321 Pine St, Suburbia     | Physical altercation between two individuals | Suspect 2   |
|       5 | Burglary     | 2023-09-05   | 555 Cedar Ave, Downtown   | Break-in and theft at a residential property | Burglar 1   |
|       6 | Vandalism    | 2023-09-12   | 777 Oak St, Villagetown   | Property damage incident                  | Scammer 1   |
|       7 | Arson        | 2023-09-08   | 999 Maple Ave, Countryside | Fire deliberately set to property        | Arsonist 1  |
+---------+--------------+--------------+---------------------------+-------------------------------------------+-------------+
7 rows in set (0.00 sec)
```

20. List all suspects who have been involved in incidents with incident types 'Robbery' or 'Assault'

```sql
SELECT DISTINCT s.SuspectID, s.Name
FROM Suspect s
INNER JOIN Crime c ON s.CrimeID = c.CrimeID
WHERE c.IncidentType IN ('Robbery', 'Assault');
```

```
+-----------+-----------+
| SuspectID | Name      |
+-----------+-----------+
|         1 | Robber 1  |
|         4 | Suspect 2 |
+-----------+-----------+
2 rows in set (0.00 sec)
```