**Coding Challenge SQL**
**Crime Management Shema DDL and DML**

```
-- Create tables
CREATE TABLE Crime (
   CrimeID INT PRIMARY KEY,
   IncidentType VARCHAR(255),
   IncidentDate DATE,
   Location VARCHAR(255),
   Description TEXT,
   Status VARCHAR(20)
);
```

```
mysql> CREATE TABLE Crime (
    -> CrimeID INT PRIMARY KEY,
    -> IncidentType VARCHAR(255), IncidentDate DATE,
    -> Location VARCHAR(255), Description TEXT,
    -> Status VARCHAR(20)
    -> );
Query OK, 0 rows affected (0.10 sec)

mysql>
mysql> desc crime;
+--------------+--------------+------+-----+---------+-------+
| 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)
```

```
CREATE TABLE Victim (
   VictimID INT PRIMARY KEY,
   CrimeID INT,
   Name VARCHAR(255),
   ContactInfo VARCHAR(255),
   Injuries VARCHAR(255),
   FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
);
```

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```
mysql> CREATE TABLE Victim (
    -> VictimID INT PRIMARY KEY,
    -> CrimeID INT,
    -> Name VARCHAR(255),
    -> ContactInfo VARCHAR(255), Injuries VARCHAR(255),
    -> FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
    -> );
Query OK, 0 rows affected (0.09 sec)

mysql> desc victim;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| VictimID    | int         | NO   | PRI | NULL    |       |
| CrimeID     | int         | YES  | MUL | NULL    |       |
| Name        | varchar(255) | YES  |     | NULL    |       |
| ContactInfo | varchar(255) | YES  |     | NULL    |       |
| Injuries    | varchar(255) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

```
CREATE TABLE Suspect (
   SuspectID INT PRIMARY KEY,
   CrimeID INT,
   Name VARCHAR(255),
   Description TEXT,
   CriminalHistory TEXT,
   FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
);
```

```
mysql> CREATE TABLE Suspect ( SuspectID INT PRIMARY KEY,
    -> CrimeID INT,
    -> Name VARCHAR(255),
    -> Description TEXT, CriminalHistory TEXT,
    -> FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
    -> );
Query OK, 0 rows affected (0.07 sec)

mysql>
mysql>
mysql> desc suspect;
+-----------------+-------------+------+-----+---------+-------+
| Field           | Type        | Null | Key | Default | Extra |
+-----------------+-------------+------+-----+---------+-------+
| SuspectID       | int         | NO   | PRI | NULL    |       |
| CrimeID         | int         | YES  | MUL | NULL    |       |
| Name            | varchar(255) | YES  |     | NULL    |       |
| Description     | text        | YES  |     | NULL    |       |
| CriminalHistory | text        | YES  |     | NULL    |       |
+-----------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

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-- Insert sample data

```
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');
```

```
mysql> 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, To
wnsville', 'Investigation into a murder case', 'Under
    '> Investigation'),
    -> (3, 'Theft', '2023-09-10', '789 Oak St, Villagetown', 'Shoplifting incident at a mall', 'Closed');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from crime;
+---------+--------------+--------------+-----------------------+-----------------------------------+--------------------+
| 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             |
+---------+--------------+--------------+-----------------------+-----------------------------------+--------------------+
3 rows in set (0.00 sec)
```

```
INSERT INTO Victim (VictimID, CrimeID, Name, ContactInfo, Injuries)
VALUES
    (1, 1, 'John Doe', 'johndoe@example.com', 'Minor injuries'),
    (2, 2, 'Jane Smith', 'janesmith@example.com', 'Deceased'),
    (3, 3, 'Alice Johnson', 'alicejohnson@example.com', 'None');
```

```
    INSERT INTO Victim (VictimID, CrimeID, Name, ContactInfo, Injuries) VALUES
    -> (1, 1, 'John Doe', 'johndoe@example.com', 'Minor injuries'), (2, 2, 'Jane Smith', 'janesmith@example.com', 'Deceased'),
    ->        (3, 3, 'Alice Johnson', 'alicejohnson@example.com', 'None');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> select * from victim;
+----------+---------+---------------+--------------------------+----------------+
| VictimID | CrimeID | Name          | ContactInfo              | Injuries       |
+----------+---------+---------------+--------------------------+----------------+
|        1 |       1 | John Doe      | johndoe@example.com      | Minor injuries |
|        2 |       2 | Jane Smith    | janesmith@example.com    | Deceased       |
|        3 |       3 | Alice Johnson | alicejohnson@example.com | None           |
+----------+---------+---------------+--------------------------+----------------+
3 rows in set (0.00 sec)
```

```
INSERT INTO Suspect (SuspectID, CrimeID, Name, Description, CriminalHistory)
VALUES
    (1, 1, 'Robber 1', 'Armed and masked robber', 'Previous robbery convictions'),
    (2, 2, 'Unknown', 'Investigation ongoing', NULL),
    (3, 3, 'Suspect 1', 'Shoplifting suspect', 'Prior shoplifting arrests');
```

```
mysql> INSERT INTO Suspect (SuspectID, CrimeID, Name, Description, CriminalHistory) VALUES
    -> (1, 1, 'Robber 1', 'Armed and masked robber', 'Previous robbery convictions'), (2, 2, 'Unknown', 'Investigation ongoing', NULL),
    -> (3, 3, 'Suspect 1', 'Shoplifting suspect', 'Prior shoplifting arrests');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
mysql> select * from suspect;
+-----------+---------+-----------+-------------------------+-----------------------------+
| SuspectID | CrimeID | Name      | Description             | CriminalHistory             |
+-----------+---------+-----------+-------------------------+-----------------------------+
|         1 |       1 | Robber 1  | Armed and masked robber | Previous robbery convictions |
|         2 |       2 | Unknown   | Investigation ongoing   | NULL                        |
|         3 |       3 | Suspect 1 | Shoplifting suspect     | Prior shoplifting arrests   |
+-----------+---------+-----------+-------------------------+-----------------------------+
3 rows in set (0.00 sec)
```

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**Solve the below queries**:

**1.Select all open incidents.**

```
ysql> 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   |
+---------+--------------+--------------+-----------------------+-------------------------------------+--------+
 row in set (0.00 sec)
```

2.Find the total number of incidents.

```
mysql> SELECT COUNT(*) AS TotalIncidents
    -> FROM crime;
+-----------------+
| TotalIncidents |
+-----------------+
|               3 |
+-----------------+
1 row in set (0.03 sec)
```

3.List all unique incident types

```
mysql> SELECT DISTINCT IncidentType
    -> FROM Crime;
+--------------+
| IncidentType |
+--------------+
| Robbery      |
| Homicide     |
| Theft        |
+--------------+
3 rows in set (0.00 sec)
```

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

```
mysql> 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 |
+---------+--------------+--------------+-----------------------+-------------------------------+--------+
1 row in set (0.01 sec)
```

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

```
mysql> UPDATE Victim
    -> SET Age = 65
    -> WHERE VictimID = 1;
Query OK, 1 row affected (0.04 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> UPDATE Victim
    -> SET Age = 35
    -> WHERE VictimID = 2;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> UPDATE Victim
    -> SET Age = 70
    -> WHERE VictimID = 3;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from victim;
+----------+---------+---------------+-------------------------+----------------+------+
| VictimID | CrimeID | Name          | ContactInfo             | Injuries       | age  |
+----------+---------+---------------+-------------------------+----------------+------+
|        1 |       1 | John Doe      | johndoe@example.com     | Minor injuries |   65 |
|        2 |       2 | Jane Smith    | janesmith@example.com   | Deceased       |   35 |
|        3 |       3 | Alice Johnson | alicejohnson@example.com | None           |   70 |
+----------+---------+---------------+-------------------------+----------------+------+
3 rows in set (0.00 sec)
```

```
mysql> SELECT Name, Age, 'Victim' AS Role
    -> FROM Victim
    -> ORDER BY Age DESC;
+---------------+------+--------+
| Name          | Age  | Role   |
+---------------+------+--------+
| Alice Johnson |   70 | Victim |
| John Doe      |   65 | Victim |
| Jane Smith    |   35 | Victim |
+---------------+------+--------+
3 rows in set (0.00 sec)
```

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

```
mysql> select avg(age) from victim;
+-----------+
| avg(age)  |
+-----------+
|  56.6667  |
+-----------+
1 row in set (0.01 sec)
```

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

```
mysql> SELECT IncidentType, COUNT(*) AS IncidentCount
    -> FROM Crime
    -> WHERE Status = 'Open'
    -> GROUP BY IncidentType;
+--------------+---------------+
| IncidentType | IncidentCount |
+--------------+---------------+
| Robbery      |             1 |
+--------------+---------------+
1 row in set (0.01 sec)
```

8.Find persons with names containing 'Doe'.

```
mysql> select * from victim
    -> where name like '%doe';
+----------+---------+----------+--------------------+----------------+------+
| VictimID | CrimeID | Name     | ContactInfo        | Injuries       | age  |
+----------+---------+----------+--------------------+----------------+------+
|        1 |       1 | John Doe | johndoe@example.com | Minor injuries | NULL |
+----------+---------+----------+--------------------+----------------+------+
1 row in set (0.00 sec)
```

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

```
mysql> SELECT V.Name, C.Status
    -> FROM Victim V
    -> JOIN Crime C ON V.CrimeID = C.CrimeID
    -> WHERE C.Status IN ('Open', 'Closed');
+---------------+--------+
| Name          | Status |
+---------------+--------+
| John Doe      | Open   |
| Alice Johnson | Closed |
+---------------+--------+
2 rows in set (0.00 sec)
```

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

```
mysql> SELECT DISTINCT C.IncidentType
    -> FROM Victim V
    -> JOIN Crime C ON V.CrimeID = C.CrimeID
    -> WHERE V.Age IN (30, 35);
+--------------+
| IncidentType |
+--------------+
| Homicide     |
+--------------+
1 row in set (0.00 sec)
```

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

```
mysql> SELECT V.Name, V.ContactInfo, V.Injuries, C.IncidentType
    -> FROM Victim V
    -> JOIN Crime C ON V.CrimeID = C.CrimeID
    -> WHERE C.IncidentType = 'Robbery';
+----------+--------------------+----------------+--------------+
| Name     | ContactInfo        | Injuries       | IncidentType |
+----------+--------------------+----------------+--------------+
| John Doe | johndoe@example.com | Minor injuries | Robbery      |
+----------+--------------------+----------------+--------------+
1 row in set (0.00 sec)
```

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

```
mysql> SELECT IncidentType, COUNT(*) AS OpenCasesCount
    -> FROM Crime
    -> WHERE Status = 'Open'
    -> GROUP BY IncidentType
    -> HAVING COUNT(*) > 1;
Empty set (0.00 sec)
```

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

```
mysql> alter table suspect add column SuspectName varchar(30);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> update Suspect
    -> set Suspectname='Riya Mehta'
    -> where suspectID = 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> update Suspect
    -> set Suspectname='Jane Smith'
    -> where suspectID = 2;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> update Suspect
    -> set Suspectname='Nick Singh'
    -> where suspectID = 3;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Suspect;
+-----------+---------+-----------+-------------------------+-------------------------------+-------------+
| SuspectID | CrimeID | Name      | Description             | CriminalHistory               | SuspectName |
+-----------+---------+-----------+-------------------------+-------------------------------+-------------+
|         1 |       1 | Robber 1  | Armed and masked robber | Previous robbery convictions | Riya Mehta  |
|         2 |       2 | Unknown   | Investigation ongoing   | NULL                          | Jane Smith  |
|         3 |       3 | Suspect 1 | Shoplifting suspect     | Prior shoplifting arrests     | Nick Singh  |
+-----------+---------+-----------+-------------------------+-------------------------------+-------------+
3 rows in set (0.00 sec)
```

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

```
mysql> SELECT C.CrimeID, C.IncidentType,
    ->        V.Name AS VictimName, V.ContactInfo AS VictimContact,
    ->        V.Injuries AS VictimInjuries, V.Age AS VictimAge,
    ->        S.Name AS SuspectName, S.Description AS SuspectDescription,
    ->        S.CriminalHistory AS SuspectCriminalHistory, S.Age AS SuspectAge
    -> FROM Crime C
    -> LEFT JOIN Victim V ON C.CrimeID = V.CrimeID
    -> LEFT JOIN Suspect S ON C.CrimeID = S.CrimeID;
+---------+--------------+--------------+-------------------------+----------------+-----------+-------------+-------------------------+------
-----------------------+------------+
| CrimeID | IncidentType | VictimName   | VictimContact           | VictimInjuries | VictimAge | SuspectName | SuspectDescription      | Suspe
ctCriminalHistory      | SuspectAge |
+---------+--------------+--------------+-------------------------+----------------+-----------+-------------+-------------------------+------
-----------------------+------------+
|       1 | Robbery      | John Doe     | johndoe@example.com     | Minor injuries |        65 | Robber 1    | Armed and masked robber | Previ
ous robbery convictions |         70 |
|       2 | Homicide     | Jane Smith   | janesmith@example.com   | Deceased       |        35 | Unknown     | Investigation ongoing   | NULL
                       |         40 |
|       3 | Theft        | Alice Johnson | alicejohnson@example.com | None           |        70 | Suspect 1   | Shoplifting suspect     | Prior
 shoplifting arrests   |         60 |
+---------+--------------+--------------+-------------------------+----------------+-----------+-------------+-------------------------+------
-----------------------+------------+
3 rows in set (0.00 sec)
```

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

```
mysql> alter table suspect add column Age int;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> update Suspect
    -> set age =70
    -> where suspectID= 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> update Suspect
    -> set age=40
    -> where suspectID = 2;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> update Suspect
    -> set age=60
    -> where suspectID = 3;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>
mysql> select * from suspect;
+-----------+---------+-----------+-------------------------+------------------------------+-------------+------+
| SuspectID | CrimeID | Name      | Description             | CriminalHistory              | SuspectName | Age  |
+-----------+---------+-----------+-------------------------+------------------------------+-------------+------+
|         1 |       1 | Robber 1  | Armed and masked robber | Previous robbery convictions | Riya Mehta  |   70 |
|         2 |       2 | Unknown   | Investigation ongoing   | NULL                         | Jane Smith  |   40 |
|         3 |       3 | Suspect 1 | Shoplifting suspect     | Prior shoplifting arrests    | Nick Singh  |   60 |
+-----------+---------+-----------+-------------------------+------------------------------+-------------+------+
3 rows in set (0.00 sec)
```

```
mysql> SELECT C.CrimeID, C.IncidentType
    -> FROM Crime C
    -> WHERE EXISTS (
    ->     SELECT 1
    ->     FROM Suspect S
    ->     JOIN Victim V ON S.CrimeID = V.CrimeID
    ->     WHERE S.Age > V.Age AND S.CrimeID = C.CrimeID
    -> );
+---------+--------------+
| CrimeID | IncidentType |
+---------+--------------+
|       1 | Robbery      |
|       2 | Homicide     |
+---------+--------------+
2 rows in set (0.01 sec)
```

16.Find suspects involved in multiple incidents:

```
mysql> SELECT S.Name AS SuspectName, COUNT(*) AS IncidentCount
    -> FROM Suspect S
    -> JOIN Crime C ON S.CrimeID = C.CrimeID
    -> GROUP BY S.SuspectID, S.Name
    -> HAVING COUNT(*) > 1;
Empty set (0.00 sec)
```

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17.List incidents with no suspects involved.

```
mysql> SELECT I.CrimeID, I.IncidentType, I.IncidentDate, I.Location, I.Description, I.Status
    -> FROM Crime I
    -> LEFT JOIN Suspect S ON I.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'.

```
mysql> SELECT crimeID, COUNT(DISTINCT IncidentType) AS UniqueIncidentTypes
    -> FROM Crime
    -> GROUP BY crimeID
    -> HAVING COUNT(DISTINCT CASE WHEN IncidentType = 'Homicide' THEN IncidentType END) >= 1
    -> AND COUNT(DISTINCT CASE WHEN IncidentType = 'Robbery' THEN IncidentType END) > 0
    -> AND COUNT(DISTINCT IncidentType) = 2;
Empty set (0.01 sec)
```

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

```
mysql> SELECT C.crimeID, C.IncidentType,
    -> COALESCE(S.SuspectName, 'No Suspect') AS SName,
    -> COALESCE(S.Description, 'No Description') AS SuspectDescription,
    -> COALESCE(S.CriminalHistory, 'No Criminal History') AS SuspectCriminalHistory
    -> FROM Crime C
    -> LEFT JOIN Suspect S ON C.crimeID = S.suspectID;
+---------+--------------+------------+-------------------------+-------------------------------+
| crimeID | IncidentType | SName      | SuspectDescription      | SuspectCriminalHistory        |
+---------+--------------+------------+-------------------------+-------------------------------+
|       1 | Robbery      | Riya Mehta | Armed and masked robber | Previous robbery convictions  |
|       2 | Homicide     | Jane Smith | Investigation ongoing   | No Criminal History           |
|       3 | Theft        | Nick Singh | Shoplifting suspect     | Prior shoplifting arrests     |
+---------+--------------+------------+-------------------------+-------------------------------+
3 rows in set (0.00 sec)
```

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

```
mysql> SELECT DISTINCT S.Name
    -> FROM Suspect S
    -> JOIN Crime C ON S.CrimeID = C.CrimeID
    -> WHERE C.IncidentType IN ('Robbery', 'Assault');
+----------+
| Name     |
+----------+
| Robber 1 |
+----------+
1 row in set (0.00 sec)
```

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