

SQL CODING CHALLENGE:

```
mysql> CREATE DATABASE SQLChallenge;  
Query OK, 1 row affected (0.06 sec)
```

```
mysql> USE SQLChallenge;  
Database changed
```

CREATING TABLE:

```
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 (0.14 sec)
```

```
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 (0.05 sec)

```
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 (0.10 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 (0.03 sec)

```
mysql>
```

```
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 (0.10 sec)
```

```
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 (0.04 sec)

INSERTING VALUES:

```
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, Townsville', '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)
```

```
mysql>
mysql> 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 (0.05 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

```
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)

```
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> 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)

```
mysql> INSERT INTO Crime (CrimeID, IncidentType, IncidentDate, Location,
Description, Status)
```

```
-> VALUES (4, 'Assault', '2023-09-26', '5 Royal St, Cinecity',
'Physical assault reported in a park', 'Open'),
```

```
-> (5, 'TerrificAttack', '2023-09-30', '7 Msdy St, westside', 'Street
attack during the night', 'Under Investigation');
```

Query OK, 2 rows affected (0.03 sec)

Records: 2 Duplicates: 0 Warnings: 0

```
mysql> INSERT INTO Victim (VictimID, CrimeID, Name, ContactInfo,
Injuries)
```

```
-> VALUES (4, 4, 'Michael Jackson', 'michaelJackson@example.com',
'Serious head injury'), (5, 5, 'Sam Samuel', 'SamSamuel@example.com',
'Gunshots and cuts');
```

Query OK, 2 rows affected (0.03 sec)

Records: 2 Duplicates: 0 Warnings: 0

```
mysql>
```

```
mysql> INSERT INTO Suspect (SuspectID, CrimeID, Name, Description,
CriminalHistory)
```

```
-> VALUES (4, 4, 'Suspect 2', 'Aggressive person involved in the
assault', 'Prior incidents occurred'), (5, 5, 'Attacker 1', 'Suspect
roaming in the street', 'History of Attacks in multiple towns');
```

Query OK, 2 rows affected (0.04 sec)

Records: 2 Duplicates: 0 Warnings: 0

```
mysql> SELECT * FROM Crime;
```

CrimeID	IncidentType	IncidentDate	Location	Description	Status
4	Assault	2023-09-26	5 Royal St, Cinecity	Physical assault reported in a park	Open
5	TerrificAttack	2023-09-30	7 Msdy St, westside	Street attack during the night	Under Investigation

```

+-----+-----+-----+-----+-----+
|      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       | 2023-09-26 | 5 Royal St, Cinecity   |
Physical assault reported in a park    | Open
|      5 | TerrificAttack | 2023-09-30 | 7 Msdy St, westside    |
Street attack during the night         | Under Investigation |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

```

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         |         |               |                      |
|      4 |      4 | Michael Jackson | michaelJackson@example.com |
Serious head injury |         |               |                      |
|      5 |      5 | Sam Samuel    | SamSamuel@example.com |
Gunshots and cuts |         |               |                      |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

```

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 |         |               |                     |
|      4 |      4 | Suspect 2     | Aggressive person involved in the
assault | Prior incidents occurred |         |               |                     |
|      5 |      5 | Attacker 1    | Suspect roaming in the street
History of Attacks in multiple towns |         |               |                     |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

ALTERING TABLE TO ADD AGE IN THE SUSPECT TABLE:

```
mysql> ALTER TABLE Suspect ADD COLUMN Age INT;
```

```
Query OK, 0 rows affected (0.09 sec)
```

```
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> UPDATE Suspect SET Age = 40 WHERE SuspectID = 1;
```

```
Query OK, 1 row affected (0.04 sec)
```

```
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> UPDATE Suspect SET Age = 42 WHERE SuspectID = 2;
```

```
Query OK, 1 row affected (0.06 sec)
```

```
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> UPDATE Suspect SET Age = 35 WHERE SuspectID = 3;
```

```
Query OK, 1 row affected (0.04 sec)
```

```
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> UPDATE Suspect SET Age = 39 WHERE SuspectID = 4;
```

```
Query OK, 1 row affected (0.04 sec)
```

```
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> UPDATE Suspect SET Age = 27 WHERE SuspectID = 5;
```

```
Query OK, 1 row affected (0.02 sec)
```

```
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> SELECT * FROM Suspect;
```

```
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
| SuspectID | CrimeID | Name          | Description          |
| CriminalHistory | Age |
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
|          1 |          1 | Robber 1      | Armed and masked robber |
| Previous robbery convictions | 40 |
|          2 |          2 | Unknown      | Investigation ongoing   |
| NULL      |          |              | 42 |
|          3 |          3 | Suspect 1     | Shoplifting suspect     |
| Prior shoplifting arrests | 35 |
|          4 |          4 | Suspect 2     | Aggressive person involved in the
assault | Prior incidents occurred | 39 |
|          5 |          5 | Attacker 1    | Suspect roaming in the street
| History of Attacks in multiple towns | 27 |
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

SOLVING QUERIES:

1. Select all open incidents.

```
mysql> 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	2023-09-26	5 Royal St, Cinecity	Physical assault reported in a park	Open

2 rows in set (0.00 sec)

2. Find the total number of incidents.

```
mysql> SELECT COUNT(*) AS Total_Incidents_Occurred FROM Crime;
```

Total_Incidents_Occurred
5

1 row in set (0.02 sec)

3. List all unique incident types.

```
mysql> SELECT DISTINCT IncidentType FROM Crime;
```

IncidentType
Robbery
Homicide
Theft
Assault
TerrificAttack

5 rows in set (0.02 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 (0.00 sec)

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

--	--

```

+-----+-----+-----+
| SuspectID | Name          | Age |
+-----+-----+-----+
|          2 | Unknown       | 42  |
|          1 | Robber 1      | 40  |
|          4 | Suspect 2     | 39  |
|          3 | Suspect 1     | 35  |
|          5 | Attacker 1    | 27  |
+-----+-----+-----+
5 rows in set (0.00 sec)

```

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

```

mysql> SELECT AVG(Age) AS AverageAge FROM Suspect;
+-----+
| AverageAge |
+-----+
|    36.6000 |
+-----+
1 row in set (0.00 sec)

```

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

```

mysql> SELECT IncidentType, COUNT(*) AS TotalCount FROM Crime WHERE
Status = 'Open' GROUP BY IncidentType;
+-----+-----+
| IncidentType | TotalCount |
+-----+-----+
| Robbery      |          1 |
| Assault      |          1 |
+-----+-----+
2 rows in set (0.00 sec)

```

8. Find persons with names containing 'Doe'.

```

mysql> SELECT Name FROM Victim 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.

```

mysql> SELECT DISTINCT v.Name FROM Crime c JOIN Victim v ON c.CrimeID =
v.CrimeID WHERE c.Status IN ('Open', 'Closed')
-> UNION
-> SELECT DISTINCT s.Name FROM Crime c JOIN Suspect s ON c.CrimeID =
s.CrimeID WHERE c.Status IN ('Open', 'Closed');
+-----+
| Name      |
+-----+
| John Doe   |
| Alice Johnson |
| Michael Jackson |
| Robber 1   |
| Suspect 1  |

```

```
| Suspect 2      |
+-----+
```

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

```
mysql> SELECT DISTINCT c.IncidentType FROM Crime c JOIN Suspect s ON
c.CrimeID = s.CrimeID WHERE s.Age IN (30, 35);
+-----+
| IncidentType |
+-----+
| Theft        |
+-----+
1 row in set (0.00 sec)
```

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

```
mysql> SELECT DISTINCT v.Name FROM Victim v JOIN Crime c ON v.CrimeID =
c.CrimeID WHERE c.IncidentType = 'Robbery'
-> UNION
-> SELECT DISTINCT s.Name FROM Suspect s JOIN Crime c ON s.CrimeID =
c.CrimeID WHERE c.IncidentType = 'Robbery';
+-----+
| Name      |
+-----+
| John Doe  |
| Robber 1  |
+-----+
2 rows in set (0.00 sec)
```

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

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

```
mysql> SELECT IncidentType, COUNT(*) AS OpenCaseCount FROM Crime WHERE
Status = 'Open' GROUP BY IncidentType;
+-----+-----+
| IncidentType | OpenCaseCount |
+-----+-----+
| Robbery      | 1             |
| Assault      | 1             |
+-----+-----+
2 rows in set (0.00 sec)
```

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

```
mysql> SELECT DISTINCT c.* FROM Crime c JOIN Suspect s ON c.CrimeID =
s.CrimeID JOIN Victim v ON s.Name = v.Name AND c.CrimeID <> v.CrimeID;
Empty set (0.00 sec)
```

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

```
mysql> SELECT c.CrimeID, c.IncidentType, c.IncidentDate, c.Location,
c.Status, v.VictimID, v.Name AS VictimName, S.SuspectID, 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 | Status | VictimID | VictimName | SuspectID | SuspectName |
+-----+-----+-----+-----+-----+-----+
| 1 | Robbery | 2023-09-15 | 123 Main St, Cityville | Open | 1 | John Doe | 1 | Robber 1 |
| 2 | Homicide | 2023-09-20 | 456 Elm St, Townsville | Under Investigation | 2 | Jane Smith | 2 | Unknown |
| 3 | Theft | 2023-09-10 | 789 Oak St, Villagetown | Closed | 3 | Alice Johnson | 3 | Suspect 1 |
| 4 | Assault | 2023-09-26 | 5 Royal St, Cinecity | Open | 4 | Michael Jackson | 4 | Suspect 2 |
| 5 | TerrificAttack | 2023-09-30 | 7 Msdy St, westside | Under Investigation | 5 | Sam Samuel | 5 | Attacker 1 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

16. Find suspects involved in multiple incidents:

```
mysql> SELECT Name, COUNT(*) AS IncidentCount FROM Suspect GROUP BY Name
HAVING COUNT(*) > 1;
Empty set (0.00 sec)
```

17. List incidents with no suspects involved.

```
mysql> SELECT c.CrimeID, c.IncidentType, c.IncidentDate, c.Location,
c.Status FROM Crime c LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID WHERE
s.SuspectID IS NULL;
Empty 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.

```
mysql> SELECT c.*, 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 | Open | Robber 1 |
| 2 | Homicide | 2023-09-20 | 456 Elm St, Townsville | Investigation into a murder case | Under Investigation | Unknown |
| 3 | Theft | 2023-09-10 | 789 Oak St, Villagetown | Shoplifting incident at a mall | Closed | Suspect 1 |
```

4	Assault	2023-09-26	5 Royal St, Cinecity	Physical
assault reported in a park		Open	Suspect 2	
5	TerrificAttack	2023-09-30	7 Msdy St, westside	Street attack
during the night		Under Investigation	Attacker 1	

5 rows in set (0.02 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
Suspect 2

2 rows in set (0.00 sec)