

# **CASE STUDY**

## **MySQL-CS.No.3:**

### **Crime Management Shema DDL and DML**

Solve the below queries:

1. Select all open incidents.
2. Find the total number of incidents.
3. List all unique incident types.
4. Retrieve incidents that occurred between '2023-09-01' and '2023-09-10'.
5. List persons involved in incidents in descending order of age.
6. Find the average age of persons involved in incidents.
7. List incident types and their counts, only for open cases.
8. Find persons with names containing 'Doe'.
9. Retrieve the names of persons involved in open cases and closed cases.
10. List incident types where there are persons aged 30 or 35 involved.
11. Find persons involved in incidents of the same type as 'Robbery'.
12. List incident types with more than one open case.
13. List all incidents with suspects whose names also appear as victims in other incidents.
14. Retrieve all incidents along with victim and suspect details.
15. Find incidents where the suspect is older than any victim.
16. Find suspects involved in multiple incidents:
17. List incidents with no suspects involved.
18. List all cases where at least one incident is of type 'Homicide' and all other incidents are of type 'Robbery'.
19. Retrieve a list of all incidents and the associated suspects, showing suspects for each incident, or 'No Suspect' if there are none.
20. List all suspects who have been involved in incidents with incident types 'Robbery' or 'Assault'?

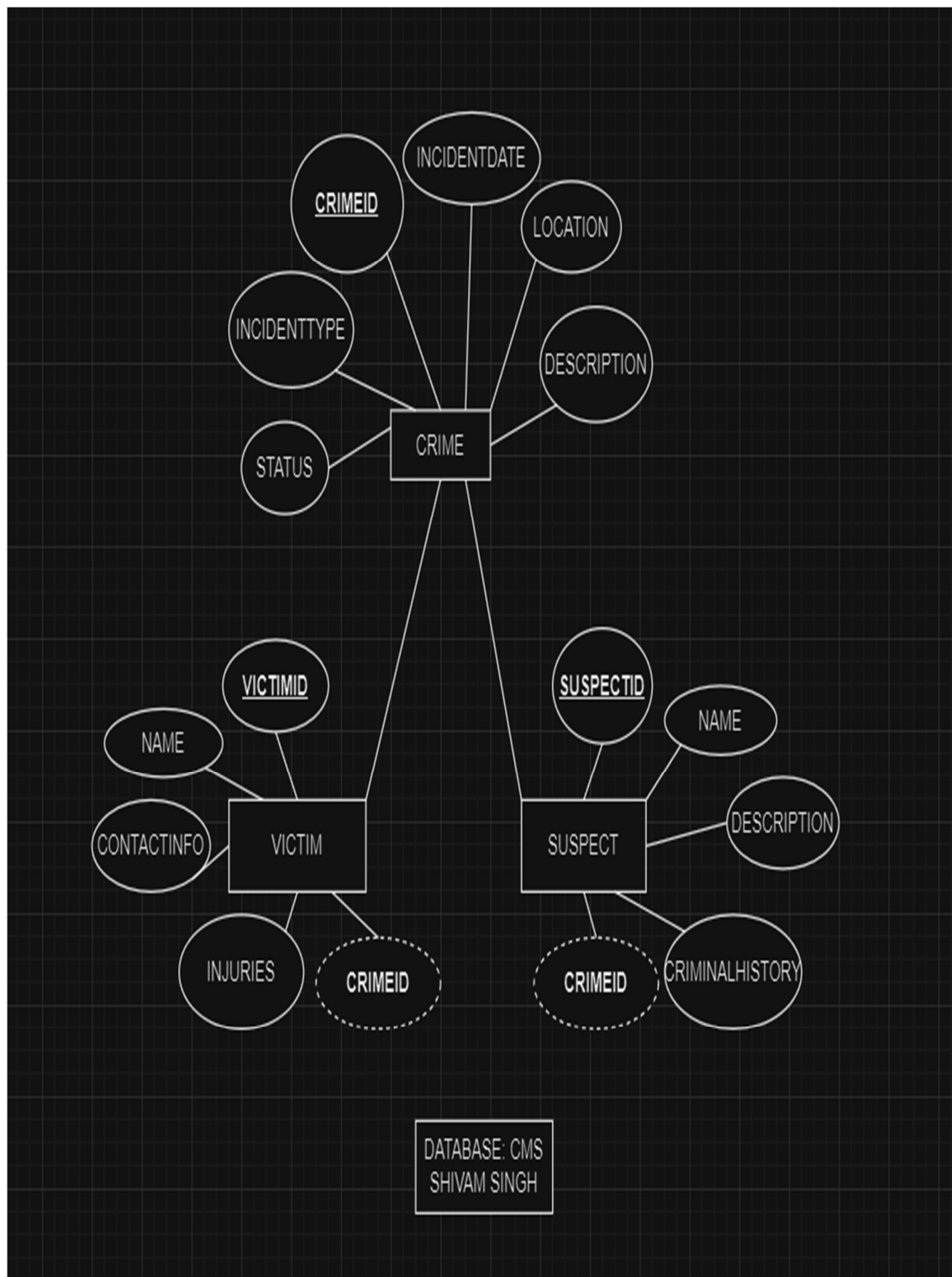


FIG.1:ERD

1.

```
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

```
1 row in set (0.00 sec)
```

2.

```
mysql> select count(*) from crime;
```

count(*)
3

```
1 row in set (0.01 sec)
```

```
mysql> select count(*) as TotalIncidents from crime;
```

TotalIncidents
3

```
1 row in set (0.00 sec)
```

3.

```
mysql> select distinct IncidentType from crime;
```

IncidentType
Robbery
Homicide
Theft

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

4.

```
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.

```
mysql> select*from victim order by age desc;
ERROR 1054 (42S22): Unknown column 'age' in 'order clause'
mysql> -- as there is no column 'age' in victim table provided it is not giving output

mysql> select*from victim order by age desc;
+-----+-----+-----+-----+-----+-----+
| VictimID | CrimeID | Name       | ContactInfo          | Injuries       | age |
+-----+-----+-----+-----+-----+-----+
| 3 | 3 | Alice Johnson | alicejohnson@example.com | None           | 40 |
| 2 | 2 | Jane Smith   | janesmith@example.com   | Deceased       | 30 |
| 1 | 1 | John Doe    | johndoe@example.com     | Minor injuries | 20 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

6.

```
mysql> select*from victim;
+-----+-----+-----+-----+-----+-----+
| VictimID | CrimeID | Name       | ContactInfo          | Injuries       | age |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | John Doe   | johndoe@example.com  | Minor injuries | 20 |
| 2 | 2 | Jane Smith | janesmith@example.com | Deceased       | 30 |
| 3 | 3 | Alice Johnson | alicejohnson@example.com | None           | 40 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> -- since to solve this question i have added age column to the victim table as it was not there
mysql> select avg(age) from victim;
+-----+
| avg(age) |
+-----+
| 30.0000 |
+-----+
1 row in set (0.00 sec)
```

7.

```
mysql> SELECT INCIDENTTYPE, COUNT(*) FROM CRIME WHERE STATUS = 'OPEN';
ERROR 1140 (42000): In aggregated query without GROUP BY, expression #1 of SELECT list contains nonaggregated column
mysql> SELECT INCIDENTTYPE,COUNT(*)FROM CRIME WHERE STATUS='OPEN' GROUP BY INCIDENTTYPE;
+-----+-----+
| INCIDENTTYPE | COUNT(*) |
+-----+-----+
| Robbery      | 1 |
+-----+-----+
1 row in set (0.00 sec)

mysql> ■
```

8.

```
mysql> SELECT * FROM VICTIM WHERE NAME LIKE '%DOE%';
+-----+-----+-----+-----+-----+-----+
| VictimID | CrimeID | Name      | ContactInfo          | Injuries      | age |
+-----+-----+-----+-----+-----+-----+
| 1        | 1       | John Doe  | johndoe@example.com | Minor injuries | 20  |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

9.

```
mysql> SELECT DISTINCT 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)
```

10.

```
mysql> SELECT DISTINCT c.IncidentType
-> FROM crime c
-> JOIN victim v ON c.CrimeID = v.CrimeID
-> where v.age in(30,35);
+-----+
| IncidentType |
+-----+
| Homicide     |
+-----+
1 row in set (0.00 sec)
```

11.

```
mysql> SELECT DISTINCT v.Name
-> FROM victim v
-> JOIN crime c ON v.CrimeID = c.CrimeID
-> WHERE c.IncidentType = 'Robbery';
+-----+
| Name      |
+-----+
| John Doe  |
+-----+
1 row in set (0.00 sec)
```

12.

```
mysql> SELECT INCIDENTTYPE FROM CRIME WHERE STATUS='OPEN' GROUP BY INCIDENTTYPE
-> HAVING COUNT(*)>1;
ERROR 1054 (42S22): Unknown column 'INCIDENTTYPE' in 'group statement'
mysql> SELECT INCIDENTTYPE FROM CRIME WHERE STATUS = 'OPEN' GROUP BY INCIDENTTYPE HAVING COUNT(*)>1;
Empty set (0.00 sec)
```

13.

```
mysql> SELECT 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.

```
mysql> SELECT c.IncidentType, v.Name AS VictimName, s.Name AS SuspectName, s.Description AS SuspectDescription
-> FROM crime c
-> LEFT JOIN victim v ON c.CrimeID = v.CrimeID
-> LEFT JOIN suspect s ON c.CrimeID = s.CrimeID
-> WHERE v.CrimeID IS NOT NULL OR s.CrimeID IS NOT NULL;
```

IncidentType	VictimName	SuspectName	SuspectDescription
Robbery	John Doe	Robber 1	Armed and masked robber
Homicide	Jane Smith	Unknown	Investigation ongoing
Theft	Alice Johnson	Suspect 1	Shoplifting suspect

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



**15.**

```
mysql> SELECT
-> C.*,
-> S.SuspectID,
-> S.Name AS SuspectName,
-> S.Age AS SuspectAge,
-> V.VictimID,
-> V.Name AS VictimName,
-> V.Age AS VictimAge
-> FROM
-> Crime C
-> JOIN
-> Suspect S ON C.CrimeID = S.CrimeID
-> JOIN
-> Victim V ON C.CrimeID = V.CrimeID
-> WHERE
-> S.Age > ANY (SELECT Age FROM Victim WHERE CrimeID = C.CrimeID);
```

CrimeID	IncidentType	IncidentDate	Location	Description	Status	SuspectID	SuspectName	SuspectAge	VictimID	VictimName	VictimAge
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	3	Suspect 1	91	3	Alice Johnson	71

1 row in set (0.00 sec)

```
mysql>
```

**16.**

```
mysql> SELECT s.Name AS SuspectName, COUNT(s.CrimeID) AS IncidentCount
-> FROM suspect s
-> GROUP BY s.Name
-> HAVING COUNT(s.CrimeID) > 1;
```

Empty set (0.00 sec)

17.

```
mysql> SELECT c.*
-> FROM crime c
-> LEFT JOIN suspect s ON c.CrimeID = s.CrimeID
-> WHERE s.CrimeID IS NULL;
Empty set (0.00 sec)
```

18.

```
mysql> SELECT DISTINCT c1.CrimeID
-> FROM crime c1
-> WHERE c1.IncidentType = 'Homicide'
-> AND NOT EXISTS (
-> SELECT 1
-> FROM crime c2
-> WHERE c2.CrimeID = c1.CrimeID
-> AND c2.IncidentType <> 'Robbery'
-> )
-> AND EXISTS (
-> SELECT 1
-> FROM crime c3
-> WHERE c3.CrimeID = c1.CrimeID
-> AND c3.IncidentType = 'Robbery'
-> );
Empty set (0.01 sec)
```

19.

```
mysql> SELECT CONCAT(c.IncidentType, '-', s.Name) AS IncidentTypeSuspect
-> FROM crime c
-> JOIN suspect s ON c.CrimeID = s.CrimeID;
+-----+
| IncidentTypeSuspect |
+-----+
| Robbery-Robber 1    |
| Homicide-Unknown    |
| Theft-Suspect 1     |
+-----+
3 rows in set (0.00 sec)
```

20.

```
mysql> SELECT DISTINCT s.*
-> FROM suspect s
-> JOIN crime c ON s.CrimeID = c.CrimeID
-> WHERE c.IncidentType IN ('Robbery', 'Assault');
+-----+-----+-----+-----+-----+
| SuspectID | CrimeID | Name      | Description                | CriminalHistory                |
+-----+-----+-----+-----+-----+
| 1         | 1       | Robber 1  | Armed and masked robber    | Previous robbery convictions   |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```