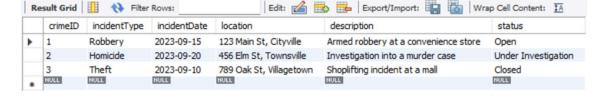# SQL CODING CHALLENGE: CRIME MANAGEMENT SYSTEM

(I) Crime Management Shema DDL and DML: Database Design

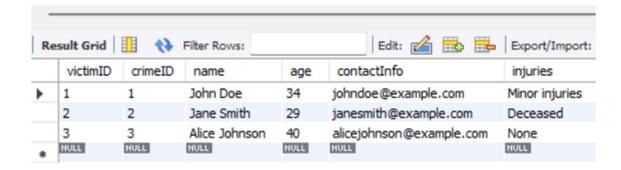- Crime Table:

```
1 •    SELECT * FROM crime_management_system.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
NULL	NULL	NULL	NULL	NULL	NULL

- Victim Table: age column is added in this table due to the corresponding queries

```
1 •    SELECT * FROM crime_management_system.victim;
```

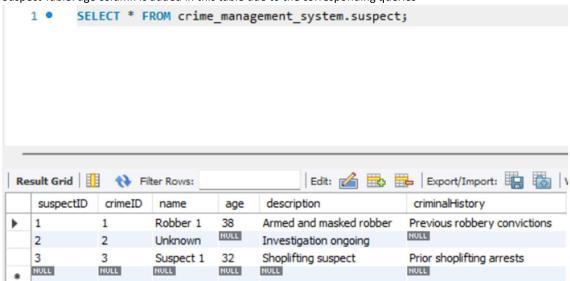| victimID	crimeID	name	age	contactInfo	injuries
1	1	John Doe	34	johndoe@example.com	Minor injuries
2	2	Jane Smith	29	janesmith@example.com	Deceased
3	3	Alice Johnson	40	alicejohnson@example.com	None
NULL	NULL	NULL	NULL	NULL	NULL

- Suspect Table: age column is added in this table due to the corresponding queries

```
1 •    SELECT * FROM crime_management_system.suspect;
```

	suspectID	crimeID	name	age	description	criminalHistory
▶	1	1	Robber 1	38	Armed and masked robber	Previous robbery convictions
	2	2	Unknown	NULL	Investigation ongoing	NULL
	3	3	Suspect 1	32	Shoplifting suspect	Prior shoplifting arrests
●	NULL	NULL	NULL	NULL	NULL	NULL

(II) Solving the queries:

1. Select all open incidents

```
34
35   ⊝  /*Solve the below queries:
36   └   1. Select all open incidents.*/
37 •     select * from crime where status = 'Open';
38
```

	crimeID	incidentType	incidentDate	location	description	status
▶	1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open
●	NULL	NULL	NULL	NULL	NULL	NULL

2. Find the total number of incidents

```
38
39      /*2. Find the total number of incidents.*/
40 •    select count(*) as totalIncidents from crime;
41
```

	totalIncidents
▶	3

3. List all unique incident types

```
41
42      /*3. List all unique incident types.*/
43  •   select distinct incidentType from crime;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentType
Robbery
Homicide
Theft

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

```
44
45      /*4. Retrieve incidents that occurred between '2023-09-01' and '2023-09-10'*/
46  •   select * from crime where incidentDate between '2023-09-01' and '2023-09-10';
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: IA

	crimeID	incidentType	incidentDate	location	description	status
▶	3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed
*	NULL	NULL	NULL	NULL	NULL	NULL

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

```
47
48      /*5. List persons involved in incidents in descending order of age.*/
49  •   select name, age from (select name, age from victim union select name, age from suspect) as people order by age desc;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

	name	age
▶	Alice Johnson	40
	Robber 1	38
	John Doe	34
	Suspect 1	32
	Jane Smith	29
	Unknown	NULL

6. Find the average age of persons involved in incidents

```
51      /*6. Find the average age of persons involved in incidents. */
52  •   select avg(age) as averageAge from (select age from victim union all select age from suspect) as people;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

	averageAge
▶	34.6000

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

```
54     /*7. List incident types and their counts, only for open cases. */
55 •   select incidentType, count(*) as incidentCount from crime where status='Open' group by incidentType;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentType	incidentCount
▶ Robbery	1

8. Find persons with names containing 'Doe'

```
56
57     /*8. Find persons with names containing 'Doe'. */
58 •   select name from victim where name like '%Doe%' union select name from suspect where name like '%Doe%';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentType	incidentCount
▶ Robbery	1

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

```
60     /*9. Retrieve the names of persons involved in open cases and closed cases.*/
61 •   select v.name, c.status from victim v join crime c on v.crimeID = c.crimeID where c.status in ('Open', 'Closed') union
62     select s.name, c.status from suspect s join crime c on s.crimeID = c.crimeID where c.status in ('Open', 'Closed');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

name	status
▶ John Doe	Open
Alice Johnson	Closed
Robber 1	Open
Suspect 1	Closed

10. List incident types where there are persons aged 30 or 35 involved (There are no people aged 30 or 35)

```
64     /*10. List incident types where there are persons aged 30 or 35 involved.*/
65 •   select distinct c.incidentType from crime c join victim v on c.crimeID = v.crimeID where v.age in (30, 35) union
66     select distinct c.incidentType from crime c join suspect s on c.crimeID = s.crimeID where s.age in (30, 35);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentType

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

```
68     /*11. Find persons involved in incidents of the same type as 'Robbery'. */
69 •   select v.name from victim v join crime c on v.crimeID = c.crimeID where c.incidentType = 'Robbery' union
70     select s.name from suspect s join crime c on s.crimeID = c.crimeID where c.incidentType = 'Robbery';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA
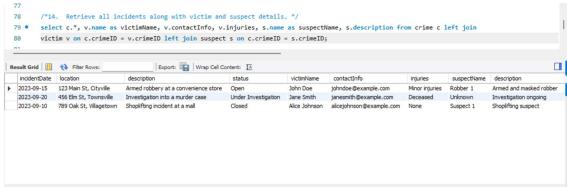
name
▶ John Doe
Robber 1

12. List incident types with more than one open case (There are no incidents with more than one open case

```
72      /*12. List incident types with more than one open case. */
73 •    select incidentType from crime where status='Open' group by incidentType having count(*)>1
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentType

13. List all incidents with suspects whose names also appear as victims in other incidents (There are no incidents with same suspect and victim

```
74
75      /*13. List all incidents with suspects whose names also appear as victims in other incidents.*/
76 •    select distinct c.* from crime c join suspect s on c.crimeID = s.crimeID join victim v on s.name = v.name;
77
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

crimeID	incidentType	incidentDate	location	description	status

14. Retrieve all incidents along with victim and suspect details

```
77
78      /*14.  Retrieve all incidents along with victim and suspect details. */
79 •    select c.*, v.name as victimName, v.contactInfo, v.injuries, s.name as suspectName, s.description from crime c left join
80      victim v on c.crimeID = v.crimeID left join suspect s on c.crimeID = s.crimeID;
81
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

crimeID	incidentType	incidentDate	location	description	status	victimName	contactInfo	injuries	suspectName
1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open	John Doe	johndoe@example.com	Minor injuries	Robber 1
2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Investigation	Jane Smith	janesmith@example.com	Deceased	Unknown
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	Alice Johnson	alicejohnson@example.com	None	Suspect 1

```
77
78      /*14.  Retrieve all incidents along with victim and suspect details. */
79 •    select c.*, v.name as victimName, v.contactInfo, v.injuries, s.name as suspectName, s.description from crime c left join
80      victim v on c.crimeID = v.crimeID left join suspect s on c.crimeID = s.crimeID;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

incidentDate	location	description	status	victimName	contactInfo	injuries	suspectName	description
2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open	John Doe	johndoe@example.com	Minor injuries	Robber 1	Armed and masked robber
2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Investigation	Jane Smith	janesmith@example.com	Deceased	Unknown	Investigation ongoing
2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	Alice Johnson	alicejohnson@example.com	None	Suspect 1	Shoplifting suspect

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

```
81
82      /*15. Find incidents where the suspect is older than any victim.*/
83  •    select distinct c.* from crime c join suspect s on c.crimeID = s.crimeID join victim v on c.crimeID = v.crimeID where s.age > v.age;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

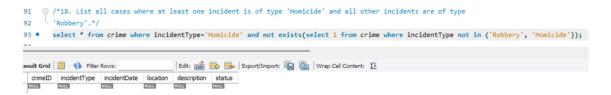| crimeID	incidentType	incidentDate	location	description	status
1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open

16. Find suspects involved in multiple incidents (There are no incidents with suspects involved in multiple incidents

```
84
85      /*16. Find suspects involved in multiple incidents.*/
86  •    select name, count(distinct crimeID) as incidentCount from suspect group by name having count(distinct crimeID)>1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

name	incidentCount

17. List incidents with no suspects involved

```
87
88      /*17. List incidents with no suspects involved. */
89  •    select * from crime where crimeID in(select crimeID from suspect where name='Unknown');
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: IA

crimeID	incidentType	incidentDate	location	description	status
2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Investigation
NULL	NULL	NULL	NULL	NULL	NULL

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

```
91      /*18. List all cases where at least one incident is of type 'Homicide' and all other incidents are of type
92      'Robbery'.*/
93  •    select * from crime where incidentType='Homicide' and not exists(select 1 from crime where incidentType not in ('Robbery', 'Homicide'));
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: IA

crimeID	incidentType	incidentDate	location	description	status
NULL	NULL	NULL	NULL	NULL	NULL

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

```
94
95      /*19. Retrieve a list of all incidents and the associated suspects, showing suspects for each incident, or
96      'No Suspect' if there are none. */
97  •    select c.crimeID, c.incidentType, c.status, (select s.name from suspect s where s.crimeID = c.crimeID limit 1) as suspectName from crime c;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

crimeID	incidentType	status	suspectName
1	Robbery	Open	Robber 1
2	Homicide	Under Investigation	Unknown
3	Theft	Closed	Suspect 1

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

```
98
99      /*20. List all suspects who have been involved in incidents with incident types 'Robbery' or 'Assault' */
100  •   select distinct * from suspect s join crime c on s.crimeID = c.crimeID where c.incidentType in ('Robbery', 'Assault');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

suspectID	crimeID	name	age	description	criminalHistory	crimeID	incidentType	incidentDate	location	description	s
1	1	Robber 1	38	Armed and masked robber	Previous robbery convictions	1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	O