

## Coding challenge

### Crime Management System

- **Database creation**

```
create TABLE Crime (  
    CrimeID INT PRIMARY KEY,  
    IncidentType VARCHAR(255),  
    IncidentDate DATE,  
    Location VARCHAR(255),  
    Description TEXT,  
    Status VARCHAR(20)  
);  
  
CREATE TABLE Victim (  
    VictimID INT PRIMARY KEY,  
    CrimeID INT,  
    Name VARCHAR(255),  
    ContactInfo VARCHAR(255),  
    Injuries VARCHAR(255),  
    FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)  
);  
  
CREATE TABLE Suspect (  
    SuspectID INT PRIMARY KEY,  
    CrimeID INT,  
    Name VARCHAR(255),  
    Description TEXT,  
    CriminalHistory TEXT,  
    FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)  
);
```

- **Inserting 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');
```

```
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 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');
```

```
alter table victim add column age int;  
alter table suspect add column age int;
```

```
update victim set age = 30 where victimid =1;  
update victim set age = 28 where victimid =2;  
update victim set age = 22 where victimid =3;
```

```
update suspect set age = 26 where suspectid =1;  
update suspect set age = 35 where suspectid =2;  
update suspect set age = 24 where suspectid =3;
```

```
-- 1.Select all open incidents.  
select * from crime where status = 'Open';
```

Output :

	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.  
select count(crimeid) as total_incidents  
from crime;
```

---

Output:

	total_incidents
▶	3

---

```
-- 3.List all unique incident types.  
select distinct incidenttype  
from crime;
```

---

Output:

	incidenttype
▶	Robbery
	Homicide
	Theft

```
-- 4.Retrieve incidents that occurred between '2023-09-01' and '2023-09-10'.  
select *  
from crime  
where incidentdate between '2023-09-01' and '2023-09-10';
```

Output:

	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.
select name,age,'victim' as role from victim
union
select name,age,'suspect' as role from suspect
order by age desc;
```

Output:

	name	age	role
▶	Unknown	35	suspect
	John Doe	30	victim
	Jane Smith	28	victim
	Robber 1	26	suspect
	Suspect 1	24	suspect
	Alice Johnson	22	victim

```
-- 6.Find the average age of persons involved in incidents.
select avg(age) as Avgage
from(
select age from victim
union all
select age from suspect)
as avgallperson;
```

Output:

	Avgage
▶	27.5000

```
-- 7. List incident types and their counts, only for open cases.
select incidenttype,count(incidenttype) as totalopencases
from crime
where status = 'open'
group by incidenttype
```

---

Output:

	incidenttype	totalopencases
►	Robbery	1

```
-- 8.Find persons with names containing 'Doe'.
select name
from(
    select name from victim
    union
    select name from suspect) as namedoe
where name like '%doe%'
```

Output :

	name
►	John Doe

```
-- 9.Retrieve the names of persons involved in open cases and closed cases.
select v.name,c.status
from victim v,crime c
where v.crimeid=c.crimeid and c.status in ('open','closed')
union
select s.name,c.status
from suspect s,crime c
where s.crimeid=c.crimeid and c.status in ('open','closed');
```

Output:

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

```
-- 11.Find persons involved in incidents of the same type as 'Robbery'.
select v.name,incidenttype,'victim'as role from crime c
join victim v on c.crimeid = v.crimeid
where incidenttype = 'robbery'
union
select s.name,incidenttype,'suspect'as role from crime c
join suspect s on c.crimeid = s.crimeid
where incidenttype = 'robbery';
```

Output:

	name	incidenttype	role
▶	John Doe	Robbery	victim
	Robber 1	Robbery	suspect

```
-- 12.List incident types with more than one open case.
select incidenttype,count(*) as totalopencases
from crime
where status ='open'
group by incidenttype
having totalopencases > 1
/* their is no incident types with more than one open case in the given data thus we have a
empty output*/
```

Output:

	incidenttype	totalopencases

✓ 265 20:03:02 select incidenttype,count(\*) as totalopencases from crime where status ='open' gro... 0 row(s) returned

```
/*13.List all incidents with suspects whose names also appear
as victims in other incidents*/
select c.*
from crime c,suspect s
where c.crimeid=s.crimeid and s.name in (select name from victim);
-- or
select *
from crime c
join suspect s on c.crimeid=s.crimeid where s.name in (select name from victim);
-- no suspect name appears as victim in other incidents
```

Output:

CrimeID	IncidentType	IncidentDate	Location	Description	Status	SuspectID	CrimeID	Name	Description	CriminalHistory	age

✓ 267 20:09:35 select \* from crime c join suspect s on c.crimeid=s.crimeid where s.name in (select n... 0 row(s) returned

```
-- 14.Retrieve all incidents along with victim and suspect details.
select c.*, v.Name as Victim , v.Age , v.Injuries,
       s.Name as Suspect , s.Age , s.CriminalHistory
from crime c
left join victim v on c.crimeid=v.crimeid
left join suspect s on c.crimeid=s.crimeid
```

#### Output:

CrimeID	IncidentType	IncidentDate	Location	Description	Status	Victim	Age	Injuries	Suspect	Age	CriminalHistory
1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open	John Doe	30	Minor injuries	Robber 1	26	Previous robbery convictions
2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Inve...	Jane Smith	28	Deceased	Unknown	35	NULL
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	Alice Johnson	22	None	Suspect 1	24	Prior shoplifting arrests

```
-- 15.Find incidents where the suspect is older than any victim.
select * from crime c
join suspect s on c.crimeid=s.crimeid
where s.age>(select v.age from victim v
             where c.crimeid=v.crimeid);
```

#### Output:

CrimeID	IncidentType	IncidentDate	Location	Description	Status	SuspectID	CrimeID	Name	Description	CriminalHistory	age
2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Inve...	2	2	Unknown	Investigation ongoing	NULL	35
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed	3	3	Suspect 1	Shoplifting suspect	Prior shoplifting arrests	24



```
-- 16.Find suspects involved in multiple incidents:
select name ,count(*) as totalincidents
from suspect
group by name
having totalincidents > 1;
-- no suspect is involved in multiple incidents
```

**Output:**

	name	totalincidents
--	------	----------------

270 20:19:00 select name ,count(\*) as totalincidents from suspect group by name having totalinci... 0 row(s) returned

```
-- 17.List incidents with no suspects involved.
select c.* from crime c
left join suspect s on c.crimeid=s.crimeid
where s.crimeid is null
-- every incident has a suspect even the homicide has a suspect with age and description
```

**Output:**

	CrimeID	IncidentType	IncidentDate	Location	Description	Status
--	---------	--------------	--------------	----------	-------------	--------

272 20:22:16 select c.\* from crime c left join suspect s on c.crimeid=s.crimeid where s.crimeid is n... 0 row(s) returned

```

/*18.List all cases where at least one incident is of type 'Homicide' and all other
incidents are of type 'Robbery'. */
select *
from crime
where incidenttype in ('homicide','robbery')
and exists (
select crimeid from crime
where incidenttype = 'homicide')
and not exists (
select crimeid from crime
where incidenttype not in ('homicide','robbery'));

```

**Output:**

	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. */
select c.crimeid, c.incidenttype, ifnull(s.name, 'no suspect') as suspectname
from crime c
left join suspect s on c.crimeid = s.crimeid;

```

**Output:**

	crimeid	incidenttype	suspectname
▶	1	Robbery	Robber 1
	2	Homicide	Unknown
	3	Theft	Suspect 1

```
-- 20.List all suspects who have been involved in incidents with incident types 'Robbery' or 'Assault'  
select s.name,c.incidenttype from suspect s  
join crime c on c.crimeid=s.crimeid  
where incidenttype in ('Robbery','Assault');
```

**Output:**

	name	incidenttype
▶	Robber 1	Robbery