Coding Challenge SQL - Crime Management

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)
);
CREATE TABLE Victim (
    victimid int primary key,
    crimeid int,
    name varchar(255),
    age int,
    contactinfo varchar(255),
    injuries varchar(255),
    foreign key (crimeid) references crime(crimeid)
);
CREATE TABLE Suspect (
    suspectid int primary key,
    crimeid int,
    name varchar(255),
    age int,
    description text,
    criminalhistory text,
    foreign key (crimeid) references crime(crimeid)
);
-- 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'),

(4, 'robbery', '2023-09-21', '987 pine st, cityville', 'bank robbery reported', 'open'),

(5, 'assault', '2023-09-18', '321 birch st, townsville', 'physical altercation outside club', 'open'),

(6, 'vandalism', '2023-09-25', '999 broken wall st, ghosttown', 'graffiti on public property', 'open');

INSERT INTO Victim (VictimID, CrimeID, Name, ContactInfo, Injuries)

VALUES

(1, 1, 'john doe', 35, 'johndoe@example.com', 'minor injuries'),

(2, 2, 'jane smith', 29, 'janesmith@example.com', 'deceased'),

(3, 3, 'alice johnson', 40, 'alicejohnson@example.com', 'none'),

(4, 4, 'emma clark', 30, 'emma@example.com', 'minor'),

(5, 5, 'bob ray', 35, 'bob@example.com', 'moderate');

INSERT INTO Suspect (SuspectID, CrimeID, Name, Description, CriminalHistory)

VALUES

(1, 1, 'robber 1', 45, 'armed and masked robber', 'previous robbery convictions'),

(2, 2, 'unknown', 27, 'investigation ongoing', null),

(3, 3, 'suspect 1', 32, 'shoplifting suspect', 'prior shoplifting arrests'),

(4, 4, 'robber 2', 30, 'armed with knife', 'prior robbery and assault cases'),

(5, 5, 'suspect 2', 35, 'club brawl suspect', null),

(6, 2, 'john doe', 42, 'repeat offender', 'prior assault charges'),

(7, 4, 'robber 1', 45, 'duplicate entry in another case', 'repeat offender');

Solve the below queries:

1. Select all open incidents.

select * from Crime where status = 'open';

```
160     -- 1. select all open incidents
161 •   select * from crime where status = 'open';
```

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

crimeid	incidenttype	incidentdate	location	description	status
1	robbery	2023-09-15	123 main st, cityville	armed robbery at a convenience store	open
4	robbery	2023-09-21	987 pine st, cityville	bank robbery reported	open
5	assault	2023-09-18	321 birch st, townsville	physical altercation outside club	open
6	vandalism	2023-09-25	999 broken wall st, ghosttown	graffiti on public property	open

2. Find the total number of incidents.

select count(*) as totalincidents from crime ;

```
163     -- 2. total number of incidents
164 •   select count(*) as totalincidents from crime;
```

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

totalincidents
6

3. List all unique incident types.

select distinct incidenttype from Crime ;

```
166     -- 3. all unique incident types
167 •   select distinct incidenttype from crime;
```

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

incidenttype
robbery
homicide
theft
assault
vandalism

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';

```
55
56 •   select * from Crime where IncidentDate between '2023-09-01' and '2023-09-10';
```

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

CrimeID	IncidentType	IncidentDate	Location	Description	Status
3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed

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

select name, age, 'victim' as role from victim

union

select name, age, 'suspect' from suspect

order by age desc;

```
169
170     -- 5. persons involved in incidents (sorted by age descending)
171 •   select name, age, 'victim' as role from victim
172     union
173     select name, age, 'suspect' from suspect
174     order by age desc;
```

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

name	age	role
robber 1	45	suspect
alice johnson	40	victim
john doe	35	victim
bob ray	35	victim
suspect 2	35	suspect
suspect 1	32	suspect
emma clark	30	victim
robber 2	30	suspect
jane smith	29	victim
unknown	27	suspect

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

```
select round(avg(age), 2) as average from (
select age from victim
union all
select age from suspect
) as allpersons;
```

```
178     -- 6. average age of all persons
179 •   select round(avg(age), 2) as average from (
180         select age from victim
181         union all
182         select age from suspect
183     ) as allpersons;
184
```

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

average
35.42

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

```
select incidenttype, count(*) as opencases
from crime
where status = 'open'
group by incidenttype;
```

```
185     -- 7. incident types and their counts (for open cases only)
186 •   select incidenttype, count(*) as opencases
187     from crime
188     where status = 'open'
189     group by incidenttype;
```

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

incidenttype	opencases
robbery	2
assault	1
vandalism	1

8. Find persons with names containing 'Doe'.

```
select Name from Victim  where Name like '%Doe%'
union
select Name from Suspect where Name like '%Doe%' ;
```

```
191     -- 8. persons with names containing 'doe'
192 •   select name, 'victim' as role from victim where name like '%doe%'
193     union
194     select name, 'suspect' from suspect where name like '%doe%';
195
```

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

name	role
john doe	victim
john doe	suspect

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

```
select  v.name from victim v
join crime c on v.crimeid = c.crimeid
where c.status in ('open', 'closed')
union
select s.name from suspect s
join crime c on s.crimeid = c.crimeid
where c.status in ('open', 'closed');
```

```
194      -- 9. names of persons in open and closed cases
195 •    select v.name from victim v
196      join crime c on v.crimeid = c.crimeid
197      where c.status in ('open', 'closed')
198      union
199      select s.name from suspect s
200      join crime c on s.crimeid = c.crimeid
201      where c.status in ('open', 'closed');
```

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

name
john doe
alice johnson
emma clark
bob ray
robber 1
suspect 1
robber 2
suspect 2

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

```
select distinct c.incidenttype
from crime c
left join victim v on c.crimeid = v.crimeid
left join suspect s on c.crimeid = s.crimeid
where v.age in (30, 35) or s.age in (30, 35);
```

```
203      -- 10. incident types with persons aged 30 or 35
204 •    select distinct c.incidenttype
205      from crime c
206      left join victim v on c.crimeid = v.crimeid
207      left join suspect s on c.crimeid = s.crimeid
208      where v.age in (30, 35) or s.age in (30, 35);
```

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

incidenttype
robbery
assault

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

```
select v.name, 'victim' as role
from victim v join crime c on v.crimeid = c.crimeid
where c.incidenttype = 'robbery'
union
select s.name, 'suspect'
from suspect s join crime c on s.crimeid = c.crimeid
where c.incidenttype = 'robbery';
```

```
210     -- 11. persons involved in same incident type as 'robbery'
211 •   select v.name, 'victim' as role
212     from victim v join crime c on v.crimeid = c.crimeid
213     where c.incidenttype = 'robbery'
214     union
215     select s.name, 'suspect'
216     from suspect s join crime c on s.crimeid = c.crimeid
217     where c.incidenttype = 'robbery';
```

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

name	role
john doe	victim
emma clark	victim
robber 1	suspect
robber 2	suspect

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

```
select incidenttype, count(*) as casecount
from crime
where status = 'open'
group by incidenttype
having count(*) > 1;
```

```
218
219     -- 12. incident types with more than one open case
220 •   select incidenttype, count(*) as casecount
221     from crime
222     where status = 'open'
223     group by incidenttype
224     having count(*) > 1;
```

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

incidenttype	casecount
robbery	2

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

```
select distinct c.*
from crime c
join suspect s on c.crimeid = s.crimeid
where s.name in (select name from victim);
```

```
227     -- 13. incidents where suspect name is also a victim
228 •  select distinct c.*
229     from crime c
230     join suspect s on c.crimeid = s.crimeid
231     where s.name in (select name from victim);
```

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

crimeid	incidenttype	incidentdate	location	description	status
2	homicide	2023-09-20	456 elm st, townsville	investigation into a murder case	under investigation

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

```
select c.*, v.name as victimname, 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;
```

```
233     -- 14. all incidents with victim and suspect details
234 •  select c.*, v.name as victimname, s.name as suspectname
235     from crime c
236     left join victim v on c.crimeid = v.crimeid
237     left join suspect s on c.crimeid = s.crimeid;
```

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

crimeid	incidenttype	incidentdate	location	description	status	victimname	suspectname
1	robbery	2023-09-15	123 main st, cityville	armed robbery at a convenience store	open	john doe	robber 1
2	homicide	2023-09-20	456 elm st, townsville	investigation into a murder case	under investigation	jane smith	unknown
2	homicide	2023-09-20	456 elm st, townsville	investigation into a murder case	under investigation	jane smith	john doe
3	theft	2023-09-10	789 oak st, villagetown	shoplifting incident at a mall	closed	alice johnson	suspect 1
4	robbery	2023-09-21	987 pine st, cityville	bank robbery reported	open	emma clark	robber 2
5	assault	2023-09-18	321 birch st, townsville	physical altercation outside club	open	bob ray	suspect 2

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

```
select distinct c.*
from crime c
join suspect s on c.crimeid = s.crimeid
where s.age > all (
    select age from victim where crimeid = c.crimeid
);
```

```
240     -- 15. incidents where suspect is older than any victim
241 •   select distinct c.*
242     from crime c
243     join suspect s on c.crimeid = s.crimeid
244     where s.age > all (
245         select age from victim where crimeid = c.crimeid
246     );
```

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

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
4	robbery	2023-09-21	987 pine st, cityville	bank robbery reported	open

16. Find suspects involved in multiple incidents:

select name, count(*) as incidentcount

from suspect

group by name

having count(*) > 1;

```
248     -- 16. suspects involved in multiple incidents
249 •   select name, count(*) as incidentcount
250     from suspect
251     group by name
252     having count(*) > 1;
```

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

name	incidentcount
robber 1	2

17. List incidents with no suspects involved.

select * from crime

where crimeid not in (select crimeid from suspect);

```
254     -- 17. incidents with no suspects involved
255 •   select * from crime
256     where crimeid not in (select crimeid from suspect);
```

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

crimeid	incidenttype	incidentdate	location	description	status
6	vandalism	2023-09-25	999 broken wall st, ghosttown	graffiti on public property	open

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 exists (
   select 1 from crime where incidenttype = 'homicide'
)
and not exists (
   select 1 from crime where incidenttype not in ('homicide', 'robbery')
);
```

```
258     -- 18. at least one 'homicide' and all others 'robbery'
259 •   select * from crime
260     where exists (
261         select 1 from crime where incidenttype = 'homicide'
262     )
263     and not exists (
264         select 1 from crime where incidenttype not in ('homicide', 'robbery')
265     );
266
```

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

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, coalesce(s.name, 'no suspect') as suspectname
from crime c
left join suspect s on c.crimeid = s.crimeid;
```

```
267     -- 19. all incidents and suspects (show 'no suspect' if none)
268 •   select c.crimeid, c.incidenttype, coalesce(s.name, 'no suspect') as suspectname
269     from crime c
270     left join suspect s on c.crimeid = s.crimeid;
271
```

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

crimeid	incidenttype	suspectname
1	robbery	robber 1
2	homicide	unknown
2	homicide	john doe
3	theft	suspect 1
4	robbery	robber 2
4	robbery	robber 1
5	assault	suspect 2
6	vandalism	no suspect

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

```
select s.* from suspect s
join crime c on s.crimeid = c.crimeid
where c.incidenttype in ('robbery', 'assault');
```

```
272     -- 20. suspects in incidents of type 'robbery' or 'assault'
273 •   select s.*
274     from suspect s
275     join crime c on s.crimeid = c.crimeid
276     where c.incidenttype in ('robbery', 'assault');
```

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

suspectid	crimeid	name	age	description	criminalhistory
1	1	robber 1	45	armed and masked robber	previous robbery convictions
4	4	robber 2	30	armed with knife	prior robbery and assault cases
7	4	robber 1	45	duplicate entry in another case	repeat offender
5	5	suspect 2	35	club brawl suspect	NULL