## CODING CHALLENGE 3 - MAGESHKANNAN U (C# BATCH 4)

#### **CREATION OF TABLES AND INSERTION OF RECORDS:**

```
CREATE DATABASE Challenge3;
USE Challenge3;
-- Create Crime table
CREATE TABLE Crime (
  CrimeID INT PRIMARY KEY,
  IncidentType VARCHAR(255),
  IncidentDate DATE,
  Location VARCHAR(255),
  Description TEXT,
  Status VARCHAR(20)
);
-- Create Victim table
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 Suspect table
CREATE TABLE Suspect (
  SuspectID INT PRIMARY KEY,
  CrimeID INT,
  Name VARCHAR(255),
  Description TEXT,
  CriminalHistory TEXT,
  FOREIGN KEY (CrimeID) REFERENCES Crime(CrimeID)
);
-- Insert into Crime
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
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
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');
SELECT * FROM Crime;
SELECT * FROM Victim;
SELECT * FROM Suspect;
INSERT INTO Crime (CrimeID, IncidentType, IncidentDate, Location, Description, Status) VALUES
(4, 'Assault', '2023-09-05', '101 River Rd', 'Street fight reported', 'Closed'),
(5, 'Fraud', '2023-08-21', '222 Lake St', 'Bank fraud investigation', 'Under Investigation'),
(6, 'Burglary', '2023-10-01', '333 Hill St', 'House break-in', 'Open'),
(7, 'Robbery', '2023-09-11', '444 Oak Ave', 'Store robbery with weapon', 'Open'),
(8, 'Vandalism', '2023-09-18', '555 Pine Blvd', 'Graffiti on public property', 'Closed'),
(9, 'Homicide', '2023-07-30', '666 Maple Ct', 'Shooting investigation', 'Under Investigation'),
(10, 'Assault', '2023-09-25', '777 Cedar Dr', 'Bar fight with injuries', 'Open'),
(11, 'Theft', '2023-09-03', '888 Birch Way', 'Bike stolen from garage', 'Closed'),
(12, 'Robbery', '2023-10-05', '999 Elm St', 'ATM robbery', 'Open'),
(13, 'Fraud', '2023-08-15', '147 Beacon St', 'Credit card scam', 'Open'),
(14, 'Assault', '2023-09-09', '258 Grove St', 'Road rage assault', 'Open'),
(15, 'Theft', '2023-10-12', '369 Ash Rd', 'Phone stolen at gym', 'Open');
INSERT INTO Victim (VictimID, CrimeID, Name, ContactInfo, Injuries, Age) VALUES
(4, 4, 'Chris Doe', 'chrisdoe@mail.com', 'Bruised arm', 28),
(5, 5, 'Ava Wright', 'avawright@mail.com', 'None', 40),
(6, 6, 'Ethan Lee', 'ethanlee@mail.com', 'Broken window', 32),
(7, 7, 'Robber 2', 'victim.robber2@mail.com', 'Minor', 31),
(8, 8, 'Sophia Adams', 'sophiaadams@mail.com', 'None', 29),
(9, 9, 'Liam Doe', 'liamdoe@mail.com', 'Deceased', 45),
(10, 10, 'Logan King', 'loganking@mail.com', 'Nose injury', 26),
(11, 11, 'Ella Grant', 'ellagrant@mail.com', 'None', 33),
(12, 12, 'Noah Baker', 'noahbaker@mail.com', 'Bruises', 27),
(13, 13, 'Mason Ross', 'masonross@mail.com', 'Mental trauma', 36),
(14, 14, 'Lucas Miller', 'lucasmiller@mail.com', 'Black eye', 24),
(15, 15, 'Zoe Diaz', 'zoediaz@mail.com', 'Stolen phone', 30);
INSERT INTO Suspect (SuspectID, CrimeID, Name, Description, CriminalHistory, Age) VALUES
(4, 4, 'Jordan Fox', 'Aggressive behavior in public', 'Prior assault', 35),
(5, 5, 'Ava Wright', 'Bank employee under suspicion', NULL, 42),
(6, 6, 'Ethan Lee', 'Suspicious person near house', NULL, 39),
(7, 7, 'Robber 2', 'Masked individual', 'Suspect in prior theft', 40),
(8, 9, 'Unknown', 'Under investigation', NULL, NULL),
(9, 10, 'Logan King', 'Drunk and disorderly', 'Assault record', 38),
(10, 12, 'Ava Wright', 'Linked to ATM fraud', 'Fraud cases', 42),
(11, 13, 'Mark Green', 'Online fraudster', 'Previous fraud case', 44),
(12, 14, 'Lucas Miller', 'Aggressive driver', NULL, 28),
```

```
(13, 15, 'Unknown', 'Unidentified', NULL, NULL);
```

-- Add Age column to Victim table ALTER TABLE Victim ADD Age INT;

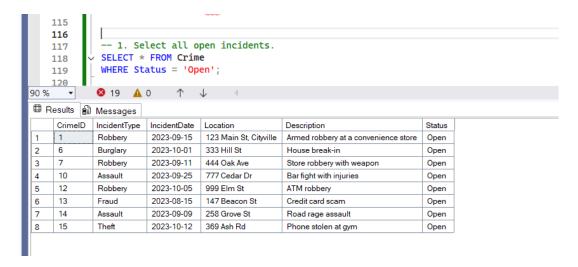
-- Add Age column to Suspect table ALTER TABLE Suspect ADD Age INT;

```
UPDATE Victim SET Age = 34 WHERE VictimID = 1;
UPDATE Victim SET Age = 45 WHERE VictimID = 2;
UPDATE Victim SET Age = 29 WHERE VictimID = 3;
```

```
UPDATE Suspect SET Age = 38 WHERE SuspectID = 1;
UPDATE Suspect SET Age = NULL WHERE SuspectID = 2;
UPDATE Suspect SET Age = 30 WHERE SuspectID = 3;
```

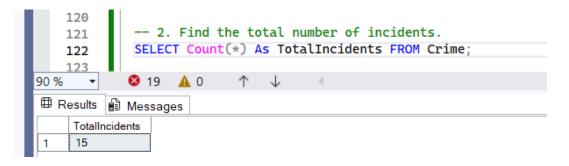
## -- 1. Select all open incidents.

SELECT \* FROM Crime WHERE Status = 'Open';



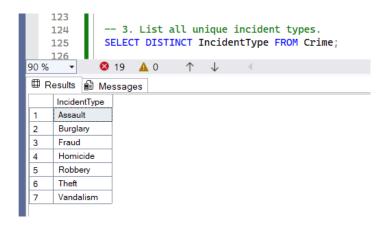
#### -- 2. Find the total number of incidents.

SELECT Count(\*) As TotalIncidents FROM Crime;



## -- 3. List all unique incident types.

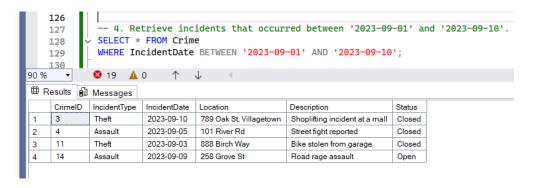
SELECT DISTINCT IncidentType FROM Crime;



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

SELECT \* FROM Crime

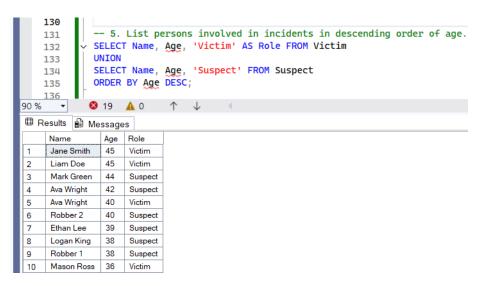
WHERE IncidentDate BETWEEN '2023-09-01' AND '2023-09-10';



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

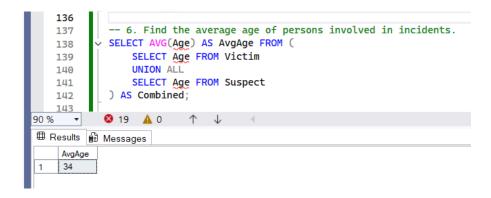
SELECT Name, Age, 'Victim' AS Role FROM Victim UNION

SELECT Name, Age, 'Suspect' FROM Suspect ORDER BY Age DESC;



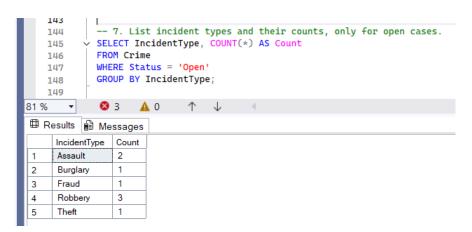
## -- 6. Find the average age of persons involved in incidents.

```
SELECT AVG(Age) AS AvgAge FROM (
SELECT Age FROM Victim
UNION ALL
SELECT Age FROM Suspect
) AS Combined;
```



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

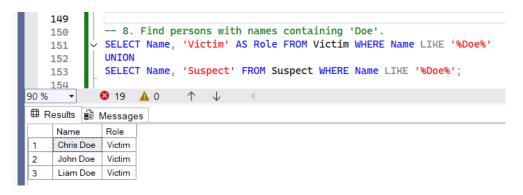
SELECT IncidentType, COUNT(\*) AS Count FROM Crime WHERE Status = 'Open' GROUP BY IncidentType;



## -- 8. Find persons with names containing 'Doe'.

SELECT Name, 'Victim' AS Role FROM Victim WHERE Name LIKE '%Doe%' UNION

SELECT Name, 'Suspect' FROM Suspect WHERE Name LIKE '%Doe%';



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

SELECT V.Name AS PersonName, 'Victim' AS Role, C.Status

FROM Victim V

JOIN Crime C ON V.CrimeID = C.CrimeID

WHERE C.Status IN ('Open', 'Closed')

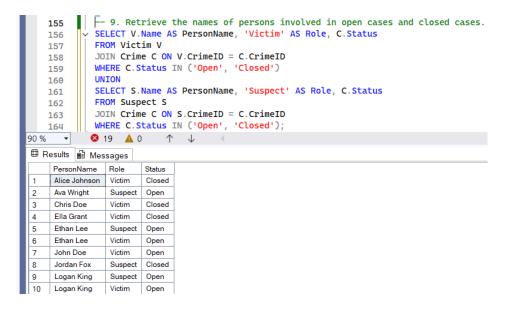
UNION

SELECT S.Name AS PersonName, 'Suspect' AS Role, C.Status

**FROM Suspect S** 

JOIN Crime C ON S.CrimeID = C.CrimeID

WHERE C.Status IN ('Open', 'Closed');



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

SELECT C.IncidentType

FROM Crime C

JOIN Victim V ON C.CrimeID = V.CrimeID

WHERE V.Age IN (30, 35)

UNION

SELECT C.IncidentType

FROM Crime C

JOIN Suspect S ON C.CrimeID = S.CrimeID

WHERE S.Age IN (30, 35);

```
-- 10. List incident types where there are persons aged 30 or 35 involved.
   168
            SELECT C.IncidentType
   169
             FROM Crime C
             JOIN Victim V ON C.CrimeID = V.CrimeID
   170
             WHERE V.Age IN (30, 35)
   171
             UNION
   172
   173
             SELECT C.IncidentType
   174
             FROM Crime C
             JOIN Suspect S ON C.CrimeID = S.CrimeID
   175
             WHERE S.Age IN (30, 35);
   176
            ⊗ 19 🛕 0
                           \uparrow \downarrow
Results Messages
    IncidentType
    Assault
    Theft
```

## -- 11. Find persons involved in incidents of the same type as 'Robbery'. **SELECT Name FROM Victim** WHERE CrimeID IN ( SELECT CrimeID FROM Crime WHERE IncidentType = 'Robbery' ) UNION **SELECT Name FROM Suspect** WHERE CrimeID IN ( SELECT CrimeID FROM Crime WHERE IncidentType = 'Robbery' ); -- 11. Find persons involved in incidents of the same type as 'Robbery'. 178 179 SELECT Name FROM Victim 180 WHERE CrimeID IN ( SELECT CrimeID FROM Crime WHERE IncidentType = 'Robbery' 181 182 **2** 19 **1** 0 ↑ ↓ Name John Doe Robber 2 Noah Baker -- 12. List incident types with more than one open case SELECT IncidentType, COUNT(\*) AS Count **FROM Crime** WHERE Status = 'Open' GROUP BY IncidentType HAVING COUNT(\*) > 1; -- 12. List incident types with more than one open case 189 SELECT IncidentType, COUNT(\*) AS Count 190 191 FROM Crime WHERE Status = 'Open' 192 GROUP BY IncidentType 193 HAVING COUNT(\*) > 1; 194 90 % **⊗** 19 **∧** 0 ↑ ↓ ⊞ Results ■ Messages IncidentType Count Assault 2 2 Robbery 3

# -- 13. List all incidents with suspects whose names also appear as victims in other incidents SELECT C.\*

FROM Crime C

JOIN Suspect S ON C.CrimeID = S.CrimeID

WHERE S.Name IN (SELECT Name FROM Victim);

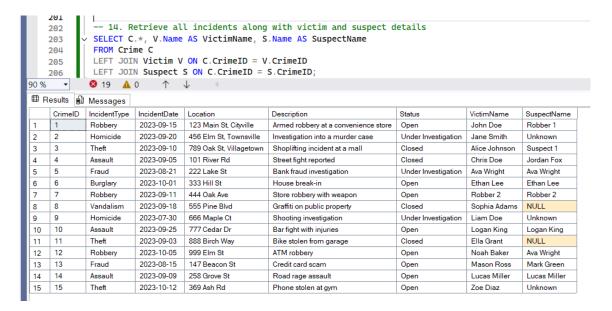


## -- 14. Retrieve all incidents along with victim and suspect details

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;



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

```
SELECT DISTINCT
C.CrimeID, C.IncidentType, C.IncidentDate, C.Location,
CAST(C.Description AS VARCHAR(MAX)) AS Description,
C.Status
FROM Crime C
JOIN Suspect S ON C.CrimeID = S.CrimeID
WHERE S.Age > (
SELECT MAX(V.Age)
FROM Victim V
WHERE V.CrimeID = C.CrimeID
);
```

```
207
               |
-- 15. Find incidents where the suspect is older than any victim
    208
               SELECT DISTINCT
    209
    210
                    C.CrimeID, C.IncidentType, C.IncidentDate, C.Location,
                    CAST(C.Description AS VARCHAR(MAX)) AS Description,
    211
                    C. Status
    212
               FROM Crime C
    213
               JOIN Suspect S ON C.CrimeID = S.CrimeID
    214
               WHERE S.Age > (
    215
                    SELECT MAX(V.Age)
    216
                    FROM Victim V
    217
                    WHERE V.CrimeID = C.CrimeID
    218
               );
    219
    220
90 %
              3 19 △ 0 ↑ ↓ ·
 CrimeID IncidentType IncidentDate Location
                                                          Description
                                                                                        Status
              Robbery
                          2023-09-15 123 Main St, Cityville
                                                          Armed robbery at a convenience store
                                                                                         Open
                          2023-09-10 789 Oak St, Villagetown Shoplifting incident at a mall
 2
                                                                                         Closed
                          2023-09-05 101 River Rd
 3
      4
              Assault
                                                          Street fight reported
                                                                                         Closed
      5
                          2023-08-21
                                      222 Lake St
                                                          Bank fraud investigation
                                                                                         Under Investigation
                          2023-10-01 333 Hill St
                                                          House break-in
      6
              Burglary
                                                                                        Open
 5
              Robbery
 6
      7
                          2023-09-11 444 Oak Ave
                                                          Store robbery with weapon
                                                                                         Open
 7
      10
              Assault
                          2023-09-25
                                      777 Cedar Dr
                                                          Bar fight with injuries
                                                                                         Open
                          2023-10-05 999 Elm St
              Robbery
 8
      12
                                                          ATM robbery
                                                                                         Open
                          2023-08-15 147 Beacon St
 9
      13
              Fraud
                                                          Credit card scam
                                                                                         Open
 10
      14
              Assault
                          2023-09-09 258 Grove St
                                                          Road rage assault
                                                                                        Open
```

## -- 16. Find suspects involved in multiple incidents

SELECT Name, COUNT(DISTINCT CrimeID) AS IncidentCount FROM Suspect GROUP BY Name HAVING COUNT(DISTINCT CrimeID) > 1;

```
-- 16. Find suspects involved in multiple incidents
    221
              SELECT Name, COUNT(DISTINCT CrimeID) AS IncidentCount
    222
    223
              FROM Suspect
              GROUP BY Name
    224
              HAVING COUNT(DISTINCT CrimeID) > 1;
    225
    226
90 %
             19 A 0

    ⊞ Results

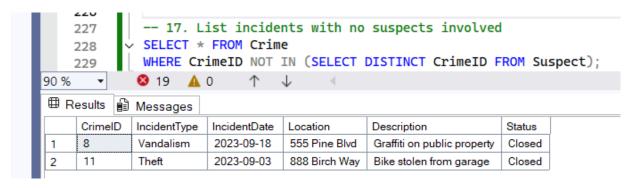
    Messages

               IncidentCount
     Name
               2
     Ava Wright
 1
 2
     Unknown
```

#### -- 17. List incidents with no suspects involved

SELECT \* FROM Crime

WHERE CrimeID NOT IN (SELECT DISTINCT CrimeID FROM Suspect);



## -- 18. List all cases where at least one incident is of type 'Homicide' and all others are 'Robbery'

```
SELECT * FROM (
```

SELECT TOP 1 \*

**FROM Crime** 

WHERE IncidentType = 'Homicide'

ORDER BY IncidentDate DESC

) AS OneHomicide

**UNION ALL** 

**SELECT\*** 

**FROM Crime** 

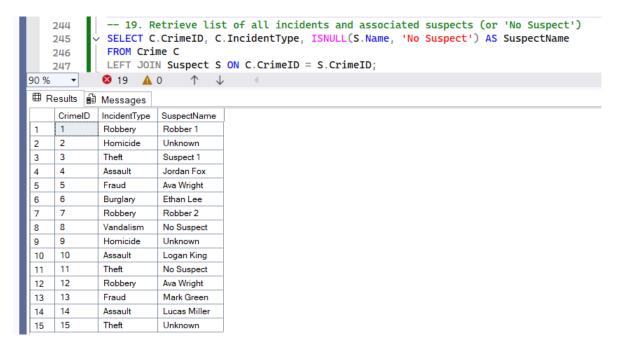
WHERE IncidentType = 'Robbery';

```
-- 18. List all cases where at least one incident is of type 'Homicide' and all others are 'Robbery'
    231
              SELECT *
    232
    233
              FROM (
                  SELECT TOP 1 *
    234
    235
                  FROM Crime
    236
                  WHERE IncidentType = 'Homicide'
                  ORDER BY IncidentDate DESC
    237
              ) AS OneHomicide
    238
              UNION ALL
    239
              SELECT >
    240
              FROM Crime
    241
    242
              WHERE IncidentType = 'Robbery';
    243
▼
90 %
             2 19 A 0 ↑ ↓
CrimeID IncidentType IncidentDate Location
                                                     Description
                                                                                  Status
             Homicide
                        2023-09-20
                                   456 Elm St, Townsville
                                                                                  Under Investigation
             Robbery
                        2023-09-15 123 Main St, Cityville
                                                     Armed robbery at a convenience store
                                                                                  Open
             Robberv
                        2023-09-11
                                   444 Oak Ave
3
                                                     Store robbery with weapon
                                                                                  Open
     12
             Robbery
                       2023-10-05 999 Elm St
                                                     ATM robbery
                                                                                  Open
```

## -- 19. Retrieve list of all incidents and associated suspects (or 'No Suspect')

SELECT C.CrimeID, C.IncidentType, ISNULL(S.Name, 'No Suspect') AS SuspectName FROM Crime C

LEFT JOIN Suspect S ON C.CrimeID = S.CrimeID;



## -- 20. List all suspects involved in incidents with types 'Robbery' or 'Assault'

SELECT S.\*

**FROM Suspect S** 

JOIN Crime C ON S.CrimeID = C.CrimeID

WHERE C.IncidentType IN ('Robbery', 'Assault');

