

DS220: Data Management
Course Project Final Report

Boston Crime Database Project

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Database Implementation

1. Create tables (Write SQL statements to create tables according to the table specification.)

```
CREATE TABLE
```

```
CREATE TABLE OFFENSE(  
    OffenseCode          int          NOT NULL   PRIMARY KEY,  
    OffenseCodeGroup     Char(50)     NOT NULL,  
    OffenseDescription    Char(280)    NOT NULL,  
);
```

```
CREATE TABLE LOCATIONTAB(  
    LocationID           int          NOT NULL   IDENTITY(1,1)  
PRIMARY KEY,  
    Latitude             NUMERIC      NOT NULL,  
    Longitude            NUMERIC      NOT NULL,  
    District             Char(3)      NOT NULL,  
    ReportingArea        int          NOT NULL,  
    Location             Char(100)    NOT NULL,  
);
```

```

CREATE TABLE INCIDENT(
    IncidentNum    Char(10)    NOT NULL    PRIMARY KEY,
    Shooting       Char(1)     NULL,
    UCRPart        Char(15)    NOT NULL,
    OccuredDate    DateTime    NOT NULL,
    Year           int         NOT NULL,
    Month          int         NOT NULL,
    DayofWeek      Char(10)    NOT NULL,
    Hour           int         NOT NULL,
    OffenseCode    int         NOT NULL,
    LocationID     int         NOT NULL,

    CONSTRAINT INCID_OFFEN_FK FOREIGN KEY(OffenseCode)
        REFERENCES OFFENSE(OffenseCode)
        ON UPDATE CASCADE,
    CONSTRAINT INCID_LOCAT_FK FOREIGN KEY(LocationID)
        REFERENCES LOCATIONTAB(LocationID)
        ON UPDATE CASCADE
);

```

2. Insert data (Write SQL statements to insert data into tables. You should have at least five data records for each table.)

```

INSERT INTO

```

OFFENSE TABLE:

```

INSERT INTO OFFENSE VALUES('00619', 'Larceny', 'LARCENY ALL
OTHERS');

```

```

INSERT INTO OFFENSE VALUES('01402', 'Vandalism',
'VANDALISM');

```

```

INSERT INTO OFFENSE VALUES('03410', 'Towed', 'TOWED MOTOR
VEHICLE');

```

```

INSERT INTO OFFENSE VALUES('03114', 'Investigate Property',
'INVESTIGATE PROPERTY');

```

```

INSERT INTO OFFENSE VALUES('03820', 'Motor Vehicle Accident
Response', 'M/V ACCIDENT INVOLVING PEDESTRIAN - INJURY');

```

LOCATION TABLE:

```
INSERT INTO LOCATIONTAB VALUES('42.35779134',  
'-71.13937053', 'D14', '808', '(42.35779134,  
-71.13937053)');
```

```
INSERT INTO LOCATIONTAB VALUES('42.30682138',  
'-71.06030035', 'C11', '347', '(42.30682138,  
-71.06030035)');
```

```
INSERT INTO LOCATIONTAB VALUES('42.34658879',  
'-71.07242943', 'D4', '151', '(42.34658879,  
-71.07242943)');
```

```
INSERT INTO LOCATIONTAB VALUES('42.33418175',  
'-71.07866441', 'D4', '272', '(42.33418175,  
-71.07866441)');
```

```
INSERT INTO LOCATIONTAB VALUES('42.27536542',  
'-71.09036101', 'B3', '421', '(42.27536542,  
-71.09036101)');
```

INCIDENT TABLE:

```
INSERT INTO INCIDENT VALUES('I182070945', NULL, 'Part One',  
'2018-09-02 13:00:00', '2018', '9', 'Sunday', '13',  
'00619', '1');
```

```
INSERT INTO INCIDENT VALUES('I182070943', NULL, 'Part Two',  
'2018-08-21 00:00:00', '2018', '8', 'Tuesday', '0',  
'01402', '2');
```

```
INSERT INTO INCIDENT VALUES('I182070941', NULL, 'Part  
Three', '2018-09-03 19:27:00', '2018', '9', 'Monday', '19',  
'03410', '3');
```

```
INSERT INTO INCIDENT VALUES('I182070940', NULL, 'Part  
Three', '2018-09-03 21:16:00', '2018', '9', 'Monday', '21',  
'03114', '4');
```

```
INSERT INTO INCIDENT VALUES('I182070938', NULL, 'Part  
Three', '2018-09-03 21:05:00', '2018', '9', 'Monday', '21',  
'03114', '5');
```

3. Queries (The basic requirement is to have at least five queries for your system. At least two functions need to join two or more tables. Please first describe the query in English, then write SQL statement for that query.)

"Find the incident number where the offense code is 619"

```

SELECT IncidentNum
FROM INCIDENT
WHERE OffenseCode = 619;

```

"Find the list of offense code and its code group"

```

SELECT OffenseCode, OffenseCodeGroup
FROM OFFENSE;

```

"Find the incident number that happened in district D4"

```

SELECT IncidentNum
FROM INCIDENT
WHERE LocationID IN( SELECT LocationID FROM LOCATIONTAB WHERE
District = 'D4');

```

"Find the reporting area where the incident took place on a tuesday"

```

SELECT ReportingArea
FROM LOCATIONTAB
WHERE LocationID IN (SELECT LocationID FROM INCIDENT WHERE DayofWeek
= 'Tuesday');

```

"Find the location of an incident that happened on a sunday"

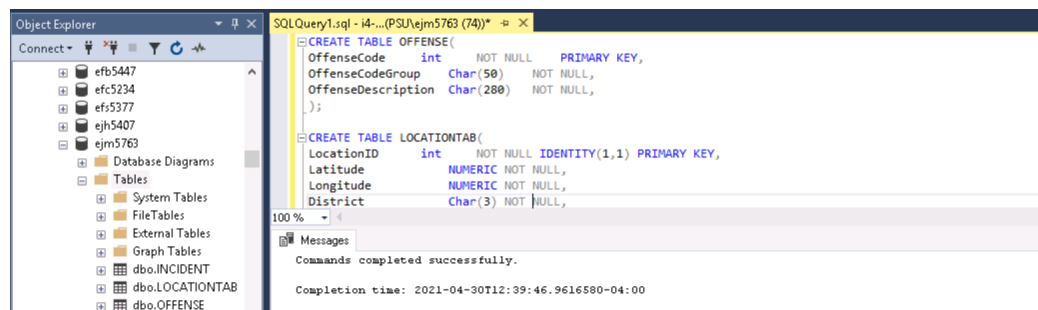
```

SELECT Location
FROM LOCATIONTAB AS L, INCIDENT AS I
WHERE L.LocationID = I.LocationID AND I.DayofWeek = 'Sunday';

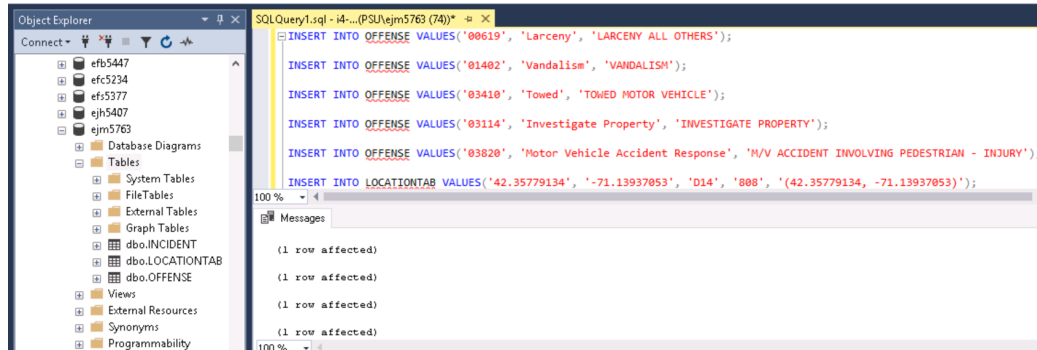
```

Note: For all the three parts above, i.e., create tables, insert data, and queries, show the screen shots of the SQL statements and the results from the statements using Microsoft SQL Server.

Create:

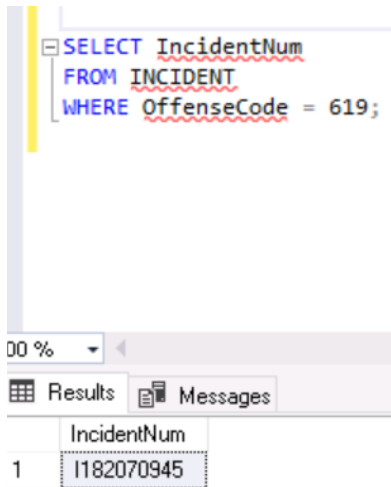


Insert:



Queries:

1. Find the incident number where the offense code is “619”



2. Find the list of offense code and its code group

SQLQuery1.sql - i4-...(PSU\ejm5763 (74))*

```

SELECT OffenseCode, OffenseCodeGroup
FROM OFFENSE;

```

100 %

Results Messages

	OffenseCode	OffenseCodeGroup
1	619	Larceny
2	1402	Vandalism
3	3114	Investigate Property
4	3410	Towed
5	3820	Motor Vehicle Accident Response

- Find the incident number that happened in district “d4”

SQLQuery1.sql - i4-...(PSU\ejm5763 (74))*

```

SELECT IncidentNum
FROM INCIDENT
WHERE LocationID IN ( SELECT LocationID FROM LOCATIONTAB WHERE District = 'D4');

```

100 %

Results Messages

	IncidentNum
1	I182070940
2	I182070941

- Find the reporting area where the incident took place on a Tuesday

SQLQuery1.sql - i4-...(PSU\ejm5763 (74))*

```

SELECT ReportingArea
FROM LOCATIONTAB
WHERE LocationID IN (SELECT LocationID FROM INCIDENT WHERE DayofWeek = 'Tuesday');

```

100 %

Results Messages

	ReportingArea
1	347

- Find the location of a incident that happened on a Sunday

The screenshot shows a SQL query window titled 'SQLQuery1.sql - i4-...(PSU\ejm5763 (74))*'. The query is as follows:

```
SELECT Location
FROM LOCATIONTAB AS L, INCIDENT AS I
WHERE L.LocationID = I.LocationID AND I.DayofWeek = 'Sunday';
```

Below the query window, the 'Results' tab is active, displaying a single row of data:

	Location
1	(42.35779134, -71.13937053)

Group Activity Log on this report

clearly report time, activity, and attendance of each individual. Activity must involve details, not just saying "we had a meeting" or "we had a discussion".

Date and Time	Activity	Attendance
4/28/2021 11:00 – 11:45 AM	With the part3 of the report we managed to make the codes to build the 3 tables, then we created the codes to insert the data we got from Kaggle into the table, and we also created some SQL queries code to use some functions.	all team members
4/30/2021 12pm	Completed final report	all team members