**Assignment 03**

***Place your answer after each question***

1. The head DBA has requested the creation of a sequence for the primary key columns of the Criminals and Crimes tables. After creating the sequences, add a new criminal named Manie Capella to the Criminals table by using the correct sequence.

(Use any values for the remainder of columns.)

USE CityJailDatabase

CREATE SEQUENCE sequence\_criminals

START WITH 1

INCREMENT BY 1;

USE CityJailDatabase

CREATE SEQUENCE sequence\_crimes

START WITH 1

INCREMENT BY 1;

USE CityJailDatabase

INSERT INTO Criminals (Criminal\_ID, [First], [Last], [Street], [City], Zip, Phone)

VALUES (NEXT VALUE FOR sequence\_criminals, 'Manie', 'Capella','849 Summer Street', 'Anaheim', '92804', '1234567890');

1. A crime needs to be added for the criminal, too. Add a row to the Crimes table, referencing the sequence value already generated for the Criminal\_ID and using the correct sequence to generate the Crime\_ID value.

(Use any values for the remainder of columns.)

Use CityJailDatabase

INSERT INTO Crimes (Crime\_ID, Criminal\_ID, Classification, [Status], Hearing\_date, Appeal\_cut\_date, Date\_Recorded)

VALUES (NEXT VALUE FOR sequence\_crimes, NEXT VALUE FOR sequence\_criminals, 'M', 'CA', '9-05-23', '11-7-23', '6-4-23');

1. The last name, street, and phone number columns of the Criminals table are used quite often in the WHERE clause condition of queries. Create objects that might improve data retrieval for these queries.

Some objects that I used for last name, street, and phone number columns of the criminal table are synonyms. <https://learn.microsoft.com/en-us/sql/relational-databases/synonyms/synonyms-database-engine?view=sql-server-ver16>

Use CityJailDatabase

CREATE SYNONYM [syn\_last\_name\_] FOR LAST

CREATE SYNONYM [syn\_street\_name\_] FOR street;

CREATE SYNONYM [syn\_phone\_number\_] FOR Phone;

1. Would a bitmap index be appropriate for any columns in the City Jail database (assuming the columns are used in search and/or sort operations)? If so, identify the columns and explain why a bitmap index is appropriate for them.

I think that a bitmap index would be appropriate for any columns in the City Jail database because according to <https://www.tutorialspoint.com/bitmap-indexing-in-dbms> it is saying how “A database index is a data structure that is used to quickly locate and retrieve data from a database table. Indexes work by creating a separate structure that stores the values from a specific column of a table, along with a pointer to the corresponding row in the table.” This is showing how much faster we can get the data when we are searching for specific columns such as name, address, classification. We can easily filter and retrieve data from the database using this.

1. Would using the City Jail database be any easier with the creation of synonyms? Explain why or why not.

I believe that it would be great to have a creation of synonyms to the City Jail database as it is according to <https://learn.microsoft.com/en-us/sql/relational-databases/synonyms/synonyms-database-engine?view=sql-server-ver16>

“Provides an alternative name for another database object, referred to as the base object, that can exist on a local or remote server.

Provides a layer of abstraction that protects a client application from changes made to the name or location of the base object.”

So overall, I think it would be good to have that extra protection in case something does happen and to have it on another server for backup but also make sure that it is secure for safety of information.