# Lab: Data Encryption

|  |
| --- |
| * This is worth 2 points. * The due date is tomorrow midnight. * Use the following naming convention: homework, underscore, last name, first initial, and extension (e.g., Lab\_Encrypt\_ImG.docx). |

## 1. Preparation

First, if your SQL Server does not have Oldhouse database, create it using this script: **Oldhouse-Table-Create (Lab).sql**.

Next, perform the lab using this script: **Encryption-Cert (Lab).sql**.

## 2. Deliverables

-- Display the original table

select \* from dbo.cust

go

/\* Task #1: Show the original table in a screen shot. \*/

Table, Excel

Description automatically generated

-- Display the encrypted table

select \* from dbo.cust\_encrypt

go

/\* Task #2: Show the encrypted table in a screen shot. Also, explain why we need to change the data type for encryption. \*/

Text

Description automatically generated

We need to change the data type for encryption because the data needs to be protected from those who have a chance to enter in the database to take sensitive information.

-- Display the encrypted table

select \* from dbo.cust\_encrypt

go

/\* Task #3: Show the encrypted table in a screen shot. Also, explain the encryption process after Task #2. \*/

Graphical user interface, text, application, chat or text message

Description automatically generated

The encryption process after task 2 is that we make a certificate using the database, and then creating a symmetric key for it. Then it becomes encrypted by using the certificate. The table is then emptied by truncating it. Then the table key is decrypted by using the certificate, and then the rows of the table are inserted by using the key that was encrypted by the Certificate we made.

-- Display the decrypted table

select fname,

lname,

cardnumber = convert(nvarchar(25), DecryptByKey(cardnumber\_encrypt))

from dbo.cust\_encrypt

go

/\* Task #4: Show the encrypted table in a screen shot. Also, explain the decryption process after Task #3. \*/

/\* Did you get the original data back? If not, what's wrong? \*/

/\* Hint: Check out the current data type of cardnumber with the original one \*/

Table

Description automatically generated

The decryption process is started by selecting the database which in this case is the oldhouse one. Then the symmetric key is opened, and then is used for decryption by the use of the certificate. Once the certificate is used for decryption, the user can then display the table that has been decrypted. I did not get the original data back because for the decrypted table, the data type is cardnumber\_encrypt which still protects the data. In the original table, the data type for that is a varchar which can be displayed when selected. So if the decrypted table does not have the correct data type in place, the data can’t be shown in its original form.