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).

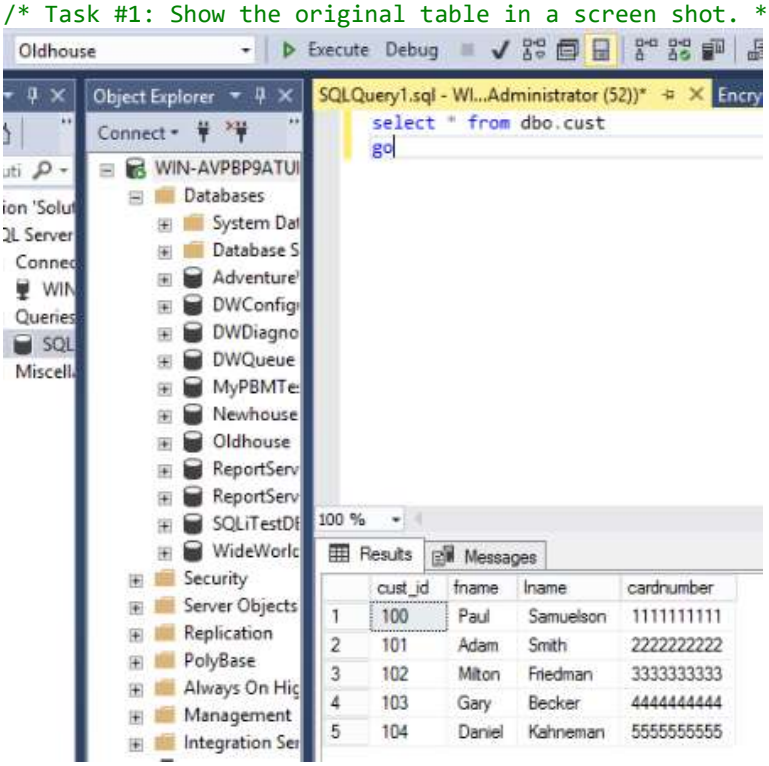
1. Preparation

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**.

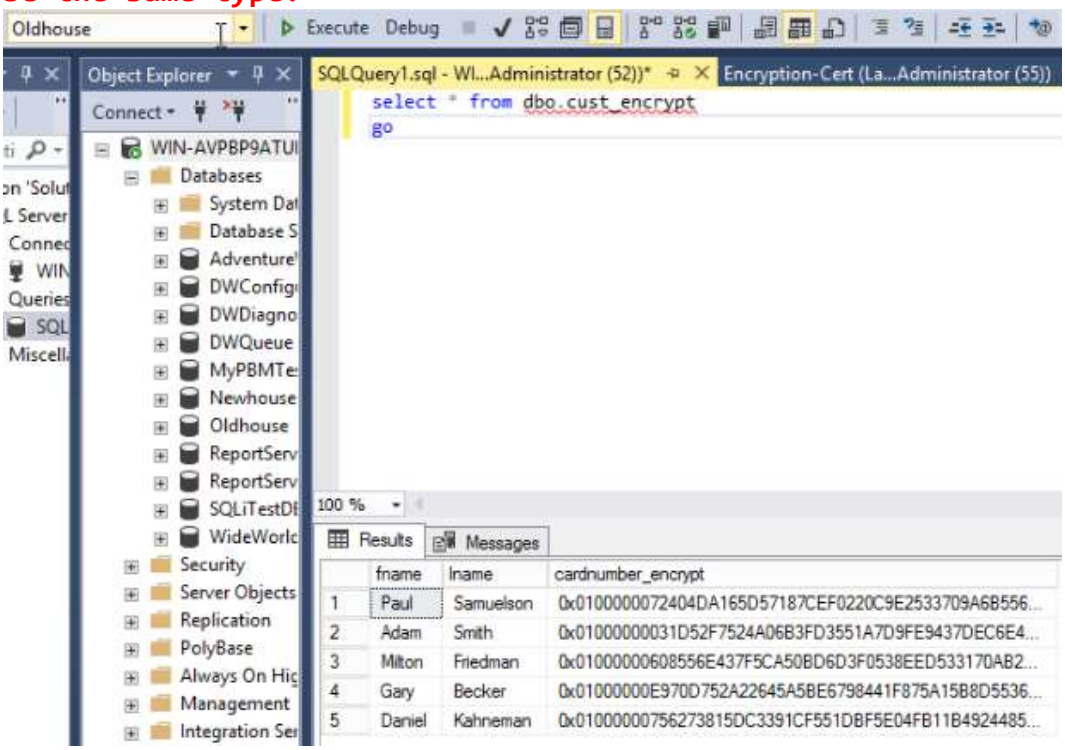
2. Deliverables

```
-- Display the original table
select * from dbo.cust
go
/* Task #1: Show the original table in a screen shot. */
```



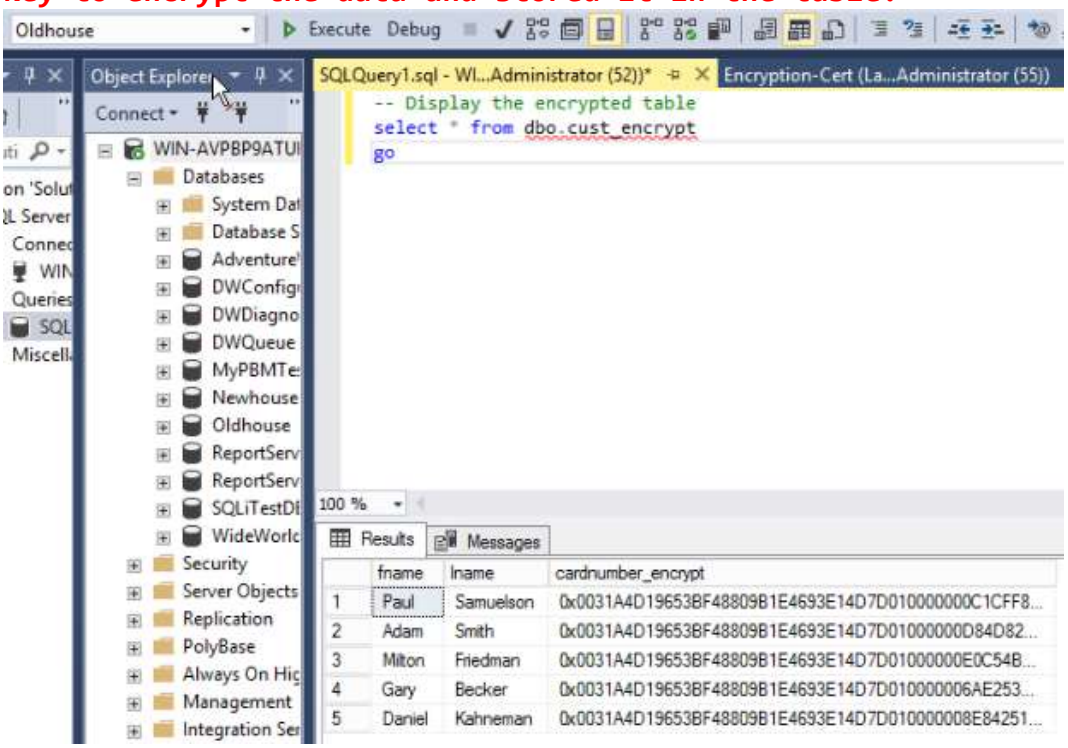
```
-- Display the encrypted table
select * from dbo.cust_encrypt
go
/* Task #2: Show the encrypted table in a screen shot. Also, explain why we need to
change the data type for encryption. */
```

We need to convert it to varbinary because the EncryptByPassphrase returns that data type. The variable that stores the card number must be the same type.



```
-- 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. */
```

I created a certificate which acted as the base for a symmetrical key. Then I created the symmetric key with the BillingCert certificate. This acted as the base I encrypted by. Finally I used the symmetric key to encrypt the data and stored it in the table.



```sql
-- 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       */
```

I used the Open Symmetric Key with the certificate we created in a previous step. This allowed an authorized user to access the data. I used DecryptByKey to decrypt the table using the Billing Cert key. Lastly, I output the data as a nvarchar with the convert function.