Lab 1: An Islamic Banking Application using C# & SQL Server (1)

Learning Objectives

Upon completion of this lab, you will be able to:

- Create database on SQL server 2005
- Create tables and Views
- Create relationship between tables
- Write SQL quarries and run it
- Define SQL service.
- Define Database file (mdf and ldf files)

Brief overview of Relational Databases and Database Applications

In 1970s, the *relational database model* which originated in the academic research community became available in commercial implementations such as IBM DB2 and Oracle. The relational data model specifies data stored in *relations* that have some *relationships* among them (hence the name *relational*).

In relational databases such as Sybase, Oracle, IBM DB2, MS SQL Server and MS Access, data is stored in *tables* made up of one or more *columns* (Access calls a column a *field*). The data stored in each column must be of a single *data type* such as Character, Number or Date. A collection of values from each column of a table is called a *record* or a *row* in the table.

Different tables can have the same column in common. This feature is used to explicitly specify a relationship between two tables. Values appearing in column A in one table are shared with another table.

Task 1: Create Database

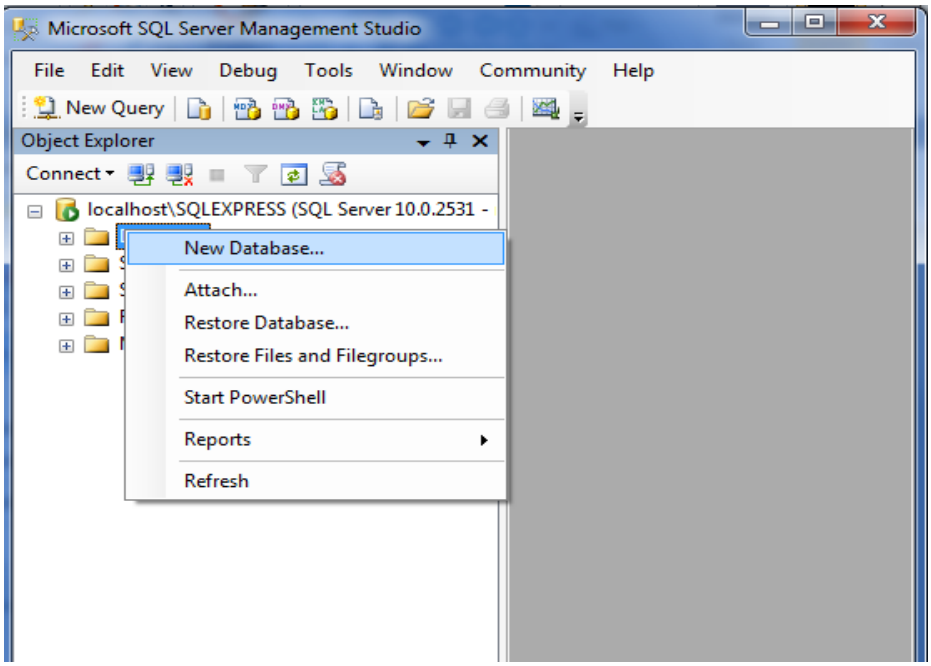
Step 1: From **start menu – All Programs - Microsoft SQL Server** run **SQL Server Management Studio.** At the **connect to server** window enter the following parameters

Server name: <PCName>\SQLEXPRESS

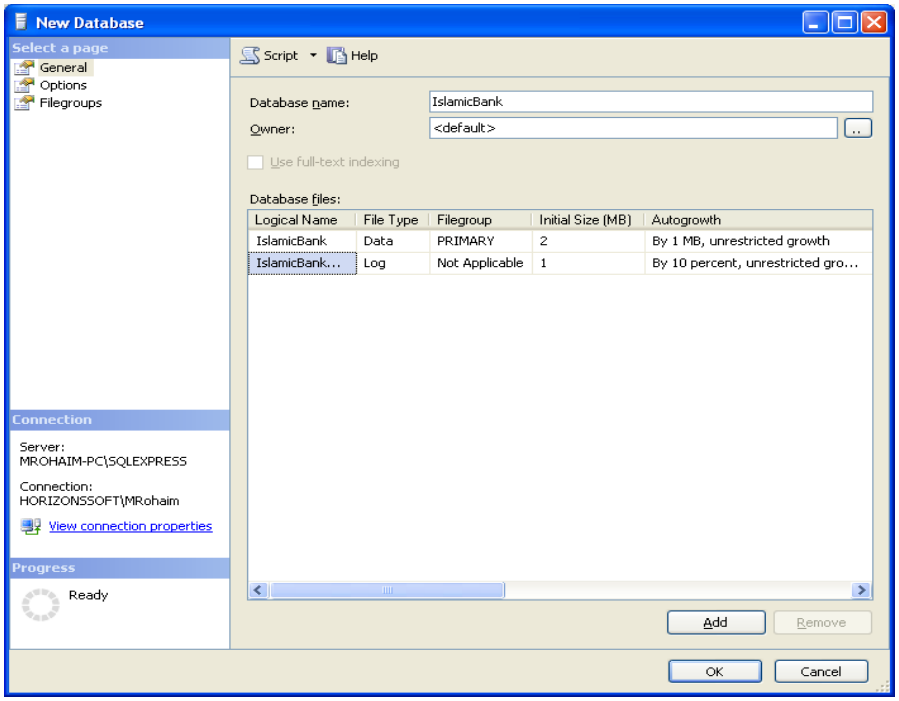
Authentication: Windows Authentication

Then press connect

Step 2: From **Objet Explorer** window **Right click** on **Database** then select **New Database**



Step 3: From **New Database** window enter **database name** as **IslamicBank** then click **OK**



Task 2: Create Tables

In this task will create the following tow tables:

Customer Table

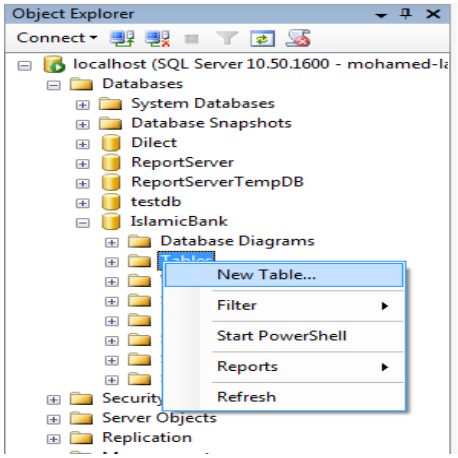
CustomerID	Name	Address	City	Zip
Number	***Character***	***Character***	***Character***	***Character***
1001	Ahmed Mohamed	Nasr city	Cairo	91232
1002	Mohamed Hosny	Tanta	Elgharbia	81992
1003	Mostafa Taha	Dmnhor	Elbehira	81992

Accounts Table

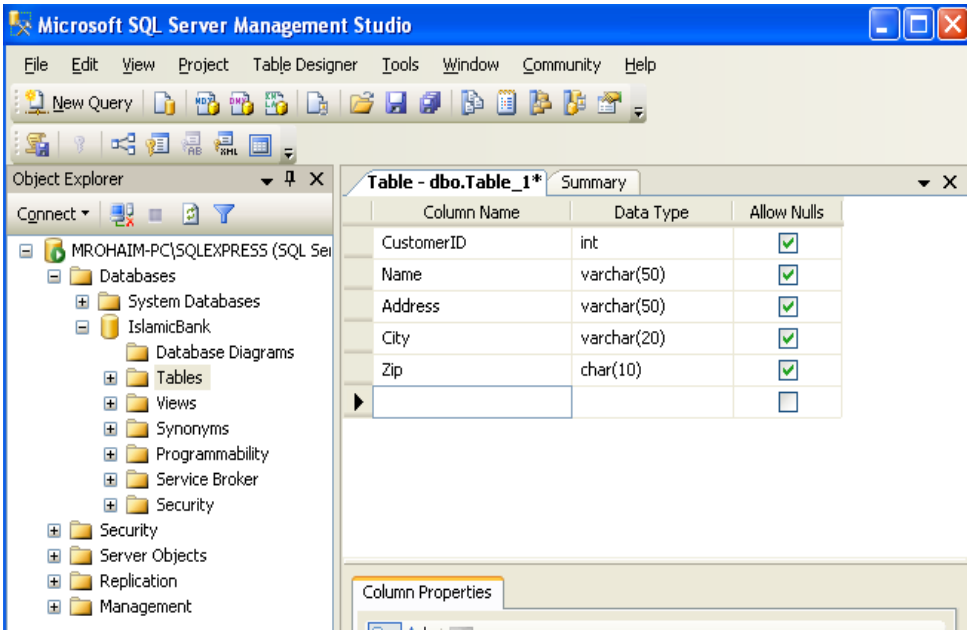
CustomerID	AccountNumber	AccountType	DateOpened	Balance	Currency
Number	***Number***	***Character***	***Date***	***Number***	***Character***
1001	9987	Checking	10/12/1989	4000.00	EGP
1001	9980	Savings	10/12/1989	2000.00	USD
1002	8811	Savings	01/05/1992	1000.00	USD
1003	4422	Checking	12/01/1994	6000.00	EGP
1003	4433	Savings	12/01/1994	9000.00	USD

To Create the Customer Table, do the following steps

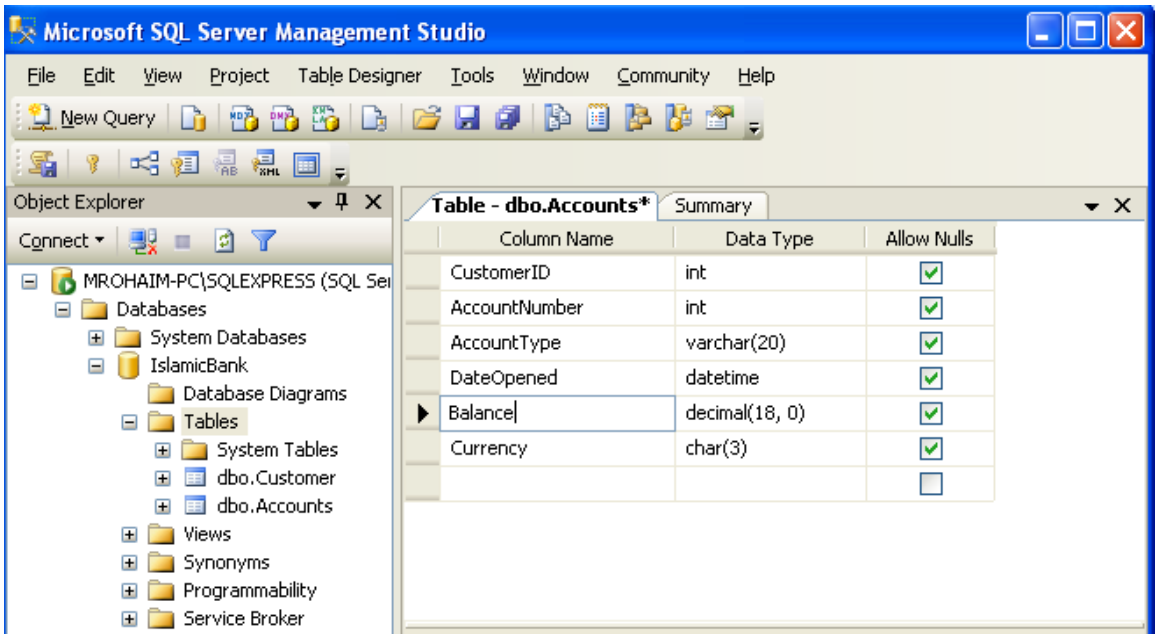
Step 1: Under **IslamicBank** database **right click** on **Tables** then select **New Table**



Step 2: Define customer table fields as shown in the following figure then save it as **Customer**



Exercise: Create the **Accounts** table in the same way we create **Customer** table as shown in the following figure.

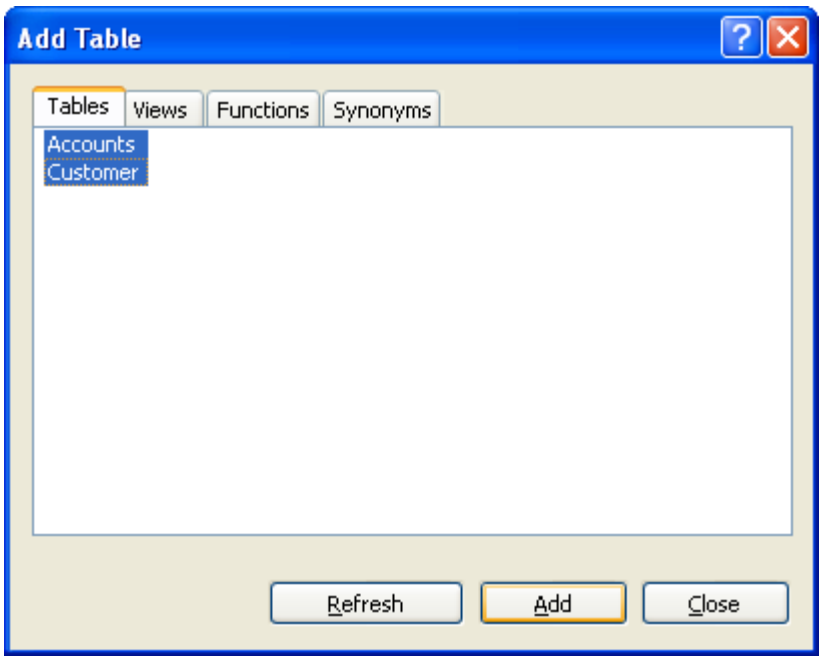


Task 3: Create Views

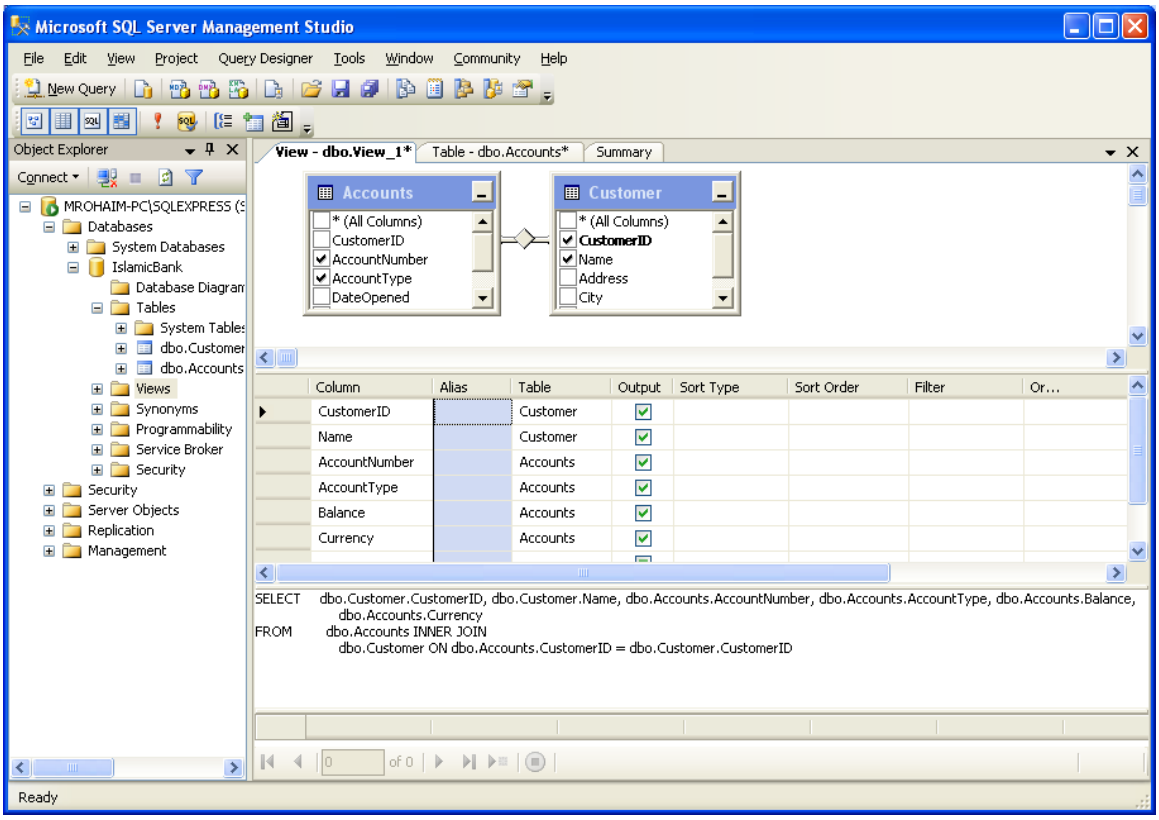
Objective: Create view on the two tables contains the following columns

Column Name	Table
CustomerID	Customer
Name	Customer
AccountNumber	Accounts
AccountType	Accounts
Balance	Accounts
Currency	Accounts

Step 1: Under **IslamicBank** database **right click** on **Views** then select **New View.** Then from **Add Table** window select **Customer and Accounts** tables then **click Add**



Step 2: From view window select required columns then save this view as **CustomerAccounts**



Note That:-

1- The relation between the two tables is donning using **CustomerID** field.

2- SQL statement for this view is:

```
SELECT  dbo.Customer.CustomerID, dbo.Customer.Name, dbo.Accounts.
        AccountNumber,  dbo.Accounts.AccountType, dbo.Accounts.Balance,
        dbo.Accounts.Currency

FROM  dbo.Accounts INNER JOIN dbo.Customer
            ON dbo.Accounts.CustomerID = dbo.Customer.CustomerID
```

Step 3: Run this view to show its result

Exercise: Do the following SQL statement and write there results

1- Select Statement

```
Select * From Customer Where Name = 'Ahmed'

Select * From Customer Where Name Like '%Ahmed%'

Select * From Accounts Where Balance > 1000 and Balance <8000

select Currency , sum(Balance) As sumOfBalance From Accounts
Group By Currency

select AccountType,Currency , sum(Balance) As sumOfBalance From Accounts
Group By Currency

select AccountType,Currency , sum(Balance) As sumOfBalance From Accounts
Group By AccountType,Currency

Select * From CustomerAccounts
```

2- Insert Statement

```
insert into Customer Values (1004,'Mohamed','Nasr City','Cairo','1234')

insert into Customer Values (1005,'Ramy','Nasr City','Cairo')
insert into Customer Values (1005,'Ramy','Nasr City','Cairo',NULL)

insert into Customer (CustomerID, Name, Address, City) Values
(1005,'Ramy','Nasr City','Cairo')
insert into Accounts(CustomerID, AccountNumber, Balance) values
(1009,123456,1000)
```

3- Update Statement

```
update Accounts set Balance = Balance * 1.5

update Accounts set Balance = Balance * 2
where CustomerID = 1001
```

4- Delete Statement

```
Delete from Accounts Where CustomerID = 1001
```