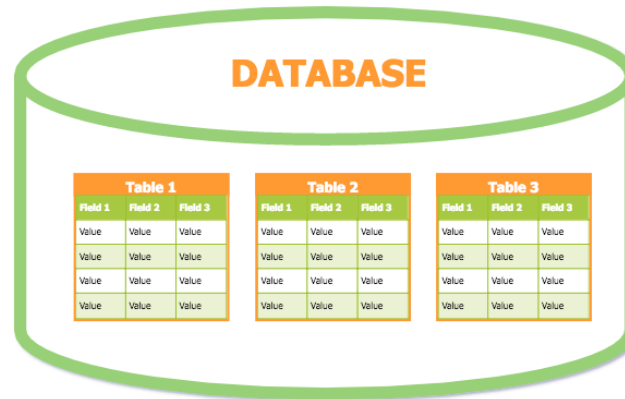


ISAD253SL - Databases

Lesson 5 Introduction to SQL



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Structured Query Language (SQL)

- The most widely used and the standard language for RDBMS.
- A **Declarative Language** (Non procedural language) used to communicate with a database.
 - Expected result is given without specific details about how to accomplish the task.
 - Only need to specify what needs to be accomplished and not how to do it.
 - The DBMS determines and performs internally the step by step operations needed to obtain the result.

SQL Statements

- Instructions are given in the form of statements, consisting of a specific SQL command and additional parameters that apply to that statement.
- Commonly used statements are grouped into the following categories:
 - Data Definition Language (DDL)
 - Data Manipulation Language (DML)
 - Data Control Language (DCL)
 - Data Query Language (DQL)

Data Definition Language (DDL)

- Used to define the database structure (Physical Design).
- CREATE
 - Create new objects (table, view, etc) in the database.
- ALTER
 - Modify the structure of existing objects in the database.
- DROP
 - Remove (delete) objects from the database.

Data Manipulation Language (DML)

- Change the data in the database.
- INSERT
 - Insert data into a table
- UPDATE
 - Updates existing data within a table
- DELETE
 - Deletes certain records from a table

Data Query Language (DQL)

- Retrieve certain records from one or more tables.
- SELECT - Retrieve data from the database

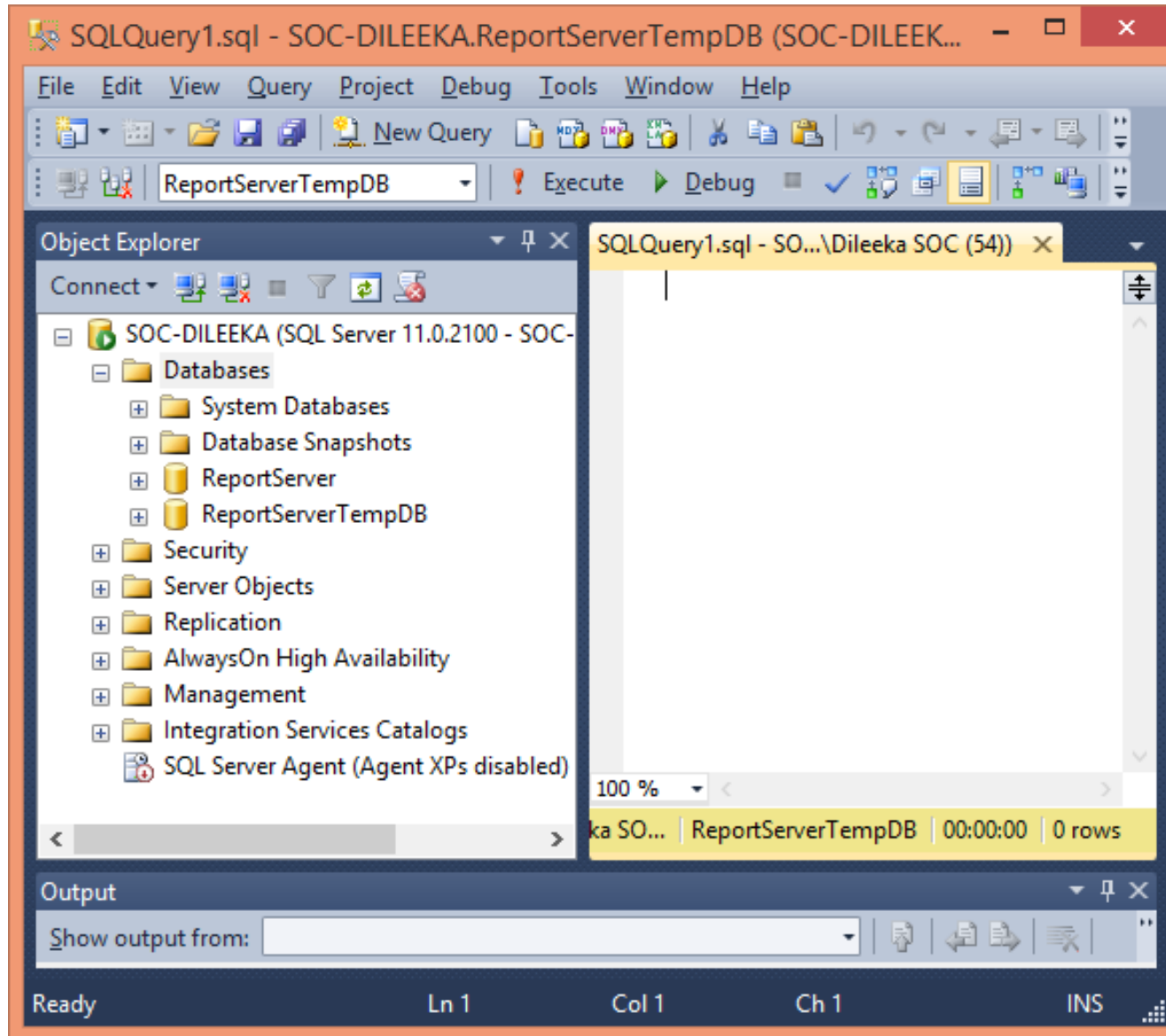
Data Control Language (DCL)

- Control the access of the data in the database and determines how, when, and whom can manipulate data.
- Provide commands to specify access rights to tables and views.
- GRANT
 - Give access privilege to someone to the database.
- REVOKE
 - Take back/ withdraw access privileges granted to someone.

Data Control Language (DCL)

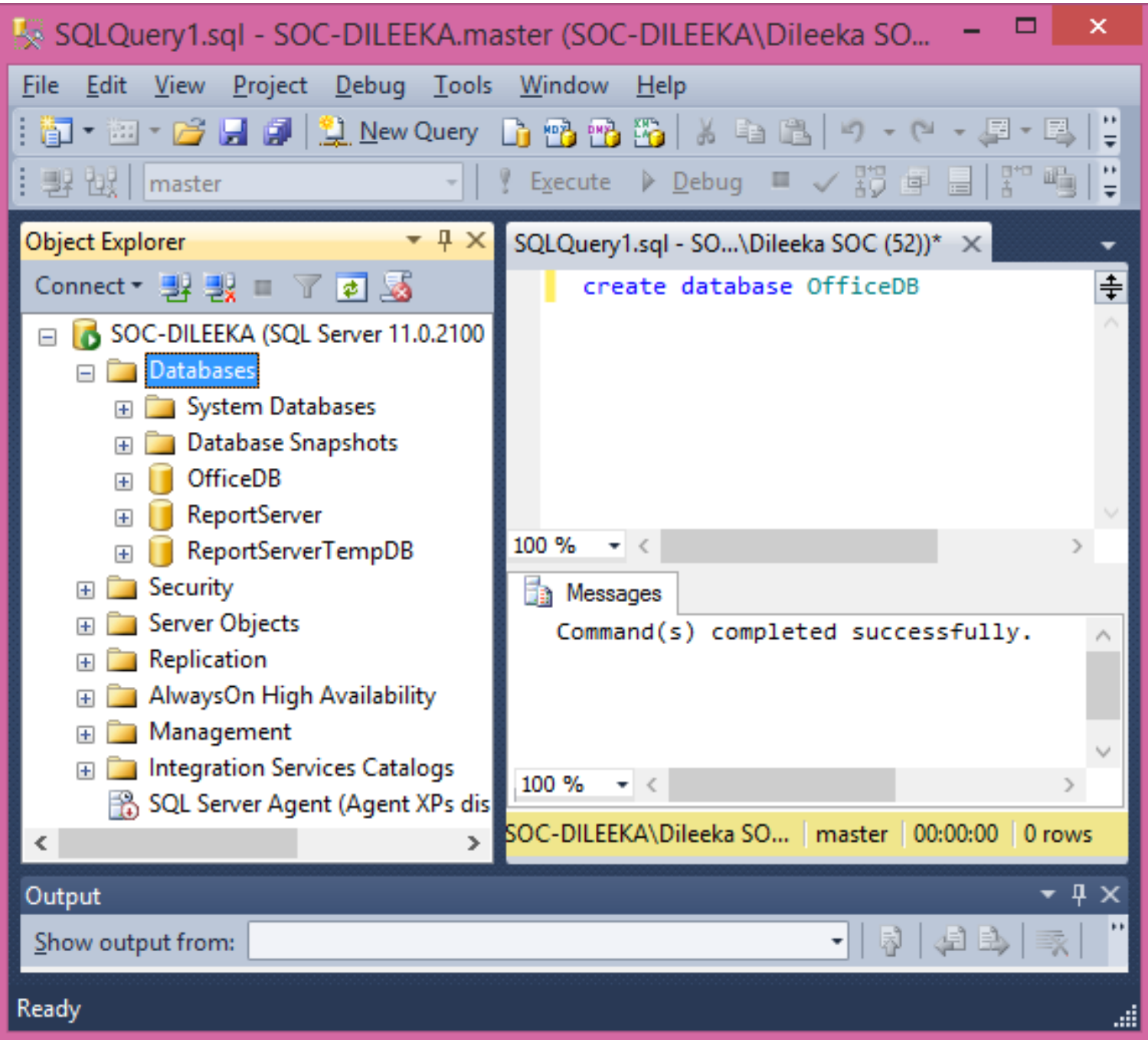
- COMMIT
 - Permanently save the work done (transactions) into the DB.
- SAVEPOINT
 - Temporally save a transaction so that we can rollback to that point whenever necessary.
- ROLLBACK
 - Restore database to original since the last COMMIT or SAVEPOINT

MS SQL Server



Create a Database

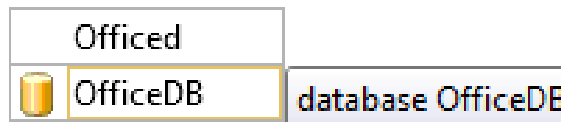
- CREATE DATABASE <Database_Name>
- Exercise:
 - Create a database to save details about the office activities.



Delete a Database

- DROP DATABASE <Database_Name>
- Exercise:
 - Delete the OfficeDB that you have created earlier.

Drop database Officed



Create Tables

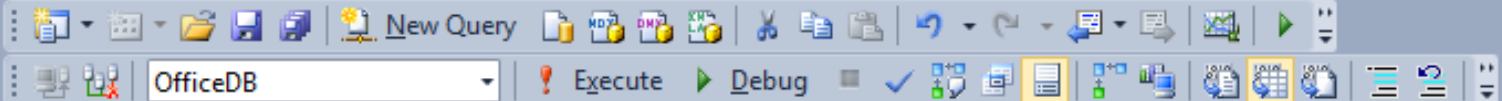
```
CREATE TABLE <table_name>
    (field_name1  data_type(field_size),
     field_name2  data_type(field_size),
     ....
     ....
     field_name  data_type(field_size)
    )
```

- No need to specify the field sizes for INTEGER and DATE data types.

Exercise

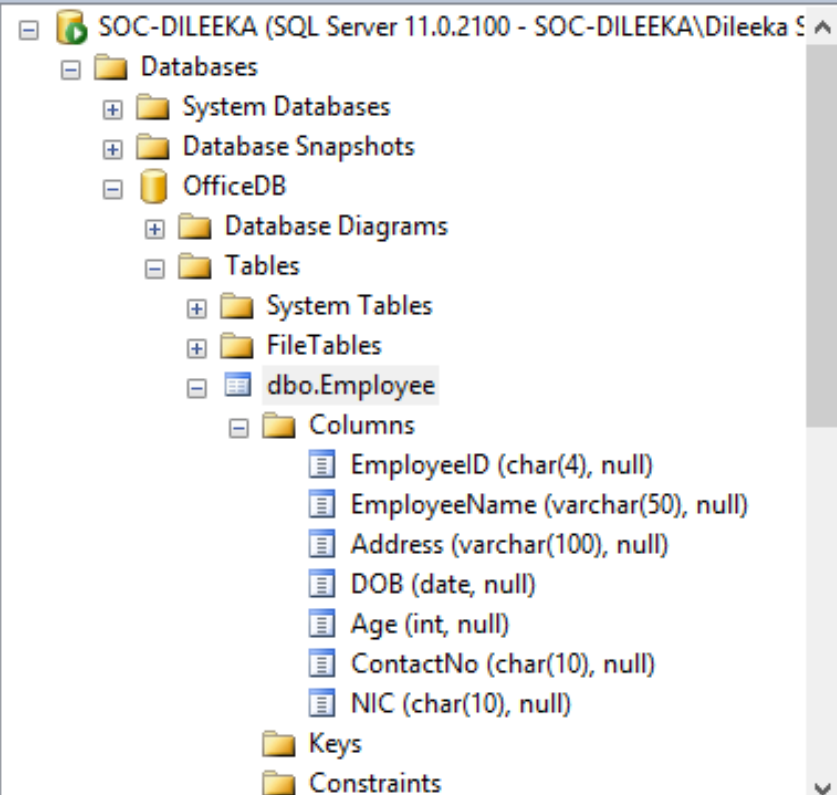
- Create a table in the OfficeDB to save details about employees.
- Fields of the table:
 - Employee ID
 - Employee Name
 - Address
 - DOB
 - Age
 - Contact no
 - NIC

File Edit View Query Project Debug Tools Window Help



Object Explorer

Connect



SQLQuery1.sql - SO...\Dileeka SOC (52))*

```
CREATE TABLE Employee (  
    EmployeeID char(4),  
    EmployeeName varchar(50),  
    Address varchar(100),  
    DOB date,  
    Age integer,  
    ContactNo char(10),  
    NIC char(10),  
)
```

100 %

Messages

Command(s) completed successfully.

100 %

DILEEKA\Dileeka SO... | OfficeDB | 00:00:00 | 0 rows

Output

Show output from:

Ready

Ln 9

Col 18

Ch 15

INS

dbo.Employee

- Columns
 - Emplo
 - Emplo
 - Addre
 - DOB (c
 - Age (i
 - Conta
 - NIC (c
- Keys
- Constrain
- Triggers
- Indexes
- Statistics
- Views
- Synonyms
- Programmability
- Service Broker
- Storage
- Security
- ReportServer
- ReportServerTempDB
- urity

- New Table...
- Design
- Select Top 1000 Rows
- Edit Top 200 Rows

Script Table as

View Dependencies

Full-Text index

Storage

Policies

Facets

Start PowerShell

Reports

Rename

Delete

Refresh

Properties

CREATE To

ALTER To

DROP To

DROP And CREATE To

SELECT To

INSERT To

UPDATE To

DELETE To

EXECUTE To

New Query Editor Window

File ...

Clipboard

Agent Job ...


```
USE [OfficeDB]
```

```
GO
```

```
/****** Object: Table [dbo].[Employee]      Script Date: 9/28/2018 11:59:52 AM *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
SET ANSI_PADDING ON
```

```
GO
```

```
CREATE TABLE [dbo].[Employee](  
    [EmployeeID] [char](4) NULL,  
    [EmployeeName] [varchar](50) NULL,  
    [Address] [varchar](100) NULL,  
    [DOB] [date] NULL,  
    [Age] [int] NULL,  
    [ContactNo] [char](10) NULL,  
    [NIC] [char](10) NULL  
) ON [PRIMARY]
```

```
GO
```

```
SET ANSI_PADDING OFF
```

```
GO
```

Insert Records to a Table

- INSERT INTO <table_name>
VALUES (... , ,)
- Exercise:
 - Insert your details to Employee table.

Insert Records

```
INSERT INTO Employee  
VALUES ('0001', 'Ann Perera', '105, Cinnoman Gardens, Colombo 7', '1970-10-13', 47, '0115446000', '706145781V')  
  
Select *from Employee
```

100 % <

Results

Messages

	EmployeeID	EmployeeName	Address	DOB	Age	ContactNo	NIC
1	0001	Ann Perera	105, Cinnoman Gardens, Colombo 7	1970-10-13	47	0115446000	706145781V

Insert Data to a Table

- Insert data only to selected fields:

```
INSERT INTO <table_name> <field names to enter values>  
VALUES (... , .... , .....)
```

- Exercise:
 - Insert only Employee ID, Employee Name and ContactNo to Employee table.

Insert Data to a Table

- Insert data by changing the order of the fields:
- Exercise:
 - Insert only Employee ID, ContactNo, Age and Employee Name to Employee table.

Update Records

UPDATE <table_name>

SET <field_name> = <New_attribute_domain>

WHERE <field_name> = <Searching_attribute_domain>

- Exercise:
 - Update the contact number of Employee 0001.

Update Records

```
UPDATE Employee  
SET ContactNo = '0115446055'  
WHERE EmployeeID = '0001'
```

```
Select *from Employee
```

00 %

Results

Messages

	EmployeeID	EmployeeName	Address	DOB	Age	ContactNo	NIC
1	0001	Ann Perera	105, Cinnoman Gardens, Colombo 7	1970-10-13	47	0115446055	706145781V

Delete Records

DELETE FROM <table_name>

WHERE <field_name> = <Searching_attribute_domain>

- Exercise:
 - Delete your record from the Employee table.

Thank You