

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 1

# Outlines

1. Installing MS SQL Server
2. Management Studio



# Offline (MS SQL Server Management studio)

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "Asmaa.sql - DESKTOP-440CVIO.master (DESKTOP-440CVIO\Programmer (65)) - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar contains various icons for database management tasks.

The Object Explorer pane on the left shows the database structure under "Natural\_Science". The "Tables" node is expanded, listing tables such as cs\_dep.level\_2, cs\_dep.level\_3, cs\_dep.level\_4, cs\_dep.prerequisite, dbo.all\_DEP, Math\_dep.level\_2, Math\_dep.level\_3, Math\_dep.level\_4, Math\_dep.prerequisite, natural\_science.level\_1, natural\_science.prerequisite, Stat\_dep.level\_2, Stat\_dep.level\_3, Stat\_dep.level\_4, and Stat\_dep.prerequisite.

The main window displays a T-SQL script in the "Script" tab:

```
('ST4214', 'Queuing Theory', 'ST3212', 'Statistical Methods'),
('MA4226', 'Partial Differential Equations & Special Functions', 'MA2105', 'Mathematical Analysis (1)');
go

select * from [natural_science].[level_1];
```

The "Results" tab shows the output of the query, displaying 22 rows of course information:

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name
1	CH1101	General Chemistry (1)	Obligatory	3	1_st	د/حسني الدالي ، د/سماح شندي
2	MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوى ، د/نهى الشرقاوى
3	PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي
4	UN1101	Scientific English	Obligatory	2	1_st	د/مجدى السيد عبدالعزيز
5	PH1125	General Physics	Optional	3	1_st	null
6	BIO1101	General Biology	Optional	3	1_st	null
7	MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عرب
8	CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد
9	UN1103	تاريخ وفلسفة الطروم	Optional	1	1_st	null
10	UN1105	مبادئ الإذاعة والتلفزيون	Optional	1	1_st	null
11	UN1107	الثقافة البينية	Optional	1	1_st	null
12	CH1202	General Chemistry (2)	Obligatory	3	2_nd	null
13	MA1202	Mathematics (2)	Obligatory	3	2_nd	د/أين الشرقاوى ، د/نهى الشرقاوى
14	PH1222	Physics (2)	Obligatory	3	2_nd	null
15	UN1202	اللغة العربية	Obligatory	2	2_nd	null
16	CH1204	Tutorial	Optional	3	2_nd	null
17	PH1226	Introduction to Biostatistics	Optional	2	2_nd	null

The status bar at the bottom indicates "Query executed successfully." and provides system information like CPU usage, memory, and network status.

# Online (SQL online IDE)

The screenshot shows a web-based SQL IDE interface. The top navigation bar includes tabs for SQLite, MS SQL, and PostgreSQL, with MS SQL selected. Below the navigation is a toolbar with File, Owner DB, Run, Export, Import, Client, Sign in, and settings icons. The left sidebar lists databases: SQLite, MariaDB, PostgreSQL, and MS SQL, with MS SQL expanded to show tables: demo and level\_1. The demo table is currently selected. The main area displays the schema and data for the level\_1 table:

Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name
CH1101	General Chemistry (1)	Obligatory	3	1_st	د/حسني الدالي ، د/سماح شندى
MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوى ، د/نهى الشرقاوى
PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي
UN1101	Scientific English	Obligatory	2	1_st	د/مجدى السيد عبدالعزيز يز
PH1125	General Physics	Optional	3	1_st	null
BIO1101	General Biology	Optional	3	1_st	null
MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عزت
CS1101	Programming	Optional	3	1_st	د/إبراهيم حاد
FIN1103	الاقتصاد الكمي	Optional	1	1_st	null

Below the table, there is a code editor window containing the following SQL query:

```
19      ( 'UN1103' , N'Optional' , 1 , '1_st','null'),
20      ( 'UN1105' , N'Optional' , 1 , '1_st','null' ),
21      ( 'UN1107' , N'Optional' , 1 , '1_st','null' );
22  SELECT * FROM level_1;
```

The status bar at the bottom shows system information: Links 60%, انخفاض درجات الحرارة (Decrease in temperature), ENG, 9:52 PM, 10/9/2023.

See  
you  
later

# Section 2

# Outlines

1. Database creation
2. Schema creation
3. Table creation



# Problem formulation (Math\_Dep)

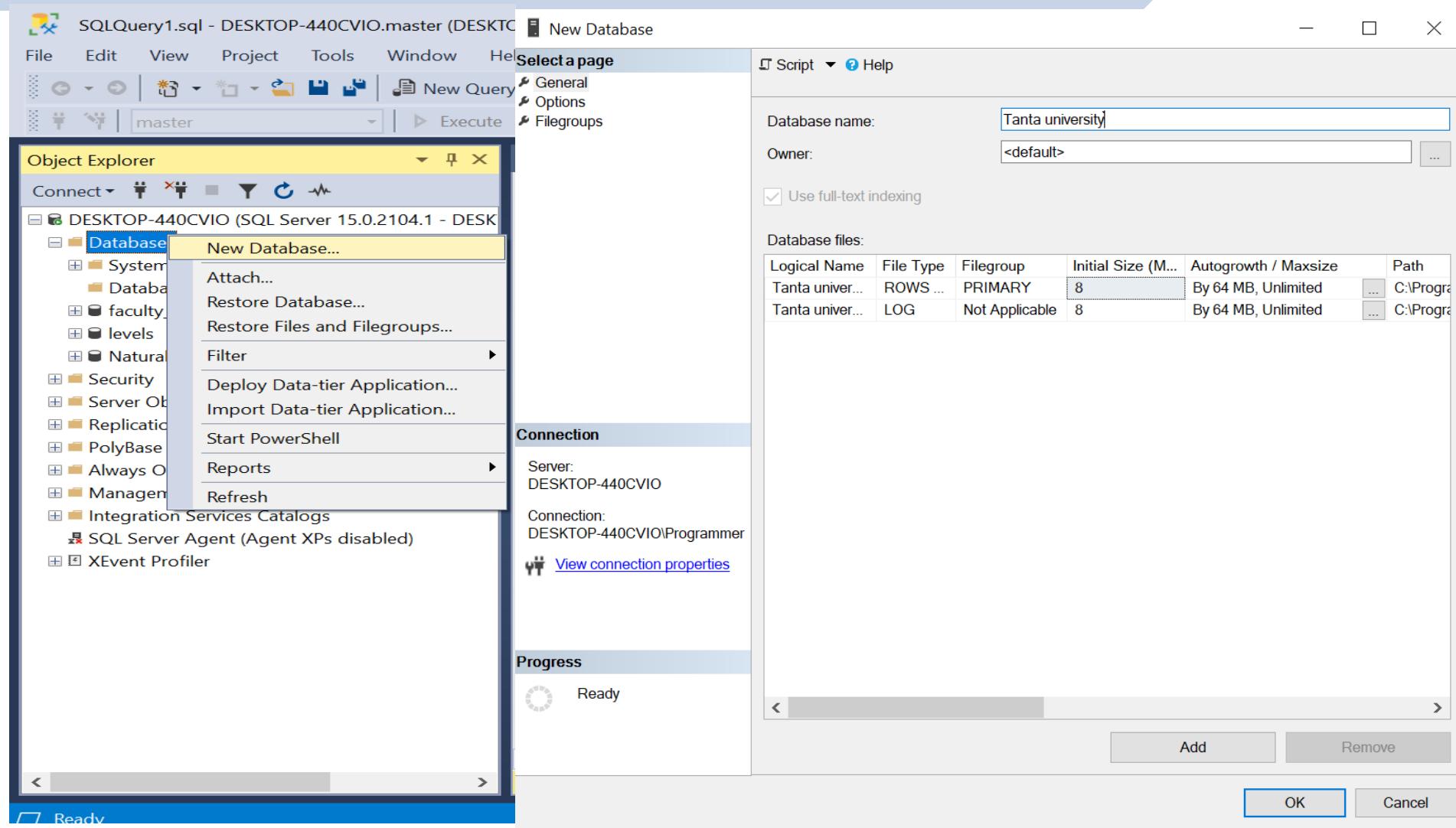
## courses

- Course Code
- Course Name
- Course type
- Credit hrs
- Semester
- Instructor Name

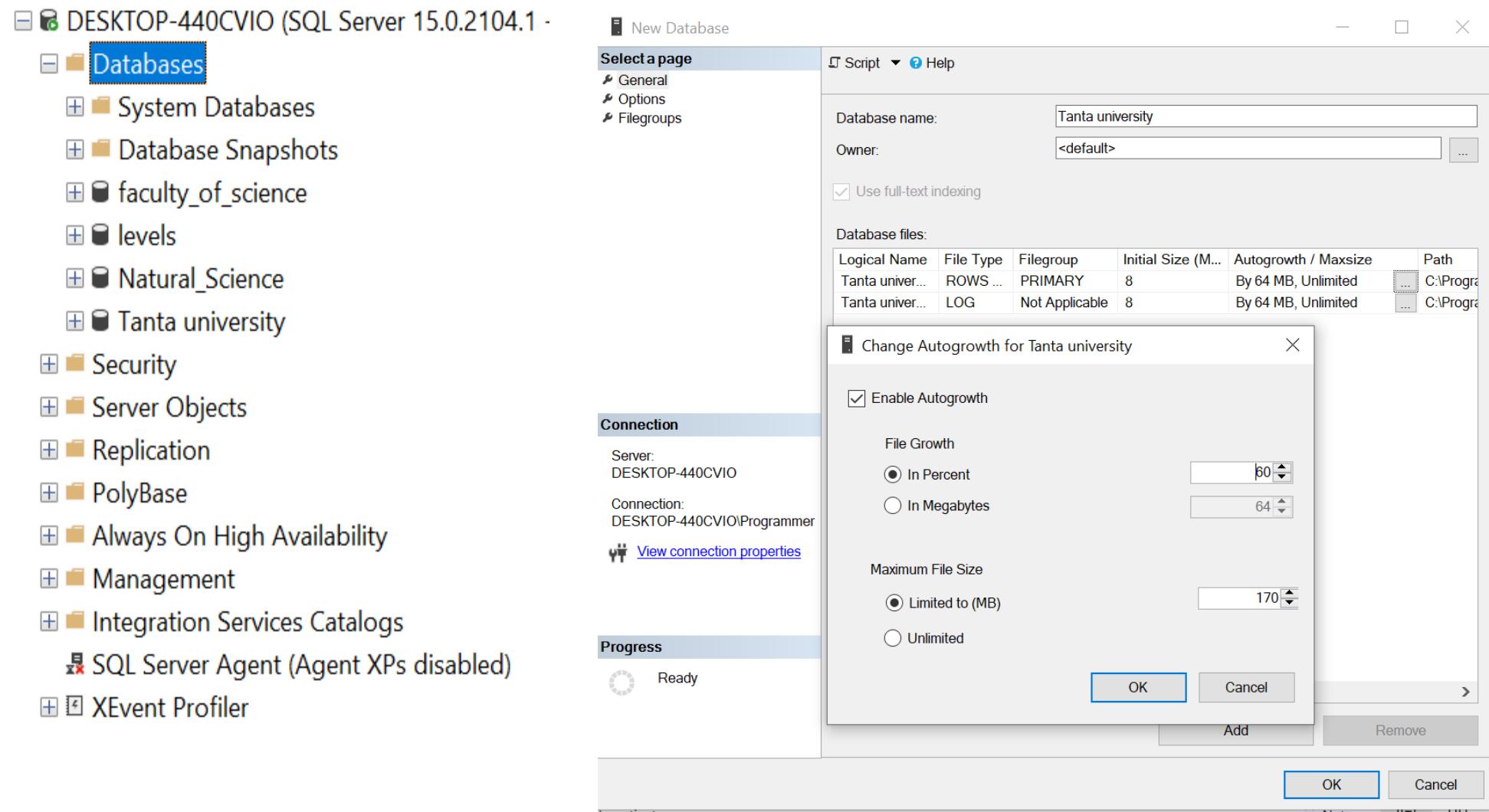
## prerequisite

- Course code
- Course Name
- prerequisite Code
- prerequisite Name

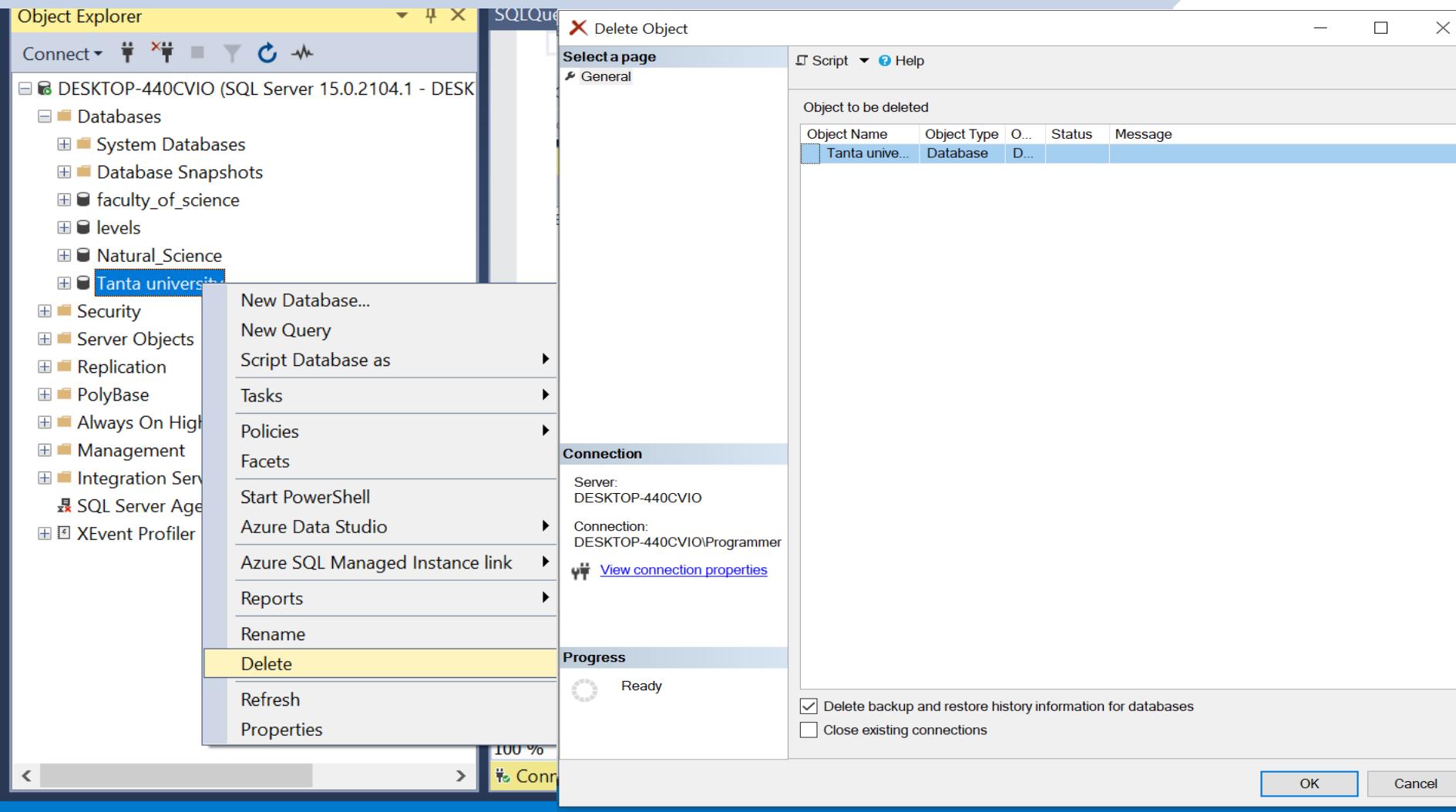
# CREATE DATABASE



# Cont.

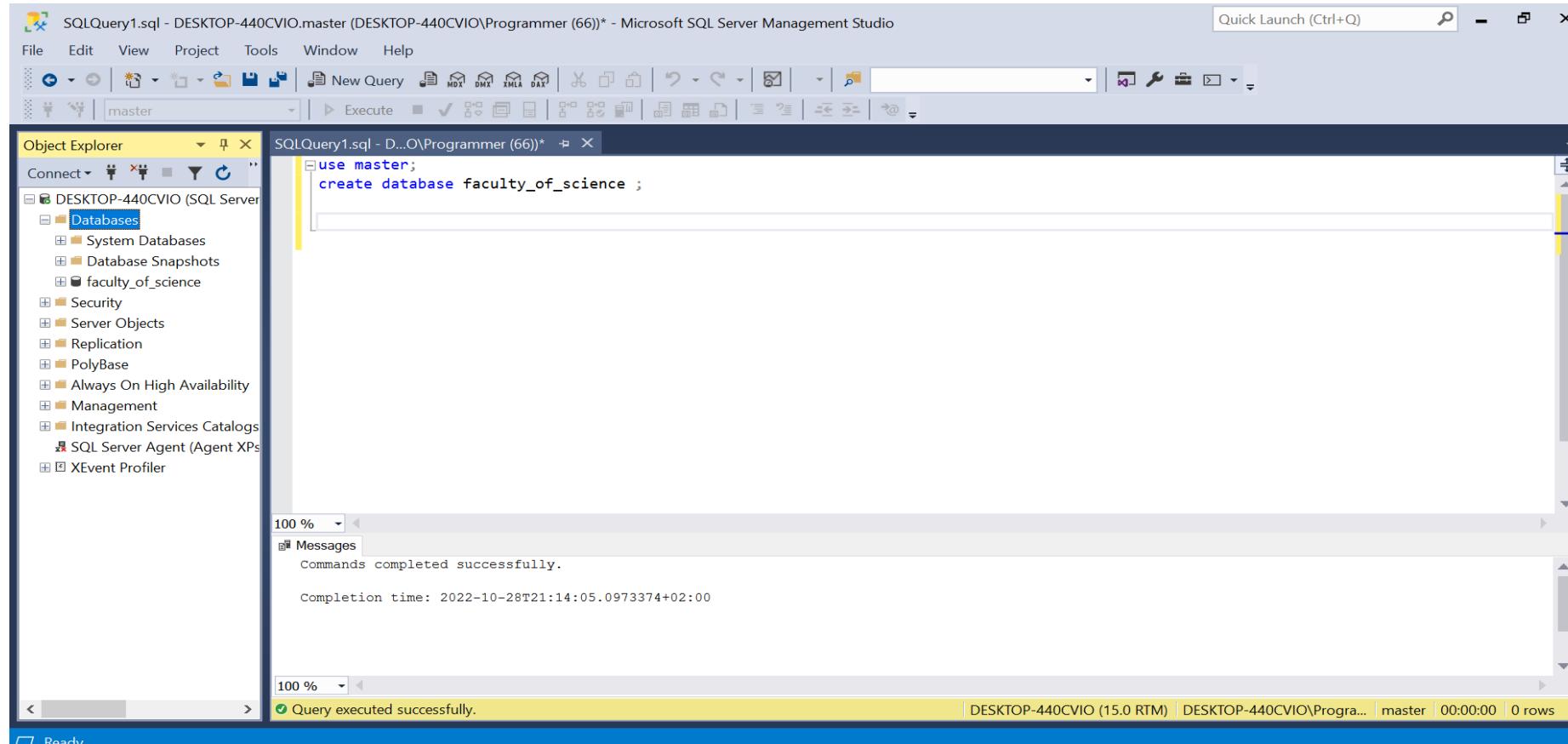


# Drop database



# CREATE DATABASE

➤ CREATE DATABASE database\_name;



The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "SQLQuery1.sql - DESKTOP-440CVIO.master (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The left pane is the Object Explorer, showing the connection to "DESKTOP-440CVIO (SQL Server)" and its databases, including "System Databases", "Database Snapshots", and "faculty\_of\_science". The right pane contains a query window titled "SQLQuery1.sql - D...O\Programmer (66)\*". The query is:use master;
create database faculty\_of\_science ;

```
Below the query window is a "Messages" pane showing the execution results:
```

Commands completed successfully.  
Completion time: 2022-10-28T21:14:05.0973374+02:00  
  
At the bottom of the screen, the status bar indicates "Ready".

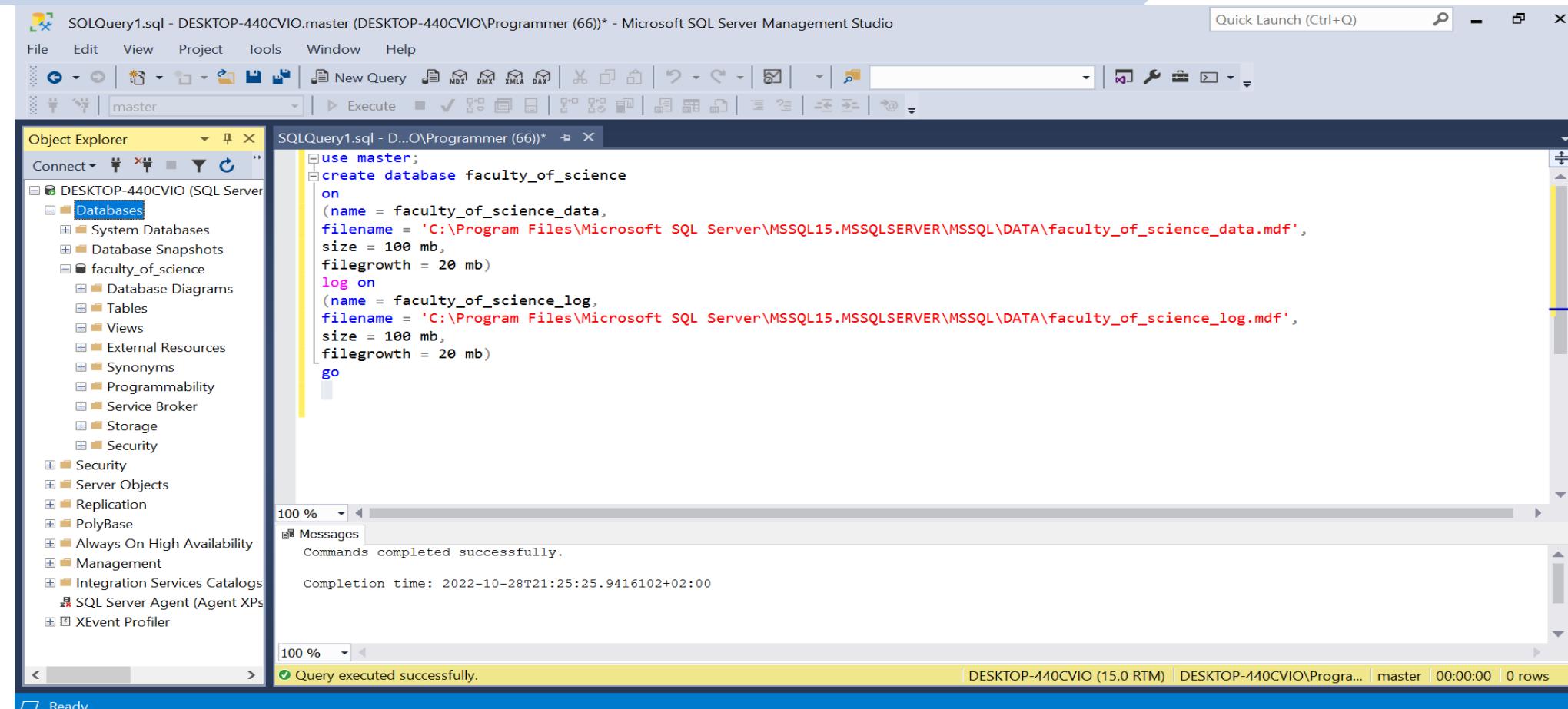
# DROP DATABASE

➤ **DROP DATABASE database\_name;**

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, under the 'master' database, a context menu is open over the 'Database' node. The menu items listed are: New Database..., Attach..., Restore Database..., Restore Files and Filegroups..., Filter, Deploy Data-tier Application..., Import Data-tier Application..., Start PowerShell, Reports, and Refresh. The 'Refresh' option is highlighted with a yellow selection bar. In the center pane, there is a SQL query window titled 'SQLQuery1.sql - D...O\Programmer (66)\*'. The query is:use master;
create database faculty\_of\_science ;
drop database faculty\_of\_science;

```
Below the query window, the 'Messages' pane displays the output: 'Commands completed successfully.' and 'Completion time: 2022-10-28T21:12:48.2873619+02:00'. At the bottom of the screen, a status bar shows 'Query executed successfully.', 'DESKTOP-440CVIO (15.0 RTM)', 'DESKTOP-440CVIO\Programmer (66)', 'master', '00:00:00', and '0 rows'.
```

# Another way to create database



The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "SQLQuery1.sql - DESKTOP-440CVIO.master (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The left pane is the Object Explorer, showing the connection to "DESKTOP-440CVIO (SQL Server)" and its databases, including "faculty\_of\_science". The right pane is the "SQLQuery1.sql" query editor, displaying the following T-SQL code:

```
use master;
create database faculty_of_science
on
(name = faculty_of_science_data,
filename = 'C:\Program Files\Microsoft SQL Server\MSSQL15.MSSQLSERVER\MSSQL\DATA\faculty_of_science_data.mdf',
size = 100 mb,
filegrowth = 20 mb)
log on
(name = faculty_of_science_log,
filename = 'C:\Program Files\Microsoft SQL Server\MSSQL15.MSSQLSERVER\MSSQL\DATA\faculty_of_science_log.mdf',
size = 100 mb,
filegrowth = 20 mb)
go
```

The status bar at the bottom indicates "Query executed successfully." and "Completion time: 2022-10-28T21:25:25.9416102+02:00".

# Cont.

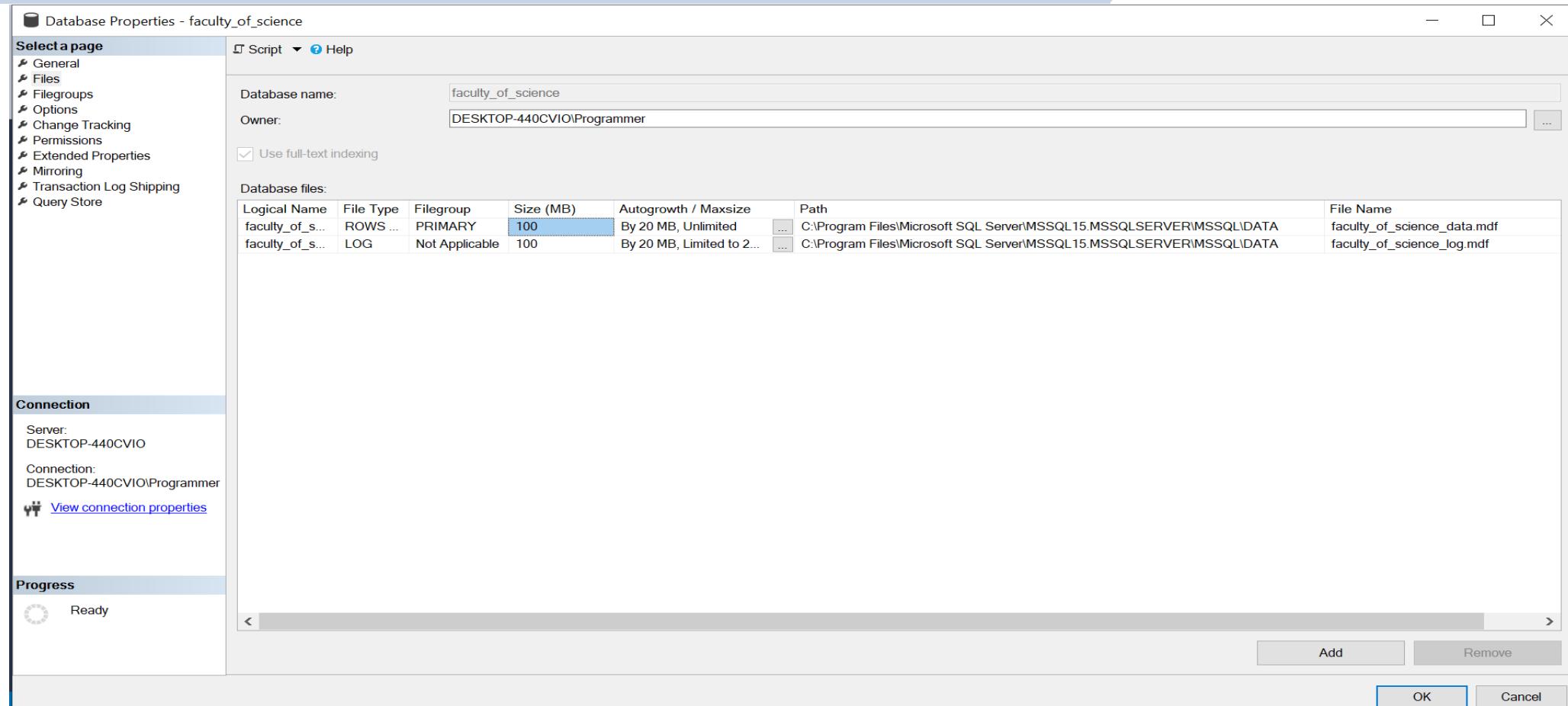
The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "SQLQuery1.sql - DESKTOP-440CVIO.master (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The left pane is the Object Explorer, showing the connection to "DESKTOP-440CVIO (SQL Server)" with its databases, system databases, and other objects. A context menu is open over the "faculty\_of\_science" database, with "Properties" highlighted. The main pane displays the T-SQL script for creating the database:

```
use master;
create database faculty_of_science
on
(name = faculty_of_science_data,
filename = 'C:\Program Files\Microsoft SQL Server\MSSQL15.MSSQLSERVER\MSSQL\DATA\faculty_of_science_data.mdf',
size = 100 mb,
filegrowth = 20 mb)

faculty_of_science_log,
= 'C:\Program Files\Microsoft SQL Server\MSSQL15.MSSQLSERVER\MSSQL\DATA\faculty_of_science_log.mdf',
00 mb,
lth = 20 mb)
```

The status bar at the bottom indicates "Query executed successfully." and shows the session details: DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Program... | master | 00:00:00 | 0 rows.

# Cont.



# CREATE SCHEMA

➤ CREATE SCHEMA schema\_name [AUTHORIZATION owner\_name]

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "SQLQuery1.sql - DESKTOP-440CVIO.faculty\_of\_science (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The Object Explorer on the left shows the database structure, including the "Security" node which is expanded to show "Users", "Roles", and "Schemas". A new schema named "Math\_department" has been created and is highlighted with a red box in the "Schemas" list. The "Messages" pane at the bottom displays the command results: "Commands completed successfully." and "Completion time: 2022-10-28T21:53:19.7414223+02:00". The status bar at the bottom right shows "DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Progra... | faculty\_of\_science | 00:00:00 | 0 rows".

```
use faculty_of_science;
go

create schema Math_department;
```

# CREATE SCHEMA

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar indicates the session is titled "SQLQuery1.sql - DESKTOP-440CVIO.faculty\_of\_science (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Tools, Window, and Help. The toolbar contains various icons for file operations like New Query, MDX, DMX, XMLA, DAX, and object explorer. The Object Explorer on the left shows the database structure, including Programmability, Service Broker, Storage, Security (Users, Roles), Schemas (bio\_department, db\_accessadmin, db\_backupoperator, db\_datareader, db\_datawriter, db\_ddladmin, db\_denydatareader, db\_denydatawriter, db\_owner, db\_securityadmin, dbo, guest, INFORMATION\_SCHEMA, Math\_department, sys, Asymmetric Keys, Certificates, Symmetric Keys), and faculty\_of\_science. The central pane displays a T-SQL script:

```
use faculty_of_science;
go

create schema Math_department;
go

create schema bio_department;
```

The Messages pane at the bottom right shows the output of the command execution:

Commands completed successfully.  
Completion time: 2022-10-28T21:56:52.0349508+02:00

The status bar at the bottom shows "Query executed successfully." and the system information "DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Progra... | faculty\_of\_science | 00:00:00 | 0 rows".

# DROP SCHEMA

## ➤ DROP SCHEMA schema\_name

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays database objects like External Resources, Synonyms, Programmability, Service Broker, Storage, Security, Users, Roles, and Schemas. The Schemas node is highlighted with an orange border. The central pane contains a query window with the following T-SQL code:

```
use faculty_of_science;
go

create schema Math_department;
go

create schema bio_department;
go

drop schema bio_department;
```

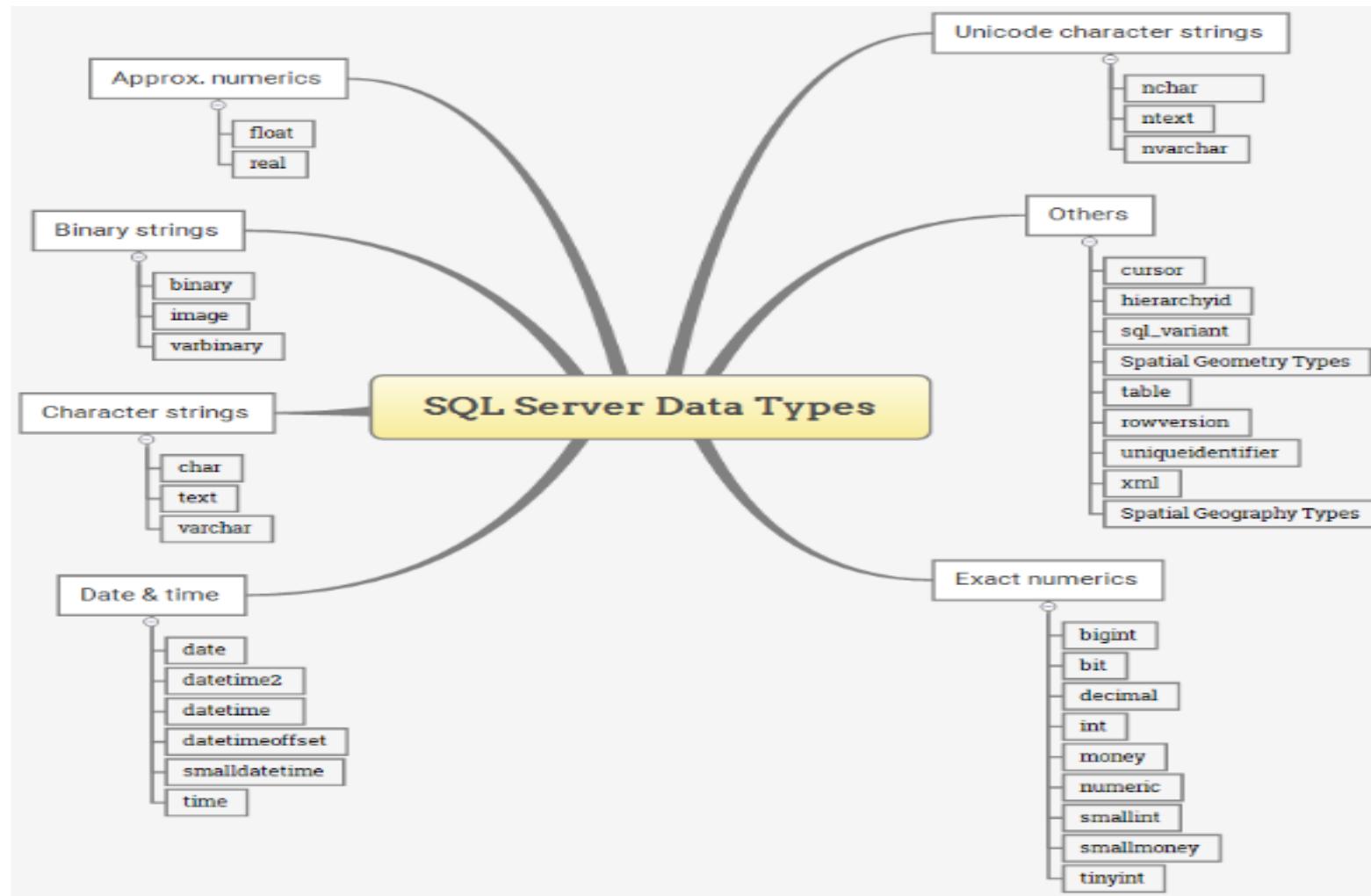
The Messages pane at the bottom shows the output of the executed commands:

```
Commands completed successfully.

Completion time: 2022-10-28T21:57:29.7828873+02:00
```

The status bar at the bottom indicates "Query executed successfully." and "0 rows".

# SQL Data types



# CREATE Table

```
➤ CREATE TABLE  
[database_name.][schema_name.]table_name  
  ( pk_column data_type PRIMARY KEY,  
    column_1 data_type NOT NULL,  
    column_2 data_type,  
    . . . ,  
    table_constraints );
```

# CONT.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "SQLQuery1.sql - DESKTOP-440CVIO.faculty\_of\_science (DESKTOP-440CVIO\Programmer (66))\* - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left lists database objects like db\_denydatareader, db\_denydatawriter, db\_owner, db\_securityadmin, dbo, guest, INFORMATION\_SCHEMA, Math\_department, and sys. The central query editor window contains the following SQL code:

```
use faculty_of_science;
go
create table Math_department.students
(
    student_number int not null,
    student_name   varchar(25) not null,
    class          varchar(25) not null ,
    major          varchar(10) not null,
);
```

The Messages pane at the bottom right shows the output: "Commands completed successfully." and "Completion time: 2022-10-28T22:37:37.1469377+02:00". The status bar at the bottom indicates "Query executed successfully.", "DESKTOP-440CVIO (15.0 RTM)", "DESKTOP-440CVIO\Programmer (66)", "faculty\_of\_science", "00:00:00", and "0 rows".

# CONT.

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar indicates the connection is to the 'faculty\_of\_science' database on 'DESKTOP-440CVIO'. The Object Explorer on the left shows the database structure, with the 'Math\_department.students' table highlighted by an orange rectangle. The 'Tables' node under 'Math\_department' is also expanded. The central query editor window contains the following SQL code:

```
use faculty_of_science;
go
create table Math_department.students
(
    student_number int not null,
    student_name varchar(25) not null,
    class varchar(25) not null ,
    major varchar(10) not null,
);
```

The 'Messages' pane at the bottom right shows the command completed successfully with the message 'Commands completed successfully.' and the completion time 'Completion time: 2022-10-28T22:37:37.1469377+02:00'. The status bar at the bottom shows 'Query executed successfully.' and other system information.

# DROP Table

**DROP TABLE [database\_name.][schema\_name.] table\_name,**

The screenshot shows the SSMS interface. On the left, the Object Explorer pane displays a tree view of database objects under the 'Tanta university' database. The 'Tables' node is expanded, showing various table names. On the right, the main window contains a SQL query script. The script starts with 'use [Tanta university]; go', followed by a 'create table' statement for 'FacultyOfScience' with columns 'department', 'employee', and 'student'. Below it is a 'drop table' statement for 'FacultyOfScience'. The status bar at the bottom shows 'Commands completed successfully.' and the completion time.

```
use [Tanta university];
go
create table FacultyOfScience(
    department varchar not null,
    employee int not null,
    student int not null);

drop table FacultyOfScience;
```

Messages  
Commands completed successfully.  
Completion time: 2023-10-16T22:19:39.7993033+03:00

# CREATE/DROP Table without specific schema

The screenshot shows the Object Explorer and SQL Query Editor in SSMS.

**Object Explorer:**

- Connected to DESKTOP-440CVIO (SQL Server 15.0.2104.1 - D...)
- Databases:
  - System Databases
  - Database Snapshots
  - faculty\_of\_science
  - levels
  - Natural\_Science
- Tanta university
  - Tables
    - System Tables
    - FileTables
    - External Tables
    - Graph Tables
    - dbo.FacultyOfScience
  - Views
  - External Resources
  - Synonyms
  - Programmability
  - Service Broker
  - Storage
  - Security

**SQLQuery2.sql - D...O\Programmer (56)\***

```
use [Tanta university];
go
create table FacultyOfScience(
    department varchar not null,
    empolyee int not null,
    student int not null);
```

Messages

Commands completed successfully.

Completion time: 2023-10-16T22:10:24.9525125+03:00

# Insert data in Students \_ Table

The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "DESKTOP-440CVIO.faculty\_of\_science - Math\_department.students - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Query Designer, Tools, Window, and Help. The toolbar has various icons for database management tasks. The Object Explorer on the left lists the database structure, including the "Math\_department.students" table with its columns: student\_number, student\_name, class, and major. A data grid in the center displays two rows of data:

	student_number	student_name	class	major
*	1	Ahmed	group1	computer science
*	NULL	NULL	NULL	NULL

The status bar at the bottom indicates "Cell is Modified." and shows navigation controls.

# Reference

- <https://www.sqlservertutorial.net/sql-server-basics/sql-server-create-database/>
- <https://www.javatpoint.com/sql-server-enable-foreign-key>
- <https://www.youtube.com/watch?v=9pmiana7PUk&list=PL1DUmTEdeA6J6oDLTveTt4Z7E5qEfFluE&index=15>

See  
you  
later

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 3

# Outlines

## ■ Database Constraint

- ▷ **PRIMARY KEY**
- ▷ **FOREIGN KEY**
- ▷ **Enable / Disable Foreign key**
- ▷ **UNIQUE Constraint**
- ▷ **CHECK Constraint**
- ▷ **NOT NULL Constraint**



# PRIMARY KEY

The screenshot shows the Object Explorer and a SQL Query window in SQL Server Management Studio.

**Object Explorer:**

- Connected to DESKTOP-440CVIO (SQL Server 15.0.2095.3 - DESK)
- Databases: System Databases, Database Snapshots
- faculty\_of\_science:
  - Database Diagrams
  - Tables
    - System Tables, FileTables, External Tables, Graph Tables
    - Math\_department.students
      - Columns: student\_id (PK, int, not null), student\_name (varchar(30), not null), major (varchar(30), not null), class (varchar(30), not null)
    - Keys, Constraints, Triggers, Indexes, Statistics
  - Views, External Resources

**SQLQuery1.sql:**

```
create table Math_department.students(
    student_id int primary key,
    student_name varchar(30) not null,
    major varchar(30) not null,
    class varchar(30) not null)
```

**Messages:**

Commands completed successfully.  
Completion time: 2022-11-04T20:07:44.3266288+02:00

**Status Bar:**

Query executed successfully. | DES

# PRIMARY KEY (another way)

The screenshot shows the Object Explorer and a SQL Query window in SQL Server Management Studio.

**Object Explorer:**

- Connected to DESKTOP-440CVIO (SQL Server 15.0.2095.3 - DESK)
- Databases: System Databases, Database Snapshots
- faculty\_of\_science: Database Diagrams
- Tables:
  - Math\_department.courses
    - Columns: course\_no (PK, int, not null), course\_name (varchar(30), not null), credit\_hours (int, not null), department (varchar(30), not null)
    - Keys
    - Constraints
    - Triggers
    - Indexes
    - Statistics
  - Math\_department.students
- Views: System Views

**SQLQuery1.sql - DESKTOP-440CVIO.f...**

```
create table Math_department.courses(
    course_no int,
    course_name varchar(30) not null,
    credit_hours int not null,
    department varchar(30) not null

    constraint courses_PK primary key (course_no)
)
```

**Messages:**

Commands completed successfully.  
Completion time: 2022-11-04T20:18:05.4171939+02:00

**Status Bar:**

100 % | DESKTOP-440CVIO (15)

# PRIMARY KEY (another 2-way)

The screenshot shows the Object Explorer and SQL Query Editor in SQL Server Management Studio.

**Object Explorer:**

- Connected to DESKTOP-440CVIO (SQL Server 15.0.2095.3 - DESK)
- Databases: System Databases, Database Snapshots
- faculty\_of\_science:
  - Database Diagrams
- Tables:
  - System Tables
  - FileTables
  - External Tables
  - Graph Tables
- Math\_department.courses:
  - Columns:
    - course\_no (PK, int, not null) [highlighted]
    - course\_name (varchar(30), not null)
    - credit\_hours (int, not null)
    - department (varchar(30), not null)
  - Keys
  - Constraints
  - Triggers
  - Indexes
  - Statistics
- Math\_department.students
- Views
- System Views

**SQLQuery1.sql - DESKTOP-440CVIO.f...partment.students**

```
create table Math_department.courses
(
    course_no int NOT NULL,
    course_name varchar(30) not null,
    credit_hours int not null,
    department varchar(30) not null
)
go
ALTER TABLE Math_department.courses
ADD constraint courses_PK PRIMARY KEY(course_no);
```

Messages: Commands completed successfully.  
Completion time: 2022-11-04T20:22:27.3734904+02:00

Query executed successfully.

Ln 9 Col 50 Ch 50 INS

# Unique constraint

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. On the left, the Object Explorer sidebar is visible, showing a tree structure of database objects. A yellow box highlights the 'dbo.students' entry under the 'Tables' node. The main area is a query window titled 'SQLQuery1.sql - D...O\Programmer (70)\*'. It contains the following SQL code:

```
create table students(
    student_id int primary key,
    student_name varchar(20) not null,
    email varchar(20) unique,
    phone varchar(20) unique,
);
```

The code defines a table named 'students' with four columns: 'student\_id' (primary key), 'student\_name' (not null), 'email' (unique constraint), and 'phone' (unique constraint). The 'Messages' pane at the bottom of the query window displays the message 'Commands completed successfully.' and the completion time: 2023-10-23T19:18:28.4358446+03:00.

# Unique constraint (another way)

The screenshot shows the Object Explorer on the left and a query editor on the right. In the Object Explorer, under the 'Tables' node for the 'faculty\_of\_science' database, the 'dbo.students' table is selected. In the query editor, a T-SQL command is being run to add a unique constraint to the 'phone' column:

```
Alter table students  
add constraint ph_uq unique (phone);
```

The status bar at the bottom indicates the completion time: 2023-10-23T19:37:12.8260658+03:00.

# Check constraint

The screenshot shows the Object Explorer and a SQL Query window in SQL Server Management Studio.

**Object Explorer:** Shows the database structure. Under the `Math_department` schema, there are two tables: `courses` and `students`. The `courses` table has columns: `course_no`, `course_name`, `credit_hours`, and `department`. The `students` table has a column: `student_no`.

**SQL Query Window:** The query is:

```
ALTER TABLE Math_department.courses
ADD constraint credit_hours_ck check(credit_hours between 8 and 12);
```

The message pane shows:

- Commands completed successfully.
- Completion time: 2022-11-04T21:54:16.4725024+02:00

The status bar at the bottom says: "Query executed successfully."

# Cont.

Object Explorer

Connect ▾ DESKTOP-440CVIO (SQL Server 15.0.2095.3 - DESK)

- Databases
- System Databases
- Database Snapshots
- faculty\_of\_science
- Database Diagrams
- Tables
  - System Tables
  - FileTables
  - External Tables
  - Graph Tables
  - Math\_department.courses
  - Columns
    - course\_no (PK, int, not null)
    - course\_name (varchar(30), not null)
    - credit\_hours (int, not null)
    - department (varchar(30), not null)
  - Keys
  - Constraints
  - Triggers
  - Indexes
  - Statistics
- Math\_department.students
- Columns
  - student\_no (PK, int, not null)

DESKTOP-440CVIO.f...department.courses

	course_no	course_name	credit_hours	department
1	123	pro	9	math
2	687	pro	3	com
*	NULL	NULL	NULL	NULL

DESKTOP-440CVIO.f...partment.students

No row was updated.

The data in row 2 was not committed.  
Error Source: .Net SqlClient Data Provider.  
Error Message: The INSERT statement conflicted with the CHECK constraint "credit\_hours\_ck". The conflict occurred in database "faculty\_of\_science", table "Math\_department.courses", column 'credit\_hours'.  
The statement has been terminated.

Correct the errors and retry or press ESC to cancel the change(s).

OK Help

of 2 | 2 Cell is Modified. ↴

# **INSERT one row**

```
INSERT INTO table_name (column_list)  
VALUES (value_list);
```

# INSERT one row

The screenshot shows the Object Explorer and a SQL Query window in SQL Server Management Studio.

**Object Explorer:** Shows the database structure. Under the `Math_department` database, the `students` table is selected. Its columns are listed: `student_no`, `student_name`, `major`, and `class`.

**SQL Query Window:** Contains the following SQL code:

```
INSERT INTO Math_department.students(student_no,student_name,major,class)
values(5018,'menna shawkat','m','G2');
```

The output pane shows the results of the query:

- (1 row affected)
- Completion time: 2022-11-04T22:13:04.5661604+02:00

At the bottom, a yellow status bar indicates: "Query executed successfully."

# Cont.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. In the Object Explorer on the left, a database named 'faculty\_of\_science' is selected. Under it, the 'dbo.students' table is expanded, showing columns: student\_id, student\_name, email, and phone. A context menu is open over the 'student\_no' column, with the 'Select Top 1000 Rows' option highlighted. The main query editor window contains a T-SQL script:

```
***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP (1000) [student_no]
      ,[student_name]
      ,[major]
      ,[class]
      ,[email]
  FROM [faculty_of_science].[Math_department].[students]
```

The results pane below shows a single row of data:

student_no	student_name	major	class	email
5018	menna shawkat	m	G2	NULL

At the bottom of the screen, a status bar displays: 'Query executed successfully.' and 'DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO'. The bottom right corner has a yellow arrow pointing right with the number '13'.

## INSERT mult. row

```
INSERT INTO table_name (column_list)
VALUES (value_list_1),
(value_list_2),
...
(value_list_n);
```

# INSERT mult. row

Object Explorer

Connect ▾

DESKTOP-440CVIO (SQL Server 15.0.2095.3 - DESK)

- Databases
- System Databases
- Database Snapshots
- faculty\_of\_science
  - Database Diagrams
  - Tables
    - System Tables
    - FileTables
    - External Tables
    - Graph Tables
  - Math\_department.courses
  - Math\_department.students
    - Columns
      - student\_no (PK, int, not null)
      - student\_name (varchar(30), not null)
      - major (varchar(1), not null)
      - class (varchar(30), not null)
      - email (varchar(30), null)
    - Keys
    - Constraints
    - Triggers
    - Indexes
    - Statistics
  - Views

```
SQLQuery4.sql - D...O\Programmer (63)*  X
INSERT INTO Math_department.students(student_no,student_name,major,class,email)
values(106,' Ahmed','s','G1','16794@SCI'),
      (13,' ali','m','G2','12664@SCI')
go

select * from Math_department.students;
```

100 %

Results Messages

	student_no	student_name	major	class	email
1	10	Ahmed	c	G5	1254@SCI
2	13	ali	m	G2	12664@SCI
3	106	Ahmed	s	G1	16794@SCI
4	5018	menna shawkat	m	G2	NULL

Query executed successfully.

DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CV

# Identity constraint

`IDENTITY[ (seed, increment) ]`

# Identity constraint

Object Explorer

Connect ▾

DESKTOP-440CVIO (SQL Server 15.0.2104.1 - DESKT...)

- Databases
- System Databases
- Database Snapshots
- departments
- faculty\_of\_science
  - Database Diagrams
  - Tables
    - System Tables
    - FileTables
    - External Tables
  - Graph Tables
    - dbo.students
      - Columns
        - students\_id (PK, int, not null)
        - first\_name (varchar(50), not null)
        - last\_name (varchar(50), not null)
        - gender (char(1), not null)
      - Keys
      - Constraints
      - Triggers

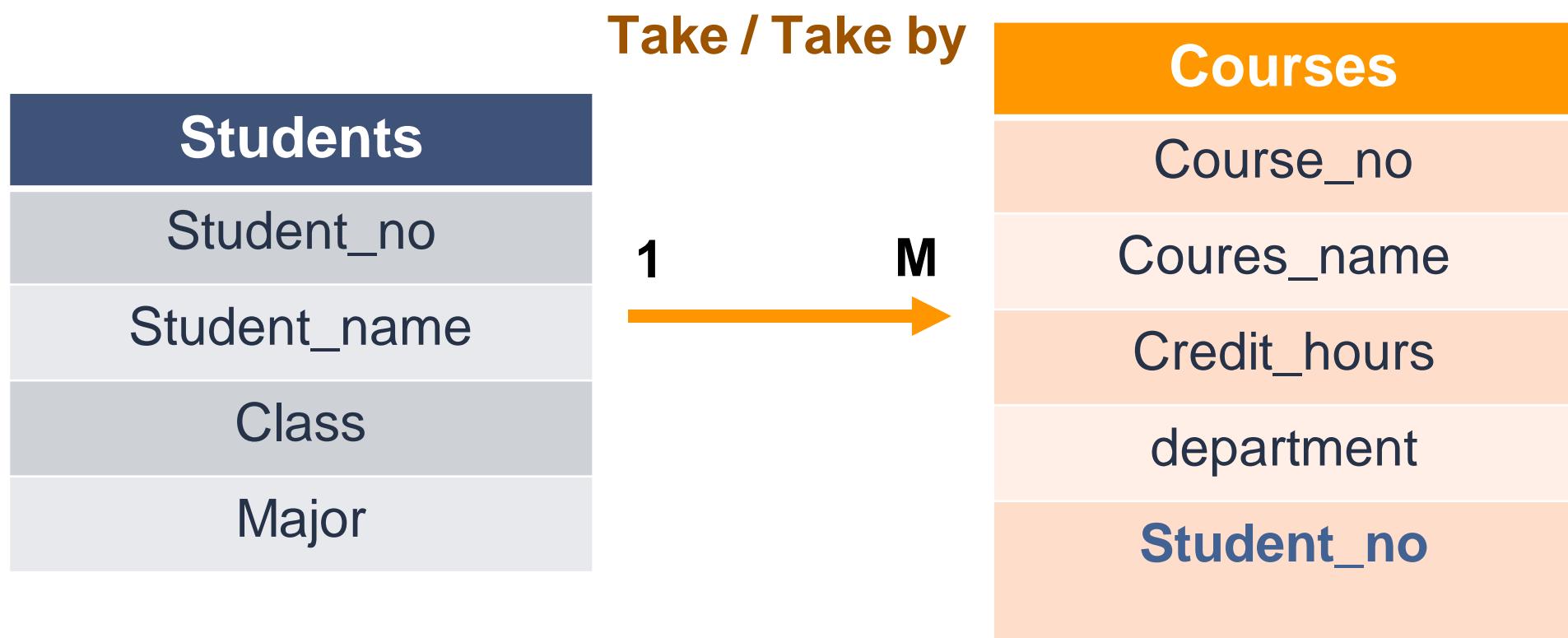
```
CREATE TABLE students (
    students_id INT IDENTITY(1,1) PRIMARY KEY,
    first_name VARCHAR(50) NOT NULL,
    last_name VARCHAR(50) NOT NULL,
    gender CHAR(1) NOT NULL
);
go

INSERT INTO students(first_name, last_name, gender)
VALUES('Nour', 'Adel', 'M'),
      ('Mai', 'Ahmed', 'F');
```

110 %

	students_id	first_name	last_name	gender
1	1	Nour	Adel	M
2	2	Mai	Ahmed	F

# FOREIGN KEY



# FOREIGN KEY

The screenshot shows the Object Explorer and SQL Query Editor windows in SSMS.

**Object Explorer:**

- Math\_department.courses
  - Columns
    - course\_no (PK, int, not null)
    - course\_name (varchar(30), not null)
    - credit\_hours (int, not null)
    - department (varchar(30), not null)
    - stud\_id (FK, int, null)
  - Keys
  - Constraints
  - Triggers
  - Indexes
  - Statistics
- Math\_department.students
  - Columns
    - student\_no (PK, int, not null)
    - student\_name (varchar(30), not null)
    - major (varchar(1), not null)
    - class (varchar(30), not null)
    - email (varchar(30), null)

**SQLQuery1.sql - D...O\Programmer (64)\***

```
alter table Math_department.courses
add stud_id int;
go

alter table Math_department.courses
add constraint students_courses_FK foreign key(stud_id)
references Math_department.students(student_no)
```

Messages

Commands completed successfully.

Completion time: 2022-11-11T14:57:36.3769468+02:00

# DROP constraint

The screenshot shows the SQL Server Management Studio interface. On the left, the Object Explorer pane displays database objects for 'Math\_department'. It lists two tables: 'courses' and 'students'. Under 'courses', there are columns for course\_no (PK), course\_name, credit\_hours, department, and stud\_id (FK). Under 'students', there are columns for student\_no (PK), student\_name, major, class, and email. There are also sections for Keys, Constraints, Triggers, Indexes, and Statistics. The main window, titled 'SQLQuery1.sql - D...O\Programmer (64)\*', contains the following T-SQL code:

```
alter table Math_department.courses
add stud_id int;
go

alter table Math_department.courses
add constraint students_courses_FK foreign key(stud_id)
references Math_department.students(student_no)
go

alter table Math_department.students
drop constraint students_PK;
```

The last line of the code, 'drop constraint students\_PK;', is highlighted with a blue selection bar. At the bottom of the window, the status bar shows 'Commands completed successfully.' and the completion time: 2022-11-11T15:09:32.3354638+02:00.

# Enable / Disable Foreign key

```
Alter table Math_department.courses  
nocheck constraint students_courses_FK;
```

```
Alter table Math_department.courses  
check constraint students_courses_FK;
```

See  
you  
later

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 4

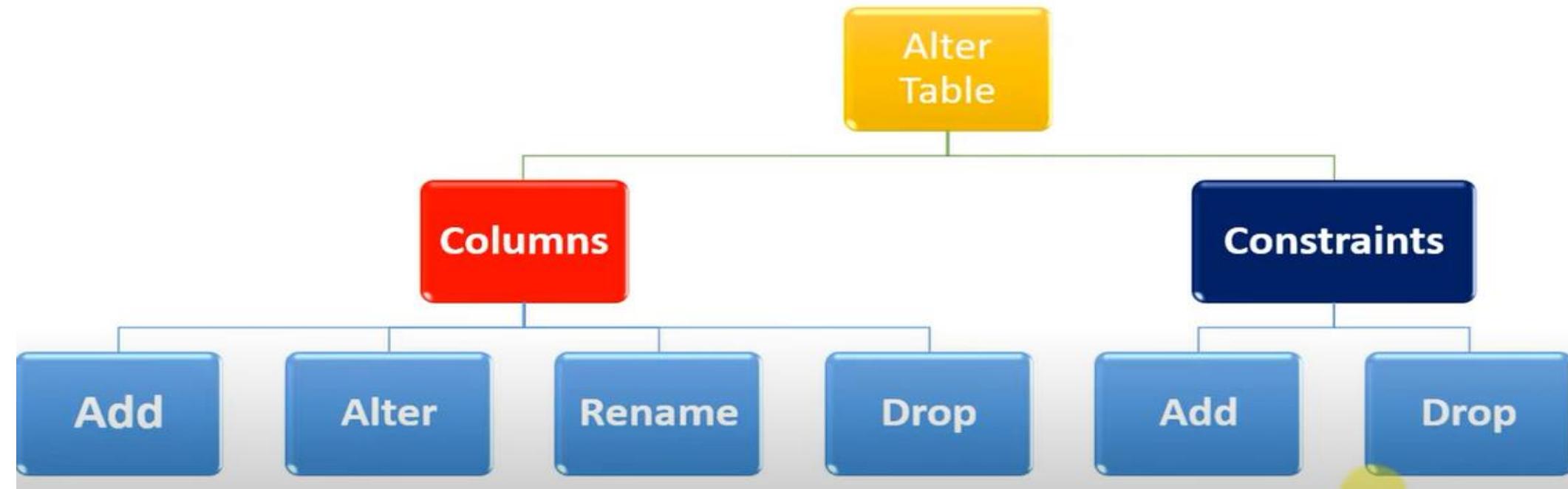
# Outlines

## ▷ **Alter table**

- ▷ Add column
- ▷ Modify column
- ▷ Drop column
- ▷ Rename table/ column



# Alter table



# Add COLUMN

The screenshot shows the SQL Server Management Studio interface with three tabs open:

- SQLQuery4.sql - D...O\Programmer (52)\***: Contains the SQL command to add a column to the 'level\_1' table.
- SQLQuery5.sql - D...O\Programmer (51)**: Contains a SELECT query to retrieve course information from the 'level\_1' table.
- SQLQuery2.sql - D...O\Pr**: A partially visible tab.

The Object Explorer on the left lists various database objects, including tables like 'cs\_dep.level\_3', 'natural\_science.level\_1', and 'Math\_dep.level\_4'.

**SQLQuery4.sql - D...O\Programmer (52)\*** content:

```
alter table [natural_science].[level_1]
add TeachingAss varchar(30);
go
```

**SQLQuery5.sql - D...O\Programmer (51)** content:

```
/***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP (1000) [Course_Code]
, [Course_name]
, [Course_type]
, [crd_hrs]
, [Semester]
, [Instructor_name]
, [TeachingAss]
FROM [Natural_Science].[natural_science].[level_1]
```

**Results** pane output:

Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	TeachingAss
CH1101	General Chemistry (1)	Obligatory	3	1_st	د/مسني الدالي ، د/سامح شندي	NULL
MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوي ، د/نهى الشرقاوى	NULL
PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي	NULL
UN1101	Scientific English	Obligatory	2	1_st	د/مجدى السيد عبدالعزيز	NULL
PH1125	General Physics	Optional	3	1_st	null	NULL
BIO1101	General Biology	Optional	3	1_st	null	NULL
MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عزت	NULL
CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد	NULL
UN1103	تاريخ وفلسفة الطبيعة	Optional	1	1_st	null	NULL
UN1105	مبادئ الأدارة والتقياذه	Optional	1	1_st	null	NULL
UN1107	الثقافة البينية	Optional	1	1_st	null	NULL
CH1202	General Chemistry (2)	Obligatory	3	2_nd	null	NULL

**Messages** pane output:

Commands completed successfully.

Completion time: 2023-10-30T21:17:30.3484384+02:00

**Status Bar** message:

Query executed successfully. DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVI

# Modify column

```
SQLQuery4.sql - D...O\Programmer (52)*  X
└─ Alter table [Stat_dep].[level_3]
   └─ alter column Course_code nvarchar(20);
```

Before

▀ Stat\_dep.level\_3  
  └─ Columns  
    ▀ Course\_Code (nvarchar(50), not null)  
    ▀ Course\_name (nvarchar(150), not null)  
    ▀ Course\_type (nvarchar(50), null)  
    ▀ crd\_hrs (int, not null)  
    ▀ Semester (nvarchar(50), null)  
    ▀ Instructor\_name (nvarchar(50), null)  
  └─ Keys  
  └─ Constraints  
  └─ Triggers  
  └─ Indexes  
  └─ Statistics

After

▀ Stat\_dep.level\_3  
  └─ Columns  
    ▀ Course\_Code (nvarchar(20), null)     
    ▀ Course\_name (nvarchar(150), not null)  
    ▀ Course\_type (nvarchar(50), null)  
    ▀ crd\_hrs (int, not null)  
    ▀ Semester (nvarchar(50), null)  
    ▀ Instructor\_name (nvarchar(50), null)  
  └─ Keys  
  └─ Constraints  
  └─ Triggers  
  └─ Indexes  
  └─ Statistics

# DROP COLUMN

The screenshot shows the Microsoft SQL Server Management Studio interface. On the left, the Object Explorer pane displays a tree view of database objects. The 'Math\_department.courses' table is selected, highlighted with a blue border. Other visible nodes include 'Graph Tables', 'Math\_department.students', 'Views', 'External Resources', 'Synonyms', 'Programmability', 'Service Broker', 'Storage', and 'Security'. On the right, the SQLQuery1.sql - D...O\Programmer (64)\* window contains the following SQL script:

```
alter table Math_department.courses
alter column lecturer varchar(50) ;
go
alter table Math_department.courses
drop column lecturer ;
```

The 'Messages' tab at the bottom of the query window shows the output:

Commands completed successfully.  
Completion time: 2022-11-11T14:41:11.1679769+02:00

# Rename table

```
exec sp_rename '[Stat_dep].[level_2]', 'level2';
```

## Before

- + natural\_science.prerequisite
- + Stat\_dep.level\_2
- + Stat\_dep.level\_3
- + Stat\_dep.level\_4
- + Stat\_dep.prerequisite

## After

- + natural\_science.prerequisite
- + Stat\_dep.level\_3
- + Stat\_dep.level\_4
- + Stat\_dep.level2
- + Stat\_dep.prerequisite

# Rename column

```
exec sp_rename 'Stat dep.level 4.Course code', 'Course ID', 'COLUMN'
```

## Before

- Stat\_dep.level\_4
  - Columns
    - Course\_Code (nvarchar(50), not null)
    - Course\_name (nvarchar(150), not null)
    - Course\_type (nvarchar(50), null)
    - crd\_hrs (int, not null)
    - Semester (nvarchar(50), null)
    - Instructor\_name (nvarchar(50), null)

# After

Stat_dep.level_4
Columns
Course_ID (nvarchar(50), not null)
Course_name (nvarchar(150), not null)
Course_type (nvarchar(50), null)
crd_hrs (int, not null)
Semester (nvarchar(50), null)
Instructor name (nvarchar(50), null)

# ASSIGNMENT 2

Create database with two table and insert values for 3 departments (Math, Stat, CS) and 4 levels with two Semester.

The screenshot shows the SQL Server Management Studio interface. On the left, the Object Explorer pane displays the database structure for 'DESKTOP-440CVIO'. It includes nodes for Databases, System Databases, Database Snapshots, and a 'CS' database. Under 'CS', there are Database Diagrams, Tables, System Tables, FileTables, External Tables, Graph Tables, and a 'department.courses' table. The 'Columns' node under 'department.courses' is highlighted with an orange box, showing the table's schema. The 'Results' tab on the right shows a grid of 173 rows of course data. The columns are: course\_code, course\_preq, course\_title, course\_department, course\_level, course\_semester, course\_hours, course\_type, course\_doctor, and course\_assistant. The data includes courses from Statistics, Computer Science, and Physical Science departments across different levels and semesters.

course_code	course_preq	course_title	course_department	course_level	course_semester	course_hours	course_type	course_doctor	course_assistant
150 ST4101	ST2206	Non-Parametric Sta...	Statistics	4	1	3	Obligatory	حمدي أبو جل	آية جبر
151 ST4103	ST3101	Reliability Theory	Statistics	4	1	3	Obligatory	محدث الميسسي	لغانا طارق
152 ST4105	ST2206	Statistical Inference...	Statistics	4	1	3	Obligatory	خنان حمدي	ناء الأشرف
153 ST4107	ST1202	Estimation Theory	Statistics	4	1	2	Optional	عادل إبرهيم	خالد عبدالجباري
154 ST4115	NULL	Selected Topic in St...	Statistics	4	1	3	Optional	ندا محمود	ندا محمود
155 ST4202	NULL	Review Article & Re...	Statistics	4	2	2	Obligatory	NULL	NULL
156 ST4204	ST4101	Time Series Analysis	Computer Science	4	2	2	Optional	NULL	NULL
157 ST4204	ST4101	Time Series Analysis	Statistics	4	2	3	Obligatory	NULL	NULL
158 ST4206	ST3105	Multivariate Statistics	Statistics	4	2	3	Obligatory	NULL	NULL
159 ST4208	ST4105	Statistical Data Min...	Statistics	4	2	3	Obligatory	NULL	NULL
160 ST4210	ST4105	Statistical Software	Statistics	4	2	3	Obligatory	NULL	NULL
161 ST4212	MA3210	Statistical Quality C...	Statistics	4	2	2	Optional	NULL	NULL
162 ST4214	ST3212	Queuing Theory	Statistics	4	2	2	Optional	NULL	NULL
163 TS2101	NULL	Transferable Skill	Mathematics Scie...	2	1	1	Obligatory	NULL	NULL
164 TS2101	NULL	Transferable Skill	Statistics	2	1	1	Obligatory	NULL	NULL
165 TS2103	NULL	Transferable Skills	Computer Science	2	1	3	Obligatory	NULL	NULL
166 UN1101	NULL	Scientific English	Physical Science	1	1	2	Obligatory	NULL	NULL
167 UN1103	NULL	تاريخ وفلسفة العلوم	Physical Science	1	1	1	Optional	NULL	NULL
168 UN1105	NULL	مبادئ الإدارة والقيادة	Physical Science	1	1	1	Optional	NULL	NULL
169 UN1107	NULL	الثقافة البينية	Physical Science	1	1	1	Optional	NULL	NULL
170 UN1202	NULL	اللغة العربية	Physical Science	1	2	2	Obligatory	NULL	NULL
171 UN1204	NULL	التفكير النقدي	Physical Science	1	2	1	Optional	NULL	NULL
172 UN1206	NULL	الثقافة الإسلامية	Physical Science	1	2	1	Optional	NULL	NULL
173 UN1208	NULL	التعلم الذاتي	Physical Science	1	2	1	Optional	NULL	NULL

See  
you  
later

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 5

# Outlines

- Update statement
- Delete statement
- Select statement
- Clauses



# Update Statement

```
update [Math_dep].[level_2]
set Instructor_name = N'د/نهى الشرقاوى'
WHERE Instructor_name = N'د/عبدالله دسوقى ، د/نهى الشرقاوى'

100 %
Messages

(1 row affected)

Completion time: 2023-11-06T17:47:17.8423353+02:00
```

# Cont.

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name
1	MA2101	Applied Mathematics (1)	Obligatory	3	1_st	د/سليم علي محمدبن
2	MA2103	Abstract Algebra	obligatory	3	1_st	د/فاطمة عبدالله
3	MA2105	Mathematical Analysis (1)	Obligatory	3	1_st	د/نبيل الخولي
4	ST2101	Probability theory (1)	Obligatory	3	1_st	د/قطب عبدالحميد
5	TS2101	Transferable Skill	Obligatory	1	1_st	null
6	MA2107	Discrete Mathematics	Optional	2	1_st	د/عبدالعزيز الباجوري
7	CS2103	Computer Programming	Optional	3	1_st	د/فاطمة شعبان
8	MA2109	Selected topic of pure Mathematiccis	Optional	3	1_st	null
9	ST2103	Sampling Thory	Optional	2	1_st	د/حمدي أبو جبل
10	MA2202	Applied Mathmatics(2)	obligatory	3	2_nd	د/قدري ذكرييا
11	MA2204	Vetor Analysis & Solid Geometry(2)	obligatory	3	2_nd	د/عبدالله دسوقي ، د/نهى الشرقاوي
12	MA2206	Linear Algebra	obligatory	3	2_nd	د/فاطمة عبدالله

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name
8	MA2109	Selected topic of pure Mathematiccis	Optional	3	1_st	null
9	ST2103	Sampling Thory	Optional	2	1_st	د/حمدي أبو جبل
10	MA2202	Applied Mathmatics(2)	obligatory	3	2_nd	د/قدري ذكرييا
11	MA2204	Vetor Analysis & Solid Geometry(2)	obligatory	3	2_nd	د/نهى الشرقاوي
12	MA2206	Linear Algebra	obligatory	3	2_nd	د/فاطمة عبدالله
13	MA2208	Mathematical Analysis (2)	Optional	3	2_nd	د/هدى كمال

# Delete Statement

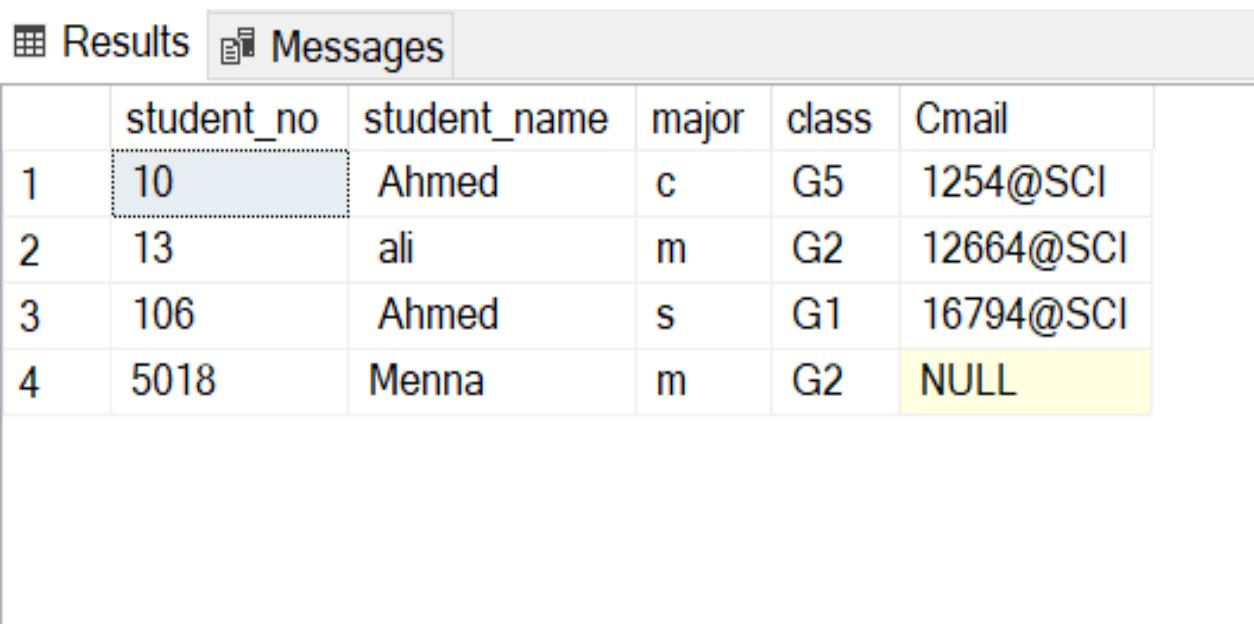
```
Delete Math_department.courses  
where course_no = 123 ;
```

	course_no	course_name	credit_hours	department	stud_id
1	123	pro	9	math	NULL
2	687	pro	10	com	NULL

	course_no	course_name	credit_hours	department	stud_id
1	687	pro	10	com	NULL

# Select Statement

```
select * from Math_department.students;
```



The screenshot shows a database query results window with two tabs: "Results" and "Messages". The "Results" tab is selected and displays a table with six columns: student\_no, student\_name, major, class, and Cmail. There are four rows of data:

	student_no	student_name	major	class	Cmail
1	10	Ahmed	c	G5	1254@SCI
2	13	ali	m	G2	12664@SCI
3	106	Ahmed	s	G1	16794@SCI
4	5018	Menna	m	G2	NULL

# Select Statement

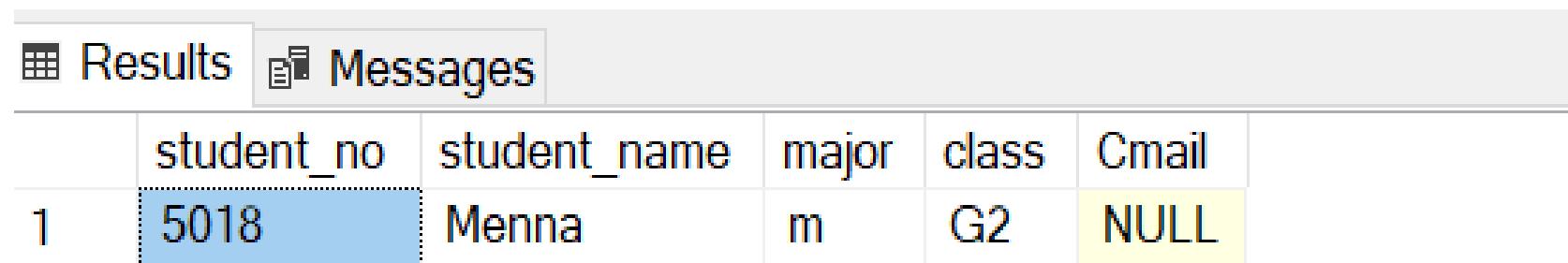
```
select student_name,major  
from Math_department.students;
```

Results    Messages

	student_name	major
1	Ahmed	c
2	ali	m
3	Ahmed	s
4	Menna	m

# Select Statement + where clause

```
select * from Math_department.students  
where student_no = 5018;
```



The screenshot shows a database query results window with two tabs: 'Results' and 'Messages'. The 'Results' tab is selected, displaying a single row of data from a table. The table has columns: student\_no, student\_name, major, class, and Cmail. The data row is: 1, 5018, Menna, m, G2, NULL. The 'student\_no' cell is highlighted with a blue dashed border.

	student_no	student_name	major	class	Cmail
1	5018	Menna	m	G2	NULL

**Relational operator → (< , > , <= , >= , <> , != )**

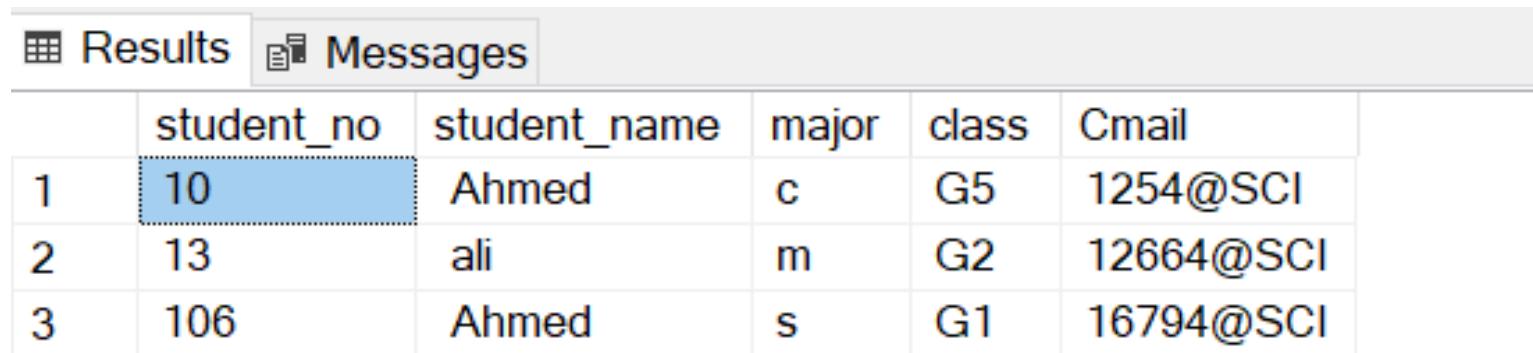
# Select Statement + IS null

```
select * from Math_department.students  
where Cmail is null;
```

	student_no	student_name	major	class	Cmail
1	5018	Menna	m	G2	NULL

# Select Statement + IS not null

```
select * from Math_department.students  
where Cmail is not null;
```

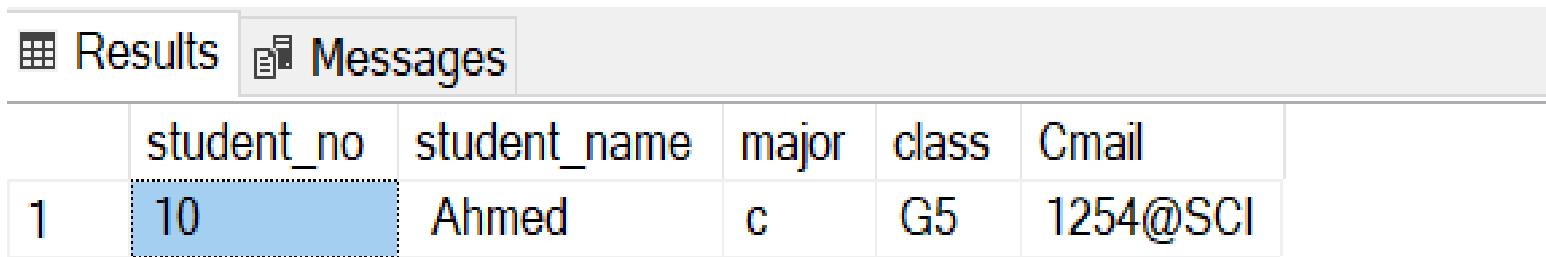


The screenshot shows a database query results window. At the top, there are two tabs: "Results" (selected) and "Messages". The main area displays a table with six columns: student\_no, student\_name, major, class, and Cmail. There are three rows of data:

	student_no	student_name	major	class	Cmail
1	10	Ahmed	c	G5	1254@SCI
2	13	ali	m	G2	12664@SCI
3	106	Ahmed	s	G1	16794@SCI

# Select Statement + AND Clause

```
select * from Math_department.students  
where student_no = 10 and major= 'c' ;
```



The screenshot shows a database query results window. At the top, there are two tabs: "Results" (highlighted in orange) and "Messages". Below the tabs is a table with five columns: "student\_no", "student\_name", "major", "class", and "Cmail". A single row of data is displayed: student\_no is 1, student\_name is Ahmed, major is c, class is G5, and Cmail is 1254@SCI. The cell containing "10" is highlighted with a blue dashed border.

	student_no	student_name	major	class	Cmail
1	10	Ahmed	c	G5	1254@SCI

# Select Statement + OR Clause

```
select * from Math_department.students  
where student_no = 10 or student_no = 106 ;
```

	student_no	student_name	major	class	Cmail
1	10	Ahmed	c	G5	1254@SCI
2	106	Ahmed	s	G1	16794@SCI

# Select Statement + IN Clause

```
■ select * from [natural_science].[courses]  
where lev in (4,3,2);
```

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	MA3214	Measure Theory	Optional	3	2_nd	null	3	math_dep
2	ST4101	Non-Parametric Statistics	Obligatory	3	1_st	د/حمدي أبو جبل	4	stat_dep
3	CS2101	Computer Systems	Obligatory	3	1_st	د/إبراهيم جاد	2	cs_dep
4	CS2103	Computer Programming	Obligatory	3	1_st	د/فاطمة شعبان	2	cs_dep
5	MA2103	Abstract Algebra	Obligatory	3	1_st	د/فاطمة عبدالله	2	cs_dep
6	MA2105	Mathematical Analysis (1)	Obligatory	3	1_st	د/هدى كمال	2	cs_dep
7	TS2103	Transferable Skills	Obligatory	1	1_st	null	2	cs_dep
8	MA2107	Discrete Mathematics	Optional	2	1_st	د/عبدالعزيز الباجوري	2	cs_dep
9	MA2121	Mathematical methods	Optional	3	1_st	null	2	cs_dep
10	ST2101	Probability Theory (1)	Optional	2	1_st	د/قطب عبدالحميد	2	cs_dep
11	CS2105	File Processing	Optional	3	1_st	د/مسعد وجيه	2	cs_dep
12	MA2208	Mathematical Analysis (2)	Obligatory	3	2_nd	د/هدى كمال	2	cs_dep
13	MA2220	Linear Algebra & Solid Geometry	Obligatory	3	2_nd	د/نهاني الشيخ	2	cs_dep
14	CC2202	Digital Logic and Algorithms	Obligatory	2	2_nd	د/علي جابر	2	cc_dep

# Select Statement + NOT IN Clause

```
■ select * from [natural_science].[courses]  
where lev not in (4,3,2);
```

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	CH1101	General Chemistry (1)	Obligatory	3	1_st	د/حسني الدالي ، د/سماح شندي	1	natural_science
2	MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
3	PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي	1	natural_science
4	UN1101	Scientific English	Obligatory	2	1_st	د/مجدي السيد عبدالعزيز	1	natural_science
5	PH1125	General Physics	Optional	3	1_st	null	1	natural_science
6	BIO1101	General Biology	Optional	3	1_st	null	1	natural_science
7	MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عزت	1	natural_science
8	CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد	1	natural_science
9	UN1103	تاريخ وفلسفة العلوم	Optional	1	1_st	null	1	natural_science
10	UN1105	مبادئ الأداره والقياده	Optional	1	1_st	null	1	natural_science
11	UN1107	الثقافة البيئيه	Optional	1	1_st	null	1	natural_science
12	CH1202	General Chemistry (2)	Obligatory	3	2_nd	null	1	natural_science
13	MA1202	Mathematics (2)	Obligatory	3	2_nd	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
14	PH1202	Physics (2)	Obligatory	2	2_nd	السعدي	1	natural_science

# Select Statement + Between Clause

```
■ select * from [natural_science].[courses]  
where crd_hrs between 0 and 2;
```

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	UN1101	Scientific English	Obligatory	2	1_st	د/مجدى السيد عبدالعزيز	1	natural_science
2	UN1103	تاريخ وفلسفة العلوم	Optional	1	1_st	null	1	natural_science
3	UN1105	مبادئ الأدارة والقياده	Optional	1	1_st	null	1	natural_science
4	UN1107	الثقافة البيئيه	Optional	1	1_st	null	1	natural_science
5	UN1202	اللغة العربية	Obligatory	2	2_nd	null	1	natural_science
6	UN1204	التفكير النقدي	Optional	1	2_nd	null	1	natural_science
7	UN1206	الثقافة الاسلاميه	Optional	1	2_nd	null	1	natural_science
8	UN1208	التعليم الذاتي	Optional	1	2_nd	null	1	natural_science
9	TS2103	Transferable Skills	Obligatory	1	1_st	null	2	cs_dep
10	MA2107	Discrete Mathematics	Optional	2	1_st	د/عبدالعزيز الباجوري	2	cs_dep
11	ST2101	Probability Theory (1)	Optional	2	1_st	د/قطب عبدالحميد	2	cs_dep
12	MA3121	Real Analysis & Measure Theory	Optional	2	1_st	د/فاطمة شعبان	3	cs_dep
13	MA3125	Abstract Algebra & Topology	Optional	2	1_st	د/أمجد سلامة	3	cs_dep

# Select Statement + NOT Between Clause

```
■ select * from [natural_science].[courses]  
where crd_hrs NOT between 0 and 2;
```

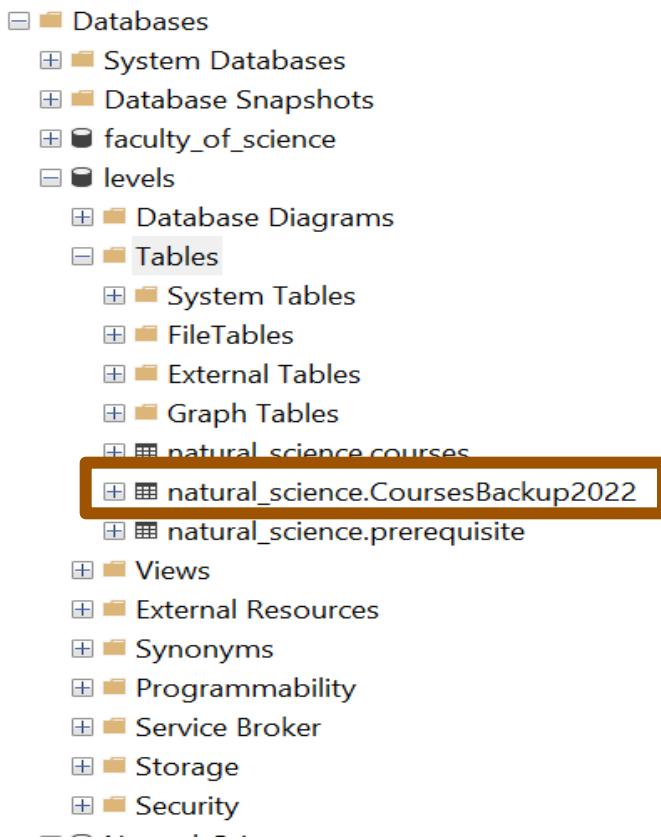
	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	MA3214	Measure Theory	Optional	3	2_nd	null	3	math_dep
2	ST4101	Non-Parametric Statistics	Obligatory	3	1_st	د/حمدي أبوجل	4	stat_dep
3	CH1101	General Chemistry (1)	Obligatory	3	1_st	د/حسني الدالي ، د/سماح شندي	1	natural_science
4	MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
5	PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي	1	natural_science
6	PH1125	General Physics	Optional	3	1_st	null	1	natural_science
7	BIO1101	General Biology	Optional	3	1_st	null	1	natural_science
8	MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عزت	1	natural_science
9	CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد	1	natural_science
10	CH1202	General Chemistry (2)	Obligatory	3	2_nd	null	1	natural_science
11	MA1202	Mathematics (2)	Obligatory	3	2_nd	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
12	PH1222	Physics (2)	Obligatory	3	2_nd	null	1	natural_science
13	CH1204	Tutorial	Optional	3	2_nd	null	1	natural_science

# Select Statement + NOT Between Clause

```
■ select * from [natural_science].[courses]  
where crd_hrs NOT between 0 and 2;
```

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	MA3214	Measure Theory	Optional	3	2_nd	null	3	math_dep
2	ST4101	Non-Parametric Statistics	Obligatory	3	1_st	د/حمدي أبوجل	4	stat_dep
3	CH1101	General Chemistry (1)	Obligatory	3	1_st	د/حسني الدالي ، د/سماح شندي	1	natural_science
4	MA1101	Mathematics (1)	Obligatory	3	1_st	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
5	PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي	1	natural_science
6	PH1125	General Physics	Optional	3	1_st	null	1	natural_science
7	BIO1101	General Biology	Optional	3	1_st	null	1	natural_science
8	MA1103	Mathematical statistics	Optional	3	1_st	د/محمد عزت	1	natural_science
9	CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد	1	natural_science
10	CH1202	General Chemistry (2)	Obligatory	3	2_nd	null	1	natural_science
11	MA1202	Mathematics (2)	Obligatory	3	2_nd	د/أين الشرقاوي ، د/نهى الشرقاوي	1	natural_science
12	PH1222	Physics (2)	Obligatory	3	2_nd	null	1	natural_science
13	CH1204	Tutorial	Optional	3	2_nd	null	1	natural_science

# INSERT INTO SELECT Statement



The image shows the Results pane of a database management tool displaying the execution of an SQL script.

```
create table [natural_science].[CoursesBackup2022]
(Course_Code nvarchar(50) not null ,
Course_name nvarchar(50) not null,
Course_type nvarchar(50),
crd_hrs nvarchar(50),
Semester nvarchar(50),
Instructor_name nvarchar(50),
lev int ,
dep nvarchar(50));

INSERT INTO [natural_science].[CoursesBackup2022]
SELECT * FROM [natural_science].[courses]
WHERE dep = 'math_dep';
```

Messages

(50 rows affected)

Completion time: 2023-11-06T20:43:30.5311808+02:00

# Cont.

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	MA3214	Measure Theory	Optional	3	2_nd	null	3	math_dep
2	MA2101	Applied Mathematics (1)	Obligatory	3	1_st	د/سليم علي محمدبن	2	math_dep
3	MA2103	Abstract Algebra	obligatory	3	1_st	د/فاطمة عبدالله	2	math_dep
4	MA2105	Mathematical Analysis (1)	Obligatory	3	1_st	د/نبيل الغولي	2	math_dep
5	ST2101	Probability theory (1)	Obligatory	3	1_st	د/قطب عبدالحميد	2	math_dep
6	TS2101	Transferable Skill	Obligatory	1	1_st	null	2	math_dep
7	MA2107	Discrete Mathematics	Optional	2	1_st	د/عبدالعزيز الباجوري	2	math_dep
8	CS2103	Computer Programming	Optional	3	1_st	د/فاطمة شعبان	2	math_dep
9	MA2109	Selected topic of pure Mathematicis	Optional	3	1_st	null	2	math_dep
10	ST2103	Sampling Thory	Optional	2	1_st	د/حمدي أبوجل	2	math_dep
11	MA2202	Applied Mathmatics(2)	obligatory	3	2_nd	د/قرني زكريا	2	math_dep
12	MA2204	\Vector Analysis & Solid Geometriy(2)	obligatory	3	2_nd	د/عبدالله دسوقي .د/نوره الشقامي	2	math_dep

✓ Query executed successfully.

| DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Program... | levels | 00:00:00 | 50 rows

# SELECT INTO Statement (copy table)

The screenshot shows the SQL Server Management Studio interface. On the left, the Object Explorer pane displays a tree view of database objects under the 'DESKTOP-440CVIO' connection. A red box highlights the 'natural\_science.CoursesBackup2022' table. In the center, the 'SQLQuery4.sql' tab is active, showing the T-SQL command used to copy the table. The command is:

```
SELECT * INTO [natural_science].[CoursesBackup2022]
FROM [natural_science].[courses];
```

The 'Messages' pane at the bottom shows the execution results: '(173 rows affected)' and the completion time: 'Completion time: 2023-11-06T19:44:49.7390863+02:00'.

# SELECT INTO Statement + Alias name

The screenshot shows the Object Explorer on the left and the Results tab in the center. The Object Explorer lists various database objects under the 'natural\_science' database. The 'natural\_science.CoursesBackup2022' table is selected and highlighted with a brown border. The Results tab displays the data from this table.

```
SELECT Course_Code AS course_id , Course_name AS course_title, Instructor_name  
INTO [natural_science].[CoursesBackup2022]  
FROM [natural_science].[courses]  
WHERE dep = 'cs_dep';
```

	course_id	course_title	Instructor_name
1	CS2101	Computer Systems	د/إبراهيم جاد
2	CS2103	Computer Programming	د/فاطمة شعبان
3	MA2103	Abstract Algebra	د/فاطمة عبدالله
4	MA2105	Mathematical Analysis (1)	د/هدى كمال
5	TS2103	Transferable Skills	null
6	MA2107	Discrete Mathematics	د/عبدالعزيز الباجوري
7	MA2121	Mathematical methods	null
8	ST2101	Probability Theory (1)	د/قطب عبدالحميد
9	CS2105	File Processing	د/مسعد وجيه
10	MA2208	Mathematical Analysis (2)	د/هدى كمال
11	MA2220	Linear Algebra & Solid Geometry	د/تهاني الشيخ
12	CS2202	Digital Logic and Algorithms	د/علي العتيق

See  
you  
later

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 6

# Outlines

- DISTINCT Clause
- LIKE Condition (Operator)
- Order By



# DISTINCT Clause

```
select distinct lecturer,sub_department  
from Math_department.courses  
where sub_department =N‘الحاسب’;
```

	lecturer	sub_department
1	د/ إبراهيم جاد	الحاسب
2	د/ أمجد سلامة	الحاسب
3	د/ ابراهيم جاد	الحاسب
4	د/ عاطف عبدالجليل	الحاسب
5	د/ عبد العزيز الباجورى	الحاسب
6	د/ عبد المحسن بدوي , د/ تهاني الشيخ	الحاسب
7	د/ فاطمة شعبان	الحاسب
8	د/ قطب	الحاسب
9	د/ محمد عبد الهاوى	الحاسب
10	د/ مسعود وجيه	الحاسب
11	د/ هدى كمال	الحاسب
12	د/ فاطمة شعبان .	الحاسب

# LIKE Condition + '%' (first Character).

```
select * from Math_department.courses  
where course_name like N'ب%' ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	برمجة	CS1101	3	علوم طبيعة	رياضيات	د/ابراهيم جاد	1	1-3	مجمع 3
2	برمجة الحاسب	CS2103	3	رياضيات	رياضيات	دافاطمة شعبان	2	1-3	مجمع 1
3	برمجة الحاسب	CS2103	3	رياضيات	احصاء	دافاطمة شعبان	2	1-3	مجمع 1
4	برمجة الحاسب	CS2103	3	رياضيات	الحاسب	دافاطمة شعبان	2	1-3	مجمع 1
5	بحوث عمليات	MA3103	3	رياضيات	احصاء	د/نبيل الخولي	3	1-3	درج 8
6	بحوث عمليات	MA4105	3	رياضيات	رياضيات	د/السعيد عمار	4	11-1	الсимinar
7	بحوث عمليات	MA4105	3	رياضيات	احصاء	د/ محمد عبدالهادي	4	9-11	قاعة حاسب 1
8	بحوث عمليات	MA4105	3	رياضيات	الحاسب	د/ محمد عبد الهادي	4	11-1	درج 8
9	برامج متقدمة في لغة الجافا	CS4107	2	رياضيات	الحاسب	د/ فاطمة شعبان	4	3-5	درج 8

# LIKE Condition + '%' (middle Character)

```
select * from Math_department.courses  
where lecturer like N'%ف%';
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	رياضيات	NULL	2	بيولوجيا	رياضيات	داهشان رفاقت	1	9-10	مجمع 3
2	جبر مجرد	MA2103	3	رياضيات	رياضيات	دافاطنه عبدالله	2	11-1	قاعة 1
3	برمجة الحاسب	CS2103	3	رياضيات	رياضيات	دافاطنة شعبان	2	1-3	مجمع 1
4	احصاء تطبيقي	ST2107	3	رياضيات	احصاء	د/ وفاء انور	2	11-1	قاعة حاسب 3
5	برمجة الحاسب	CS2103	3	رياضيات	احصاء	دافاطنة شعبان	2	1-3	مجمع 1
6	برمجة الحاسب	CS2103	3	رياضيات	الحاسب	دافاطنة شعبان	2	1-3	مجمع 1
7	جبر مجرد	MA2103	3	رياضيات	الحاسب	دافاطنه عبدالله	2	1-3	قاعة 1
8	تحليل عددي	MA2103	3	رياضيات	رياضيات	د/ عاطف عبدالجليل	3	9-11	درج 8
9	نظرية التوافقيات	NULL	3	رياضيات	رياضيات	د/ فاطمة شعبان	3	11-1	درج 8
10	نظرية المعادلات التفاضلية	NULL	3	رياضيات	رياضيات	د/ شرف البنداري	3	1-3	قاعة حاسب 1
11	نظرية المخزون	ST3105	3	رياضيات	احصاء	د/ هالة فرجاني	3	1-3	السيمنار

# LIKE Condition + '%' (Last Character)

```
select * from Math_department.courses  
where lecturer like N'٪ل' ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	رياضيات	NULL	3	كيميا تطبيقية	رياضيات	داهدى كمال	1	9-11	درج 3
2	نظرية المعاينة	ST2103	3	رياضيات	رياضيات	د/ حمدي أبو جبل	2	9-11	الсимinar
3	نظرية المعاينة	ST2103	3	رياضيات	احصاء	د/ حمدي أبو جبل	2	9-11	الсимinar
4	تحليل رياضي	MA2105	3	رياضيات	الحاسب	د/ هدى كمال	2	11-9	قاعة حاسب 2
5	تحليل عددي	MA2103	3	رياضيات	رياضيات	د/ عاطف عبدالجليل	3	9-11	درج 8
6	تحليل عددي	MA3103	3	رياضيات	الحاسب	د/ عاطف عبدالجليل	3	9-11	درج 8
7	إحصاء لامعلمى	ST4101	3	رياضيات	احصاء	د/ حمدي أبو جبل	4	11-1	قاعة حاسب 3

# LIKE Condition + '\_' (11 character)

```
select * from [natural_science].[courses]
where course_name like '_';
```

	Course_Code	Course_name	Course_type	crd_hrs	Semester	Instructor_name	lev	dep
1	PH1121	Physics (1)	Obligatory	3	1_st	د/فاطمة الزهراء فهمي	1	natural_science
2	CS1101	Programming	Optional	3	1_st	د/إبراهيم جاد	1	natural_science
3	PH1222	Physics (2)	Obligatory	3	2_nd	null	1	natural_science
4	MA4111	Topology(2)	Optional	2	1_st	د/بنية طاهر	4	math_dep
5	MA4204	Algebra (2)	Obligatory	3	2_nd	د/تهاني الشيخ	4	math_dep

# LIKE Condition + '\_'

```
select * from Math_department.courses  
where course_name like N'ب_____';
```



The screenshot shows a database query results window. At the top, there are two tabs: "Results" (selected) and "Messages". The results table has the following columns: course\_name, course\_no, credit\_hr, department, sub\_department, lecturer, lev, time\_, and place. A single row of data is shown for entry 1:

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	برمجه	CS1101	3	علوم طبيعه	رياضيات	دالبراهيم جاد	1	1-3	مجمع

# Cont.

```
select * from Math_department.courses  
where course_no like 'C_4__';
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	أنظمة إدارة قواعد البيانات	CS4101	3	رياضيات	الحاسب	د/ مسعود وجيه	4	1-3	معلم حاسب 1
2	نظرية الحسابات	CS4103	3	رياضيات	الحاسب	د/ إبراهيم جاد	4	1-3	درج 8
3	برامج متقدمة في لغة الجافا	CS4107	2	رياضيات	الحاسب	د/ فاطمة شعبان	4	3-5	درج 8
4	أنظمة خبيرة	CS4111	3	رياضيات	الحاسب	د/ فاطمة شعبان	4	1-3	درج 8

# LIKE Condition + '[characters]'

```
select * from Math_department.courses  
where course_no like '[cs]%' ;
```

# LIKE Condition + '[^characters]'

```
select * from Math_department.courses  
where course_no like '[^cs]%' ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	جبر + تفاضل	MA1101	3	علوم طبيعة	رياضيات	دالين الشرقاوي , دانهى الشرقاوى	1	11-1	مجمع 1
2	اجصاء رياضي	MA1103	3	علوم طبيعة	رياضيات	دامحمد عرت	1	9-11	مجمع 1
3	(1)رياضيات	MA1101	3	جيولوجيا	رياضيات	دامجد سلامه	1	9-11	درج 6
4	رياضيات تطبيقية	MA2101	3	رياضيات	رياضيات	داسليم علي محمدبن	2	1-3	سيمنار القسم
5	جبر مجرد	MA2103	3	رياضيات	رياضيات	دافاطمه عبدالله	2	11-1	قاعة 1
6	تحليل رياضي	MA2105	3	رياضيات	رياضيات	دانبيل الخولي	2	9-11	مجمع 1
7	رياضيات متقطعه	MA2107	3	رياضيات	رياضيات	دا عبدالعزيز الباجوري	2	11-1	مجمع 1
8	تحليل رياضي	MA2105	3	رياضيات	احصاء	دانبيل الخولي	2	9-11	مجمع 1
9	جبر مجرد و جبر خطى	MA2103	3	رياضيات	احصاء	د/ تهاني السيخ , دامحمد سويلم	2	9-11	السيمنار
10	جبر مجرد	MA2103	3	رياضيات	الحاسب	دافاطمه عبدالله	2	1-3	قاعة 1
11	تحليل رياضي	MA2105	3	رياضيات	الحاسب	د/ هدى كمال	2	11-9	قاعة حاسب 2
12	.....	MA2107	3	.....	.....	د/ هدى العزبي , دالحاج .	2	11-9	مجمع 1

# LIKE Condition + Range between '[character - character]' .

```
select * from Math_department.courses  
where course_name like N '[ج-ا]%'
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	جبر + تفاضل	MA1101	3	علوم طبيعه	رياضيات	دالين الشرقاوي , دانهه الشرقاوي	1	11-1	مجمع 1
2	اجصاء رياضي	MA1103	3	علوم طبيعه	رياضيات	دامحمد عزت	1	9-11	مجمع 1
3	برمجه	CS1101	3	علوم طبيعه	رياضيات	دالبراهيم جاد	1	1-3	مجمع 3
4	جبر مجرد	MA2103	3	رياضيات	رياضيات	دافاطمه عبدالله	2	11-1	قاعه
5	تحليل رياضي	MA2105	3	رياضيات	رياضيات	دانبيل الخولي	2	9-11	مجمع 1
6	برمجة الحاسب	CS2103	3	رياضيات	رياضيات	دافاطمة شعبان	2	1-3	مجمع 1
7	تحليل رياضي	MA2105	3	رياضيات	احصاء	دانبيل الخولي	2	9-11	مجمع 1
8	جبر مجرد وجبر خطى	MA2103	3	رياضيات	احصاء	د/ تهاني السيخ , دامحمد سويلم	2	9-11	السيمنار
9	احصاء تطبيقى	ST2107	3	رياضيات	احصاء	د/ وفاء أنور	2	11-1	قاعه حاسب 3
10	برمجة الحاسب	CS2103	3	رياضيات	احصاء	دافاطمة شعبان	2	1-3	مجمع 1
11	برمجة الحاسب	CS2103	3	رياضيات	الحاسب	دافاطمة شعبان	2	1-3	مجمع 1
12	المملكة العالى ...	CS2101	2	العام ..	العام ..	دال ابراهيم جاد	2	11-1	مجمع 1

# NOT LIKE Condition

```
select * from Math_department.courses  
where course_name not like N'ج%'
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	(1) رياضيات	MA1101	3	جيولوجيا	رياضيات	دالمنجدة سلامه	1	9-11	درج 6
2	رياضيات	NULL	3	بترول و تغير	رياضيات	دالسعيد عمار	1	1-3	درج 1
3	رياضيات	NULL	3	كيميا تطبيقية	رياضيات	داهدى كمال	1	9-11	درج 3
4	رياضيات	NULL	2	التقنية الحيوية	رياضيات	دالين الشرقاوي	1	9-10	درج 9
5	رياضيات	NULL	2	بيولوجيا	رياضيات	داهشام رفافات	1	9-10	مجمع 3
6	رياضيات تطبيقية	MA2101	3	رياضيات	رياضيات	داسليم علي محمدبن	2	1-3	سيمنار القسم
7	نظرية الاحتمالات	NULL	3	رياضيات	رياضيات	دافطب	2	1-3	مجمع 3
8	رياضيات متقطعة	MA2107	3	رياضيات	رياضيات	دا عبدالعزيز الباجوري	2	11-1	مجمع 1
9	نظرية المعاينة	ST2103	3	رياضيات	رياضيات	د/ حمدي أبوجل	2	9-11	السيمنار
10	نظرية الاحتمالات	NULL	3	رياضيات	احصاء	دافطب	2	1-3	مجمع 3
11	نظرية المعاينة	ST2103	3	رياضيات	احصاء	د/ حمدي أبوجل	2	9-11	السيمنار
12	الحالة المفتوحة	CS2105	3	رياضيات	احصاء	دالمنجدة سلامه	2	11-1	درج 6

# Order By Ascending

```
select * from Math_department.courses  
order by lev ;
```

```
select * from Math_department.courses  
order by lev ASC ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	جبر + تفاضل	MA1101	3	علوم طبيعة	رياضيات	دالين الشرقاوي , دانه الشرقاوي	1	11-1	مجمع 1
2	اچصاء رياضي	MA1103	3	علوم طبيعة	رياضيات	دامحمد عزت	1	9-11	مجمع 1
3	برمجه	CS1101	3	علوم طبيعة	رياضيات	دالبراهيم جاد	1	1-3	مجمع 3
4	(1) رياضيات	MA1101	3	جيولوجيا	رياضيات	دالمجد سلامه	1	9-11	درج 6
5	رياضيات	NULL	3	بترول و تعدين	رياضيات	دالسعيد عمار	1	1-3	درج 1
6	رياضيات	NULL	3	كيميا تطبيقية	رياضيات	داهدى كمال	1	9-11	درج 3
7	رياضيات	NULL	2	التقنية الحيوية	رياضيات	دالين الشرقاوي	1	9-10	درج 9
8	رياضيات	NULL	2	بيولوجيا	رياضيات	داهشام رأفات	1	9-10	مجمع 3
9	رياضيات تطبيقية	MA2101	3	رياضيات	رياضيات	داسليم علي محمددين	2	1-3	سيمنار القسم
10	جبر مجرد	MA2103	3	رياضيات	رياضيات	دافاطمه عبدالله	2	11-1	قاعه 1
11	تحليل رياضي	MA2105	3	رياضيات	رياضيات	دانيلل الخولي	2	9-11	مجمع 1
12	نظرية الاحتمالات	NULL	3	رياضيات	رياضيات	داقطب	2	1-3	مجمع 3
13	برمجة الحاسب	CS2103	3	رياضيات	رياضيات	دافاطمة شعبان	2	1-3	مجمع 1
14	رياضيات متقطعة	MA2107	3	رياضيات	رياضيات	دا عبدالعزيز الباجوري	2	11-1	مجمع 1
15	نظرية المعاينة	ST2103	3	رياضيات	رياضيات	د/ حمدي أبوجل	2	9-11	السيمنار
16	نظرية الاحتمالات	NULL	3	رياضيات	احصاء	داقطب	2	1-3	مجمع 3
17	تحليل رياضي	MA2105	3	رياضيات	احصاء	دانيلل الخولي	2	9-11	مجمع 1
18	جبر و حساب	MA2103	3	رياضيات	احصاء	د/ تمامى السرىخ دامحمد سعيد	2	9-11	السيمنار

# Cont.

```
select * from Math_department.courses  
order by lev, course_name ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	اجصاء رياضي	MA1103	3	علوم طبيعة	رياضيات	دامحمد عزت	1	9-11	مجمع 1
2	برمجه	CS1101	3	علوم طبيعة	رياضيات	دالبراهيم جاد	1	1-3	مجمع 3
3	جبر + تفاضل	MA1101	3	علوم طبيعة	رياضيات	دالين الشرقاوي , دالنهي الشرقاوي	1	11-1	مجمع 1
4	رياضيات	NULL	3	بترول و تعدين	رياضيات	دالسعيد عمار	1	1-3	درج 1
5	رياضيات	NULL	3	كيميا تطبيقية	رياضيات	داهدي كمال	1	9-11	درج 3
6	رياضيات	NULL	2	التقنيه الحيوية	رياضيات	دالين الشرقاوي	1	9-10	درج 9
7	رياضيات	NULL	2	بيولوجيا	رياضيات	داهشام رفاث	1	9-10	مجمع 3
8	(1) رياضيات	MA1101	3	جيولوجيا	رياضيات	دامجد سلامه	1	9-11	درج 6
9	جبر مجرد	MA2103	3	رياضيات	الحاسب	دافاطمه عبدالله	2	1-3	قاعة 1
10	احصاء تطبيقى	ST2107	3	كيميا	رياضيات	د/ حنان حمدى	2	11-1	مجمع 6
11	احصاء تطبيقى	ST2107	3	رياضيات	احصاء	د/ وفاء أنور	2	11-1	قاعة حاسب 3
12	أنظمة الحاسوب	CS2101	3	رياضيات	الحاسب	د/ ابراهيم جاد	2	11-1	معمل 1
13	برمجة الحاسوب	CS2103	3	رياضيات	احصاء	دافاطمة شعبان	2	1-3	مجمع 1
14	برمجة الحاسوب	CS2103	3	رياضيات	الحاسب	دافاطمة شعبان	2	1-3	مجمع 1
15	برمجة الحاسوب	CS2103	3	رياضيات	رياضيات	دافاطمة شعبان	2	1-3	مجمع 1
16	تحليل رياضي	MA2105	3	رياضيات	الحاسب	د/ هدى كمال	2	11-9	قاعة حاسب 2
17	تحليل رياضي .. باصيات	MA2105	3	رياضيات .. باصيات	رياضيات	دانسا . الحموى	2	9-11	مجمع 1

# Order By Descending

```
select * from Math_department.courses  
order by course_name DESC ;
```

	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	هندسة تفاضلية	MA4107	3	رياضيات	رياضيات	د/ عبدالعزيز الباجوري	4	11-1	قاعة حاسب 1
2	نظرية المعاينة	ST2103	3	رياضيات	رياضيات	د/ محمد أبو جبل	2	9-11	السيمنار
3	نظرية المعاينة	ST2103	3	رياضيات	احصاء	د/ حمدي أبو جبل	2	9-11	السيمنار
4	نظرية المعادلات التفاضلية	NULL	3	رياضيات	رياضيات	د/ شريف البنداري	3	1-3	قاعة حاسب 1
5	نظرية المخرون	ST3105	3	رياضيات	احصاء	د/ هالة فرجاني	3	1-3	السيمنار
6	نظرية الصلاحيه	ST4103	3	رياضيات	احصاء	د/ محدث الدمشيسي	4	1-3	قاعة حاسب 1
7	نظرية الحسابات	CS4103	3	رياضيات	الحاسب	د/ إبراهيم جاد	4	1-3	درج
8	نظرية التوافقيات	NULL	3	رياضيات	الحاسب	د/ فاطمة شعبان	3	11-1	درج 8
9	نظرية التوافقيات	NULL	3	رياضيات	رياضيات	د/ فاطمة شعبان	3	11-1	درج 8
10	نظرية التقدير	ST4107	3	رياضيات	احصاء	د/ علاء رافت	4	1-3	قاعة حاسب 1
11	نظرية الارتباط	ST3101	3	رياضيات	احصاء	د/ شيماء يحيى	3	11-1	درج 8
12	نظرية الاحتمالات	ST3121	3	رياضيات	احصاء	د/ عادل إدريس	3	9-11	درج 8
13	نظرية الاحتمالات	NULL	3	رياضيات	احصاء	داقطب	2	1-3	مجموع 3
14	نظرية الاحتمالات	NULL	3	رياضيات	رياضيات	داقطب	2	1-3	مجموع 3
15	نظرية الاحتمالات	NULL	3	رياضيات	الحاسب	د/ قطب	2	1-3	مجموع 3
16	نسبيه عامه	MA4113	3	رياضيات	رياضيات	د/ عفاف فرج	4	11-1	قاعة حاسب 3
17	نسبية خاصة	MA3111	3	رياضيات	رياضيات	د/ مها سلمة	3	9-11	قاعة حاسب 2

See  
you  
later

# MS SQL Server Tutorial

produced by Mona M. Elattar

# Section 7

# Outlines

- OFFSET FETCH
- Join Types
- Aggregate function
- Group by
- Top record
- Having Clause
- Nested query



# OFFSET FETCH

```
SELECT course_code, course_title ,course_level  
FROM department.courses  
ORDER BY course_level, course_semester  
OFFSET 10 ROWS;
```

	course_code	course_title	course_level
1	UN1107	الفلانية البيانية	1
2	UN1202	اللغة العربية	1
3	UN1204	التفكر النعدي	1
4	UN1206	الثقافة الإسلامية	1
5	UN1208	التعليم الذاتي	1
6	PH1222	Physics (2)	1
7	PH1226	Introduction to Biophysics	1
8	CH1202	General Chemistry (2)	1
9	CH1204	Tutorial	1
10	MA1202	Mathematics (2)	1
11	MA1204	Applied Mathematics	1
12	MA1206	Algebra	1
13	MA2101	Applied Mathematics (1)	2
14	MA2103	Abstract Algebra	2
15	MA2103	Abstract Algebra	2
16	MA2103	Abstract Algebra & Line...	2
17	MA2105	Mathematical Analysis (1)	2
18	MA2105	Mathematical Analysis (1)	2

ID	Name
1	Item #1
2	Item #2
3	Item #3
4	Item #4
5	Item #5
6	Item #6
7	Item #7
8	Item #8
9	Item #9
10	Item #10
11	Item #11
12	Item #12
13	Item #13
14	Item #14
15	Item #15
16	Item #16
17	Item #17
18	Item #18
19	Item #19
20	Item #20

OFFSET 5 ROWS

FETCH NEXT 10 ROWS ONLY

# Cont.

```
SELECT course_code, course_title , course_level  
FROM department.courses  
ORDER BY course_level, course_semester  
OFFSET 10 ROWS  
FETCH NEXT 10 ROWS ONLY;
```

Results Messages

	course_code	course_title	course_level
1	UN1107	الثقافة البيئية	1
2	CH1204	Tutorial	1
3	CH1202	General Chemistry (2)	1
4	MA1202	Mathematics (2)	1
5	MA1204	Applied Mathematics	1
6	MA1206	Algebra	1
7	PH1222	Physics (2)	1
8	PH1226	Introduction to Biophysics	1
9	UN1202	اللغة العربية	1
10	UN1204	التفكير النقدي	1

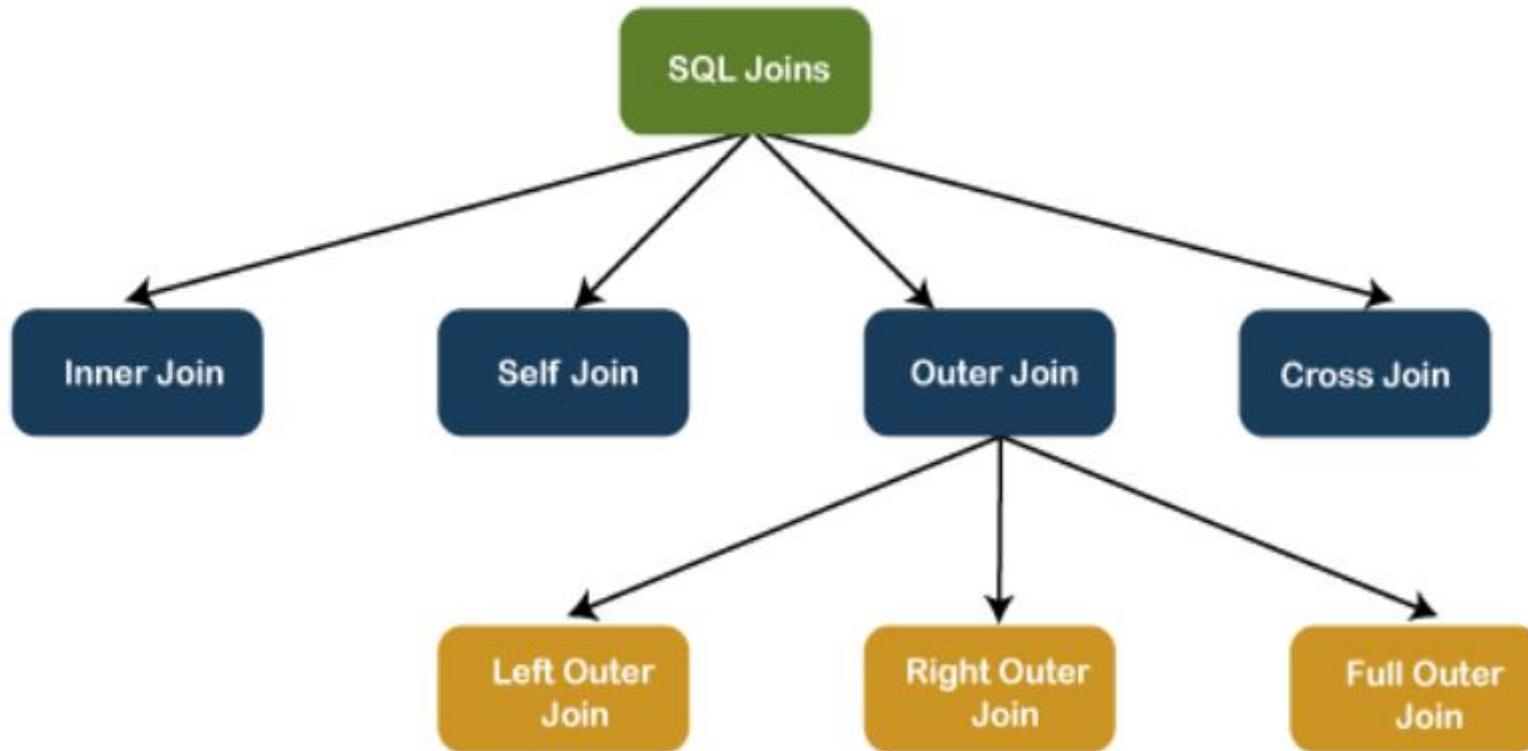
# Cont.

```
|SELECT course_code, course_title ,course_level  
FROM  department.courses  
ORDER BY course_level, course_semester  
OFFSET 0 ROWS  
FETCH NEXT 15 ROWS ONLY;
```

	course_code	course_title	course_level
1	CH1101	General Chemistry (1)	1
2	BIO1101	General Biology	1
3	CS1101	Programming	1
4	MA1101	Mathematics (1)	1
5	PH1121	Physics (1)	1
6	PH1125	General Physics	1
7	ST1103	Mathematical statistics	1
8	UN1101	Scientific English	1
9	UN1103	تاريخ وفلسفة العلوم	1
10	UN1105	مبادئ الإدارة والقيادة	1
11	UN1107	الثقافة البيئية	1
12	CH1204	Tutorial	1
13	CH1202	General Chemistry (2)	1
14	MA1202	Mathematics (2)	1
15	MA1204	Applied Mathematics	1

✓ Query executed successfully.

## Types of Join



# Join between two tables

## FIRST TABLE

	course_id	course_name	preq_no	preq_name
1	MA2101	Applied Mathematics (1)	MA1101	Mathematics (1)
2	MA2103	Abstract Algebra	MA1206	Algebra
3	MA2105	Mathematical Analysis (1)	MA1202	Mathematics (2)
4	ST2101	Probability Theory (1)	ST1101	Mathematics (1)
5	MA2107	Discrete Mathematics	MA1206	Algebra
6	CS2103	Computer Programming	CS1101	Programming
7	ST2103	Sampling Theory	MA1103	Mathematical statistics
8	MA2202	Applied Mathematics (2)	MA2101	Applied Mathematics (1)
9	MA2204	Vector Analysis & Solid Geometry	MA2105	Mathematical Analysis (1)
10	MA2206	Linear Algebra	MA2103	Abstract Algebra
11	MA2208	Mathematical Analysis (2)	MA2105	Mathematical Analysis (1)
12	CS2204	Data Structure and Algorithms	CS2103	Computer Programming

## SECOND TABLE

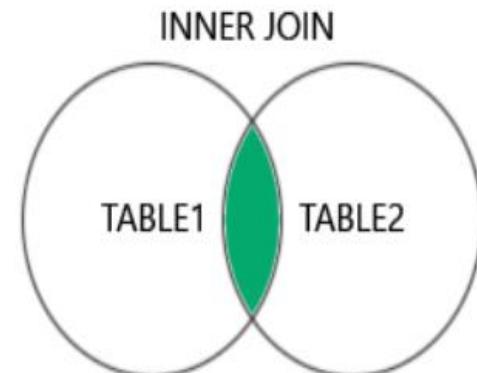
	course_name	course_no	credit_hr	department	sub_department	lecturer	lev	time_	place
1	جبر + تفاضل	MA1101	3	علوم طبيعه	رياضيات	داین الشرقاوي, دانیه الشرقاوي	1	11-1	1
2	إحصاء رياضي	MA1103	3	علوم طبيعه	رياضيات	دامحمد عزت	1	9-11	1
3	برمجه	CS1101	3	علوم طبيعه	رياضيات	دالبراهيم جاد	1	1-3	3
4	(1) رياضيات	MA1101	3	جيولوجيا	رياضيات	دالماجد سلامه	1	9-11	6
5	رياضيات	NULL	3	بررول و تعدين	رياضيات	دالسعید عمار	1	1-3	1
6	رياضيات	NULL	3	كيمياء تطبيقية	رياضيات	داھدى کمال	1	9-11	3
7	رياضيات	NULL	2	التقنيه الحيویه	رياضيات	داین الشرقاوي	1	9-10	9
8	رياضيات	NULL	2	بيولوجيا	رياضيات	داہشام رأفات	1	9-10	3
9	رياضيات تطبيقية	MA2101	3	رياضيات	رياضيات	داسليم علي محمدن	2	1-3	سيمنار القسم
10	جبر مجرد	MA2103	3	رياضيات	رياضيات	دافاطمه عبدالله	2	11-1	1
11	تحليل رياضي	MA2105	3	رياضيات	رياضيات	دانیل الخولي	2	9-11	1
12	نظرية الاحتمالات	NULL	3	رياضيات	رياضيات	دانطب	2	1-3	3

# Inner join

```
select course_no, preq_name, lecturer, lev  
from Math_department.prerequisite join  
Math_department.courses  
on courses.course_no = prerequisite.course_id;
```

```
select course_no, preq_name, lecturer, lev  
from Math_department.prerequisite ,  
Math_department.courses  
where courses.course_no = prerequisite.course_id;
```

	course_no	preq_name	lecturer	lev
1	MA2101	Mathematics (1)	داسليم علي محمدبن	2
2	MA2103	Algebra	دافاطمه عبدالله	2
3	MA2103	Algebra	/ تهانى السيخ , دامحمد سويلم	2
4	MA2103	Algebra	دافاطمه عبدالله	2
5	MA2103	Algebra	/ عاطف عبدالجليل	3
6	MA2105	Mathematics (2)	دانبيل الخولي	2
7	MA2105	Mathematics (2)	دانبيل الخولي	2
8	MA2107	Algebra	دا عبدالعزيز الباجوري	2
9	MA2107	Algebra	د/ عبد العزير الباجوري	2
10	CS2103	Programming	دافاطمة شعبان	2
11	CS2103	Programming	دافاطمة شعبان	2
12	CS2103	Programming	دافاياتة شعبان	2



# Q (For what reason did this error happen)

```
■ select course_name, course_no, preq_name, lecturer, lev  
      from Math_department.prerequisite , Math_department.courses  
     where courses.course_no = prerequisite.course_id;
```

A screenshot of a database query window. At the top left, there is a zoom control set to 100% and a back arrow. Below it is a 'Messages' tab. The main area shows a SQL query and its execution results. The SQL query is:

```
select course_name, course_no, preq_name, lecturer, lev  
      from Math_department.prerequisite , Math_department.courses  
     where courses.course_no = prerequisite.course_id;
```

The execution results show a single message in red text:

Msg 209, Level 16, State 1, Line 1  
Ambiguous column name 'course\_name'.

At the bottom, the completion time is displayed as: Completion time: 2022-12-02T20:49:39.4641592+02:00

# A : Determine from which table you want the (course name ) column.

```
select prerequisite.course_name, course_no, preq_name, lecturer, lev  
from Math_department.prerequisite JOIN Math_department.courses  
ON courses.course_no = prerequisite.course_id;
```

Results Messages

	course_name	course_no	preq_name	lecturer	lev
1	Applied Mathematics (1)	MA2101	Mathematics (1)	داسليم علي محمدبن	2
2	Abstract Algebra	MA2103	Algebra	دافطمه عبدالله	2
3	Abstract Algebra	MA2103	Algebra	د/ تهانى السيخ , دامحمد سوليم	2
4	Abstract Algebra	MA2103	Algebra	دافطمه عبدالله	2
5	Abstract Algebra	MA2103	Algebra	د/ عاطف عبدالجليل	3
6	Mathematical Analysis (1)	MA2105	Mathematics (2)	دانيل الخولي	2
7	Mathematical Analysis (1)	MA2105	Mathematics (2)	دانيل الخولي	2
8	Discrete Mathematics	MA2107	Algebra	دا عبدالعزيز الباجورى	2
9	Discrete Mathematics	MA2107	Algebra	د/ عبد العزير الباجورى	2
10	Computer Programming	CS2103	Programming	دافطة شعبان	2
11	Computer Programming	CS2103	Programming	دافطة شعبان	2
12	Computer Programming	CS2103	Programming	دافتة شعبان	2

Query executed successfully. | DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Program... | faculty\_of\_science | 00:00:00 | 62 rows

# Inner join

```
select course_no, preq_no, lecturer, lev  
from Math_department.prerequisite inner  
join Math_department.courses  
  
on courses.course_no =  
prerequisite.course_id;
```

```
select course_no, preq_no, lecturer, lev  
from Math_department.prerequisite JOIN  
Math_department.courses  
  
ON course_no = course_id;
```

100 %

Results Messages

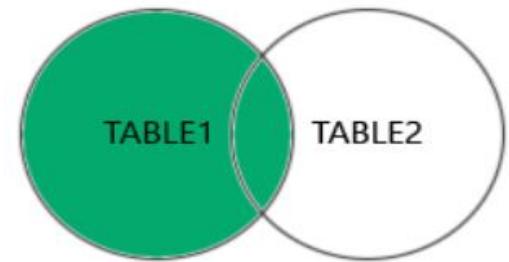
	course_no	preq_no	lecturer	lev
1	MA2101	MA1101	داسليم علي محمدبن	2
2	MA2103	MA1206	دافاطمه عبدالله	2
3	MA2103	MA1206	د/ تهانى السيخ ، دامحمد سويم	2
4	MA2103	MA1206	دافاطمه عبدالله	2
5	MA2103	MA1206	د/ عاطف عبدالجليل	3
6	MA2105	MA1202	دانبيل الخولي	2
7	MA2105	MA1202	دانبيل الخولي	2
8	MA2107	MA1206	دا عبدالعزيز الياجوري	2
9	MA2107	MA1206	د/ عبد العزير الياجوري	2
10	CS2103	CS1101	دافاطمة شعبان	2
11	CS2103	CS1101	دافاطمة شعبان	2
12	CS2103	CS1101	دافاطمة شعبان	2

Query executed successfully.

DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\F

# Left outer join

LEFT JOIN



```
select course_no, preq_no, lecturer, lev  
from Math_department.prerequisite left outer join Math_department.courses  
ON course_no = course_id;
```

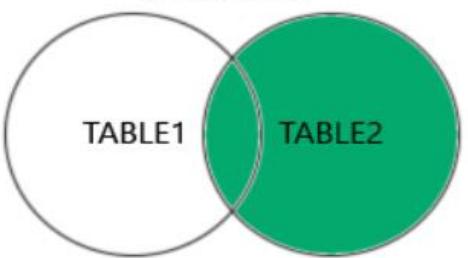
100 %

Results Messages

	course_no	preq_no	lecturer	lev
1	MA2101	MA1101	داسليم علي محمدبن	2
2	MA2101	MA1101	داسليم علي محمدبن	2
3	MA2103	MA1206	دافاطمه عبدالله	2
4	MA2103	MA1206	دافاطمه عبدالله	2
5	MA2105	MA1202	دانبيل الخولي	2
6	MA2105	MA1202	دانبيل الخولي	2
7	CS2103	CS1101	دافاطمة شعبان	2
8	CS2103	CS1101	دافاطمة شعبان	2
9	MA2107	MA1206	دا عبدالعزيز الباجوري	2
10	MA2107	MA1206	دا عبدالعزيز الباجوري	2
11	ST2103	MA1103	د/ حمدي أبو جبل	2
12	ST2103	MA1103	د/ حمدي أبو جبل	2

Query executed successfully. | DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Programs | faculty\_of\_science | 00:00:00 | 116 rows

RIGHT JOIN



# Right outer join

```
select course_no, preq_no, lecturer, lev  
from Math_department.prerequisite right outer join Math_department.courses  
ON courses.course_no = prerequisite.course_id;
```

Results Messages

	course_no	preq_no	lecturer	lev
1	MA1101	NULL	دالين الشرقاوي, دانيه الشرقاوي	1
2	MA1103	NULL	دامحمد عزت	1
3	CS1101	NULL	داربر اهيم جاد	1
4	MA1101	NULL	دامجدة سلامه	1
5	NULL	NULL	دالسعيد عمار	1
6	NULL	NULL	داهى كمال	1
7	NULL	NULL	دالين الشرقاوي	1
8	NULL	NULL	داهشام رفاقت	1
9	MA2101	MA1101	داسليم علي محمدبن	2
10	MA2101	MA1101	داسليم علي محمدبن	2
11	MA2103	MA1206	دافتنه عبدالله	2
12	MA2103	MA1206	دافتنه عبدالله	2

Query executed successfully. DESKTOP-440CVIO (15.0 RTM) DESKTOP-440CVIO\Programs faculty\_of\_science 00:00:00 | 105 rows

# Full outer join

```
select course_no, preq_no, lecturer, lev  
from Math_department.prerequisite full outer join Math_department.courses  
ON courses.course_no = prerequisite.course_id;
```

100 %

Results Messages

	course_no	preq_no	lecturer	lev
1	MA1101	NULL	دایین الشرقاوی, دانیه الشرقاوی	1
2	MA1103	NULL	دامحمد عزت	1
3	CS1101	NULL	داربراهیم جاد	1
4	MA1101	NULL	دالجاد سلامه	1
5	NULL	NULL	دالسعید عمار	1
6	NULL	NULL	داهدی کمال	1
7	NULL	NULL	دایین الشرقاوی	1
8	NULL	NULL	داہشام رأفات	1
9	MA2101	MA1101	داسلیم علی محمدین	2
10	MA2101	MA1101	داسلیم علی محمدین	2
11	MA2103	MA1206	دافتنه عبدالله	2
12	MA2103	MA1206	دافتنه عبدالله	2

Query executed successfully.

DESKTOP-440CVIO (15.0 RTM) | DESKTOP-440CVIO\Programs | faculty\_of\_science | 00:00:00 | 159 rows

# Cross join

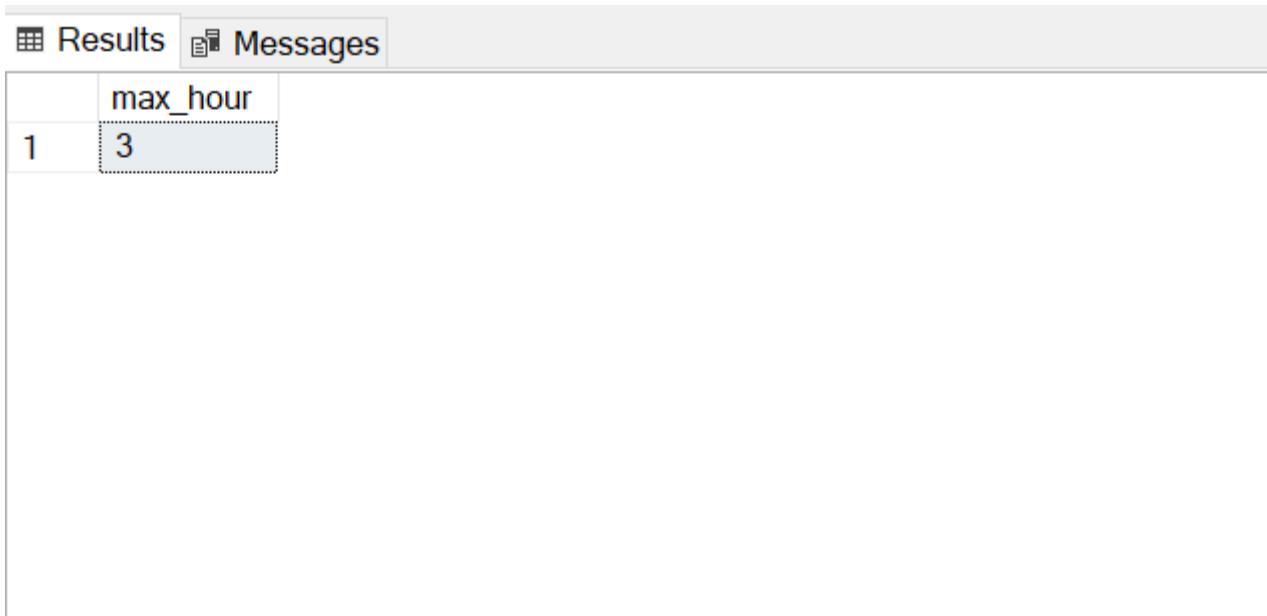
```
SELECT courses.course_name,prerequisite.preq_name,lev,lecturer,sub_department  
FROM Math_department.courses  
CROSS JOIN Math_department.prerequisite  
WHERE courses.course_no = prerequisite.course_id;
```

	course_name	preq_name	lev	lecturer	sub_department
1	رياضيات تطبيقية	Mathematics (1)	2	داسليم علي مهددين	رياضيات
2	جبر مجرد	Algebra	2	دافاطمه عبدالله	رياضيات
3	جبر مجرد و جبر خطى	Algebra	2	د/ تهانى السيخ ، دامحمد سويلم	احصاء
4	جبر مجرد	Algebra	2	دافاطمه عبدالله	الحاسب
5	تحليل عددي	Algebra	3	د/ عاطف عبدالجليل	رياضيات
6	تحليل رياضي	Mathematics (2)	2	دانبيل الخولي	رياضيات
7	تحليل رياضي	Mathematics (2)	2	دانبيل الخولي	احصاء
8	رياضيات متقطعة	Algebra	2	دا عبدالعزيز الباجوري	رياضيات
9	رياضيات متقطعة	Algebra	2	د/ عبد العزيز الباجوري	الحاسب
10	برمجة الحاسب	Programming	2	دافاطمة شعبان	رياضيات
11	برمجة الحاسب	Programming	2	دافاطمة شعبان	احصاء
12	برمجة الحاسب	Programming	2	دافاطمة شعبان	الحاسب

- 
- **MAX VALUE**
  - **MIN VALUE**
  - **SUM VALUE**
  - **COUNT NUMBER**
  - **AVG VALUE**

# Max number

```
select max(credit_hr)as max_hour from Math_department.courses
```



The screenshot shows a database query results window. At the top, there are two tabs: "Results" (which is selected) and "Messages". Below the tabs is a table with one row and two columns. The first column is labeled "max\_hour" and contains the value "3". The second column is also labeled "max\_hour" and contains the value "3".

	max_hour
1	3

# MIN number

```
select min (credit_hr)as min_hour from Math_department.courses
```

The screenshot shows a software interface for running SQL queries. At the top, there is a zoom control set to "100 %". Below the zoom control are two tabs: "Results" (which is selected) and "Messages". The main area displays the results of a query. The query is:

	min_hour
1	2

The result shows one row with two columns. The first column is labeled "min\_hour" and contains the value "2".

# Count number

```
■ select count(distinct Instructor_name) AS NumberOfInstructor  
from natural_science.courses
```

Results	Messages
	<b>NumberOfInstructor</b> 1 58

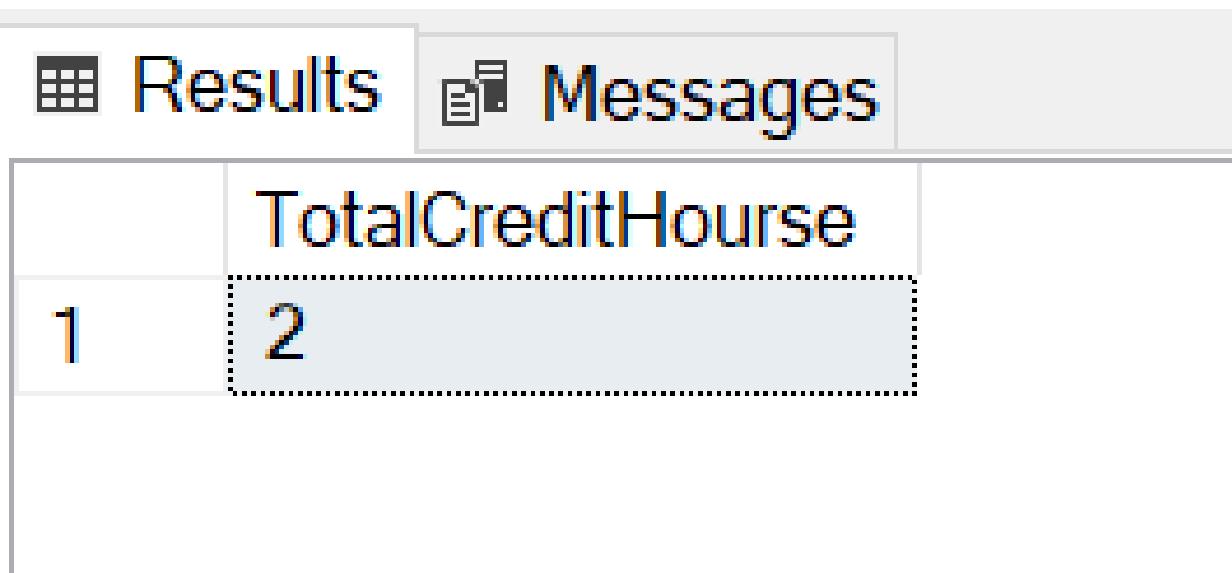
# Sum number

- `select Sum(crd_hrs) as TotalCreditHourse  
from natural_science.courses`

Results	
	TotalCreditHourse
1	463

# Average number

```
■ select avg(crd_hrs) as AVGCreditHourse  
      from natural_science.courses
```



The screenshot shows a software interface for running SQL queries. At the top, there are two tabs: "Results" (selected) and "Messages". Below the tabs is a table with one row. The first column is labeled "TotalCreditHourse" and contains the value "2". The second column contains the value "1". The cell containing "2" is highlighted with a dashed border.

	TotalCreditHourse
1	2

# Group by

```
■ select Instructor_name, Sum(crd_hrs) as TotalCreditHourse  
from natural_science.courses  
group by Instructor_name
```

	Instructor_name	TotalCreditHourse
1	د/عاطف عبدالجليل	3
2	د/عبدالمحسن بدوي ، د/تهاني الشيخ	2
3	null	77
4	د/إبراهيم جاد	20
5	د/أحمد أبوزيد	14
6	د/أحمد أبوعنبر	2
7	د/أحمد النمورى	6
8	د/أسامة إمبابي	3
9	د/أسماء العشري	2
10	د/أمجد سلامة	2
11	د/أمنية البربرى	11
12	د/أيمن الشرقاوى ، د/نهى الشرقاوى	6

# Select TOP record

```
■ select top 10 Instructor_name, Sum(crd_hrs) as TotalCreditHourse  
from [natural_science].[courses]  
group by Instructor_name  
order by TotalCreditHourse desc;
```

	Instructor_name	TotalCreditHourse
1	null	77
2	د/مسعد وجيه	32
3	د/فاطمة شعبان	24
4	د/إبراهيم جاد	20
5	د/عبدالمحسن بدوي	15
6	د/أحمد أبوزيد	14
7	د/حمدي أبوجل	14
8	د/محمد عبدالهادي	12
9	د/نبيل الخولي	12
10	د/أمنية البربرى	11

# Having Clause

```
■ SELECT lecturer, SUM(credit_hr) AS "Total working hours"  
      FROM [Math_department].[courses]  
      GROUP BY lecturer  
      HAVING SUM (credit_hr) > 9;
```



The screenshot shows a database query results window. At the top, there are buttons for '100 %' (with a dropdown arrow), 'Results' (which is selected and highlighted in blue), and 'Messages'. The results table has two columns: 'lecturer' and 'Total working hours'. There are two rows of data:

	lecturer	Total working hours
1	د/فاطمة شعبان	14
2	د/مسعد وجيه	18

# Nested query

```
select lecturer ,credit_hr  
from [Math_department].[courses]  
where credit_hr > (select avg(credit_hr)from  
[Math_department].[courses])
```

Results		Messages
	lecturer	credit_hr
1	دایین الشرقاوی, دانیه الشرقاوی	3
2	دامحمد عرب	3
3	دابر اهیم جاد	3
4	دامدج سلامہ	3
5	دالسعید عمار	3
6	داهدی کمال	3
7	داسلیم علی محمدین	3
8	دافاطمه عبدالله	3
9	دانیل الخولي	3
10	دقاطب	3
11	دافاطمة شعبان	3
12	دا عبدالعزیز الباجوري	3
13	/ حمدي أبوجل	3
14	دقاطب	3

Query executed successfully.

# EXISTS Operator

```
■ SELECT distinct Instructor_name from [natural_science].[courses]
WHERE EXISTS (SELECT Course_name FROM [natural_science].[courses]
WHERE Course_type = 'Obligatory' AND Semester = '2_nd');
```

	Instructor_name
1	د/عاطف عبدالجليل
2	د/عبدالمحسن بدوي ، د/نهاني الشيبخ
3	null
4	د/إبراهيم جاد
5	د/أحمد أبوزيد
6	د/أحمد أبوعنبر
7	د/أحمد التموري
8	د/أسامة إمبابي
9	د/أسماء العشرى
10	د/أمجاد سلامة
11	د/أمنية البربرى
12	د/أيمان الشرقاوى ، د/نهى الشرقاوى

# ANY Operator

```
SELECT distinct course_doctor, course_title FROM [department].[courses]
WHERE course_title =
ANY (SELECT course_title FROM [department].[courses] WHERE course_hours > 2);
```

	course_doctor	course_title
67	إبراهيم جاد	Computer Systems
68	إبراهيم جاد	Programming
69	إبراهيم جاد	Theory of Computation
70	أحمد النوري	Numerical Analysis (2)
71	أسامة إمبابي	Topology
72	أمجد سلامة	Discrete Mathematics
73	أيمن الشرقاوي	Abstract Algebra
74	السعيد عمار	Operations Research (1)
75	السيد عبدالعال	Theory of Ordinary Differenti...
76	بسمة الشيخ	Experimental Design
77	بسمة الشيخ	Sampling Theory
78	حمدي أبو جبل	Non-Parametric Statistics
79	حنان حمدي	Statistical Inference (2)

# ALL Operator

```
SELECT course_title, course_code , course_hours FROM [department].[courses]
WHERE course_hours > all
(SELECT course_hours FROM [department].[courses] WHERE course_hours <3);
```

	course_title	course_code	course_hours
1	General Biology	BIO1101	3
2	General Chemistry (1)	CH1101	3
3	General Chemistry (2)	CH1202	3
4	Tutorial	CH1204	3
5	Programming	CS1101	3
6	Computer Systems	CS2101	3
7	Computer Programming	CS2103	3
8	Computer Programming	CS2103	3
9	Computer Programming	CS2103	3
10	File Processing	CS2105	3
11	File Processing	CS2105	3
12	Digital Logic and Algorithms	CS2202	3
13	Data structure and Algorithms	CS2204	3
14	Data Structure and Algorithms	CS2204	3
15	Data Structure and Algorithms	CS2204	3
16	Data Basic Systems	CS2206	3
17	Object Oriented Programming	CS2208	3
18	Computer Organization & As...	CS3101	3
19	Design & Analysis of Algorith...	CS3103	3

# Reference

- <https://www.sqlservertutorial.net/sql-server-basics/sql-server-create-database/>
- <https://www.javatpoint.com/sql-server-enable-foreign-key>
- <https://www.youtube.com/watch?v=9pmiana7PUk&list=PL1DUMTEdeA6J6oDLTveTt4Z7E5qEfFluE&index=15>

See  
you  
later