

Course Outline

Installation

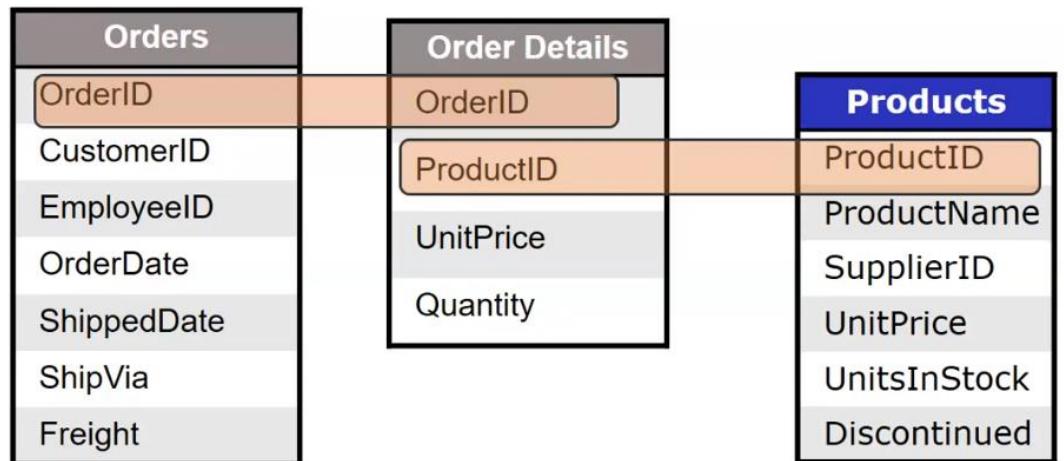
- Writing Queries Using Microsoft SQL Server T-SQL
- Implementing a Microsoft SQL Server Database
- Maintain Microsoft SQL Server Database
- SQL Server Business Intelligence

احنا يعتبر كل اللي خدناه ال ؛ محاضرات اللي فاتوا ف أول نقطة

Fully Relational Database Engines : Oracle و SQL Server ال

Overview of Relational Databases

- SQL Server is a Fully RDBMS
- The tables have one-to-many relationships



SQL Server Versions History

1 st Generation	
SQL Server Version	Features
SQL 6.0/6.5 (1995)	First version designed specifically for Windows NT Replication
SQL Server 4.2 (1992)	Developed for Windows NT 3.1
SQL Server 1.0 (1989)	Developed by Microsoft, Sybase, and Ashton-Tate for OS/2

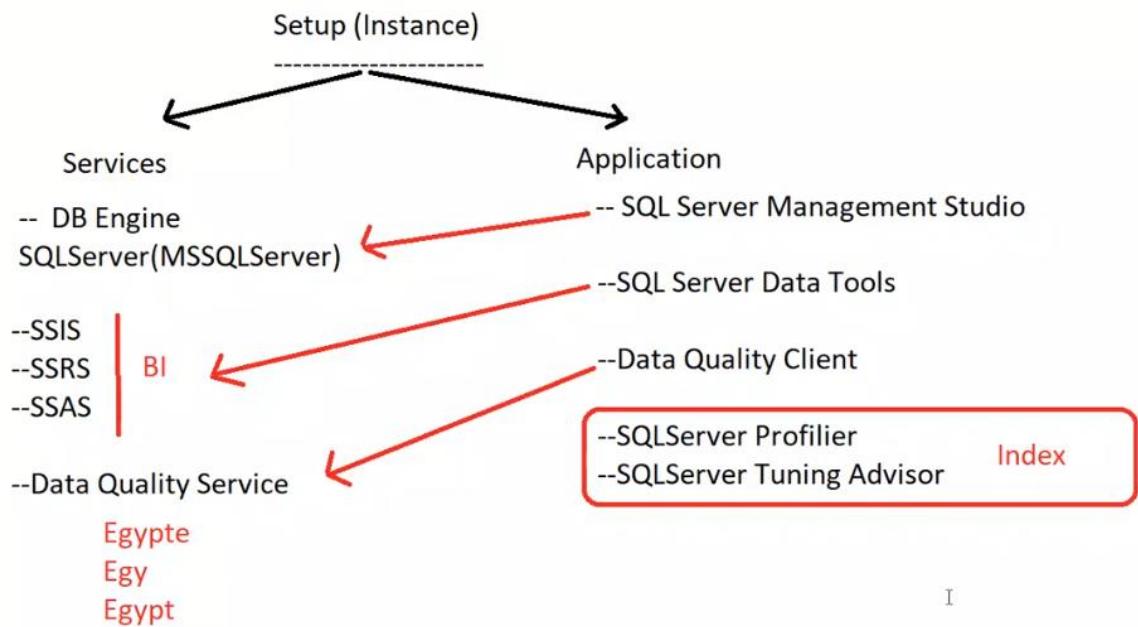
2 nd Generation	
SQL Server Version	Features
SQL2000	Focus on Performance and Scalability XML support Data Mining Reporting Services
SQL Server 7.0 (1999)	Restructure of Relational Server Data Transformation Services Online Analytical Processing

SQL Server Versions History

3 rd Generation	
SQL Server Version	Features
SQL 2014,2017,2019	Security&Performance
SQL 2012	Always On Power View File Table Sequence Data Quality Service
SQL2008/SQL2008 R2	Power Pivot Enhance SharePoint Integration T-SQL (Ranking, Merge, Output) Improve and enhance for BI Tools
SQL2005	High Availability(includes DB Mirroring) Security Enhancements (DB Schema) Integration Services SQLCLR XML and Web services supports

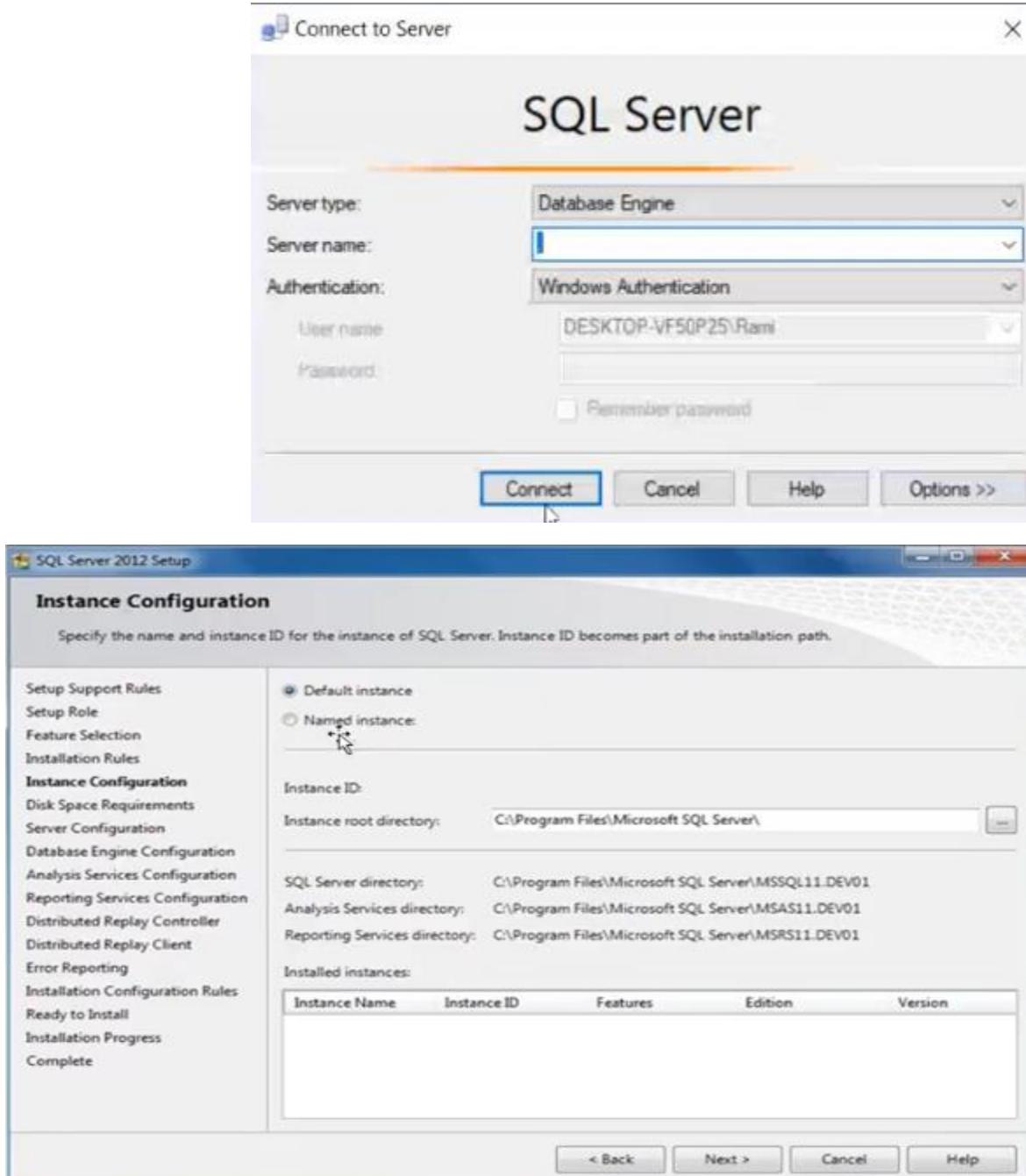
SQL Server Editions

Edition	Description
Enterprise	For large scale, business-critical applications
Standard-Developer	For small/medium, departmental applications
BI Edition	For BI Services
Express	Entry level/learning edition
Azure	For Cloud



لو عايز ا Connect على Database

ايه اللي بيحصل ؟



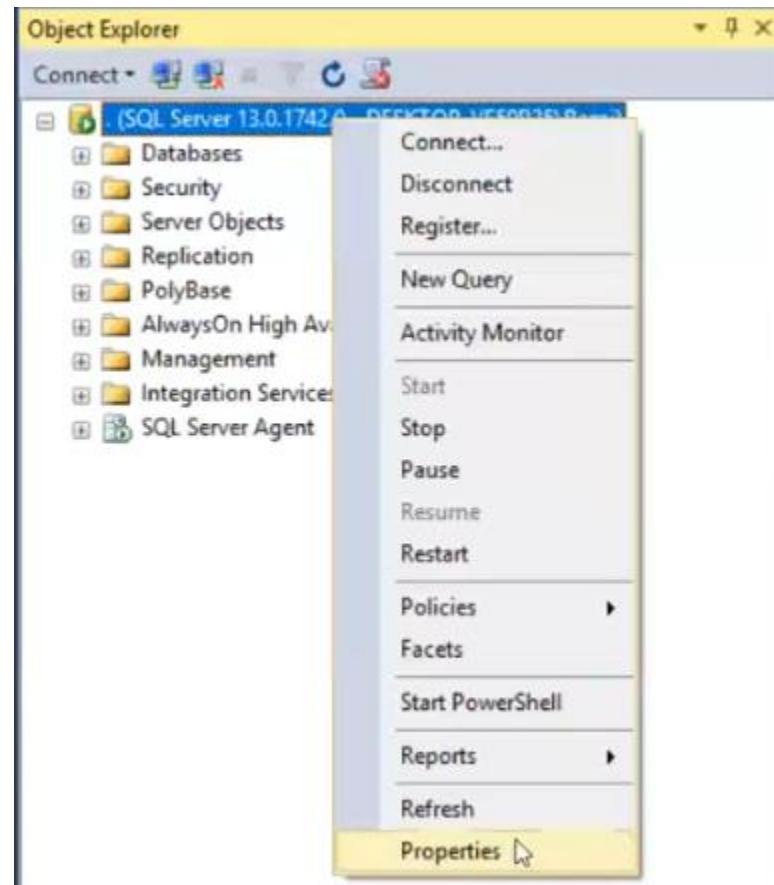
هو هنا اختيار ال **Default** : وهي تلقائي بتاخذ اسم الجهاز

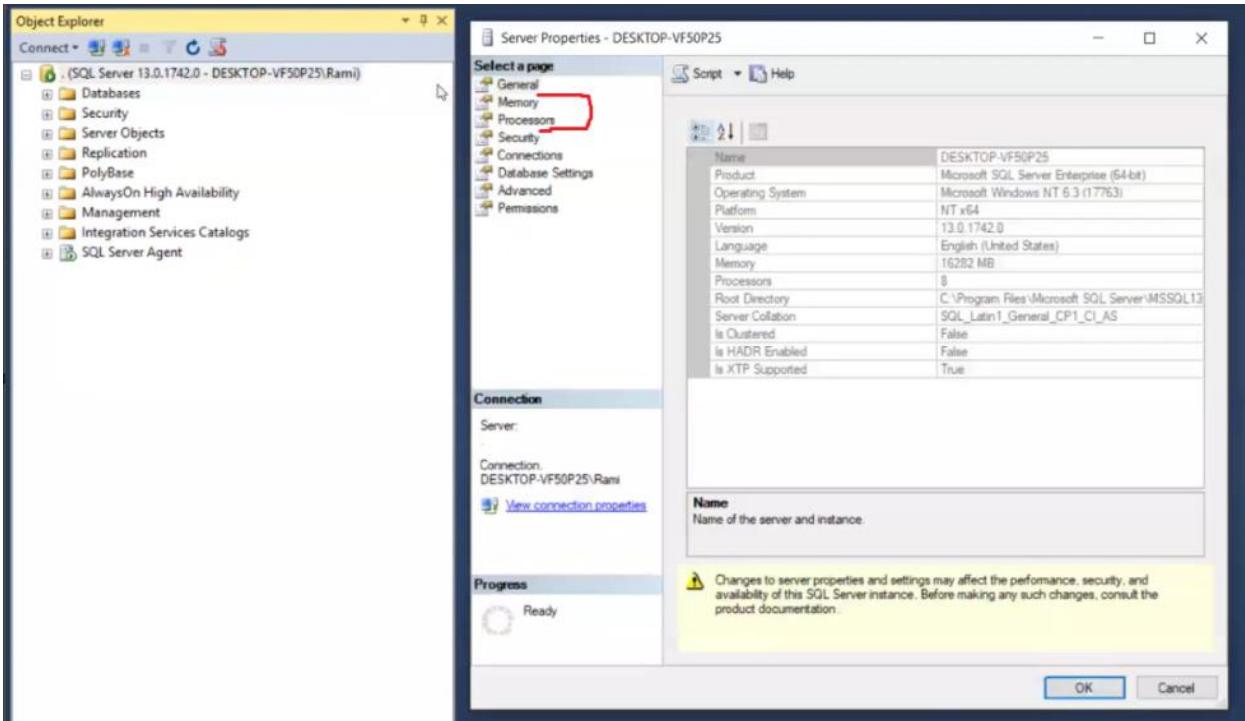
Default Instance (DB Engine)
--Service SQLServer(MSSQLServer)
Connect
.
or local
or Pc-Name
or IP (Current PC)

طيب ممکن انزل اکثر من DB Engines علی نفس الجهاز ؟

اه ممکن

و هيبي لکل DB Engine جزء من ال Processor Memory وال





طيب امتی بنظر نعمل کده ؟

لو مثلا عندي عدد ال **Users** كتير

ف ممكن اقسمهم على ال **2 DB Engines** دول

وادي لكل **DB Engine** Processor و **Memory** منهم جزء من ال

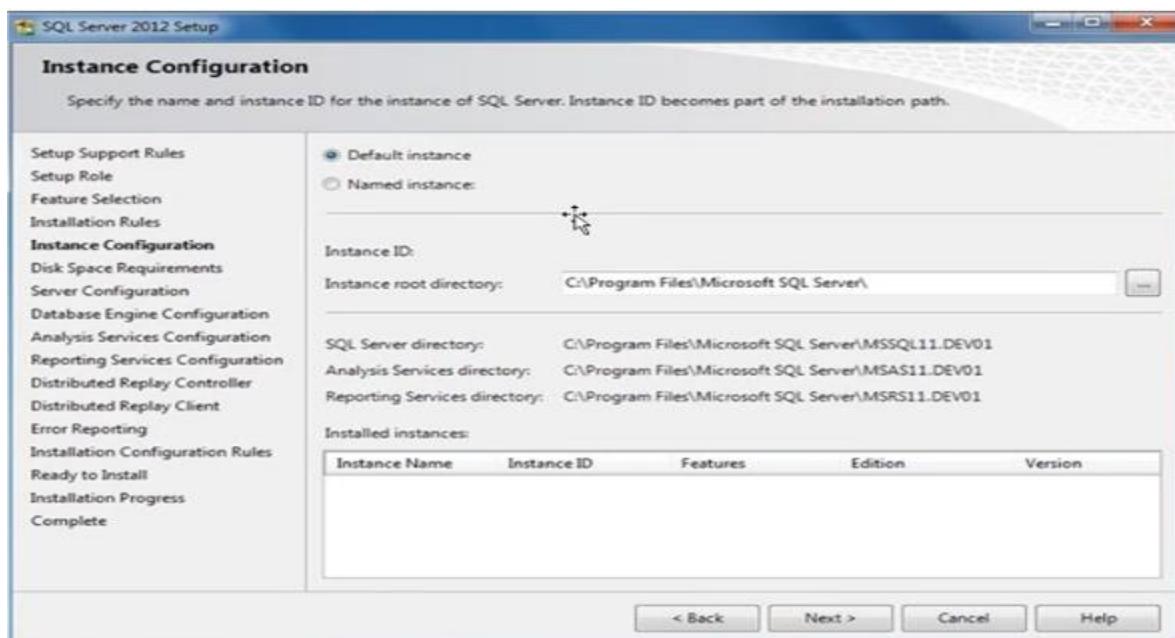
معلومات :-

-- DB Engine
SQLServer(MSSQLServer)

ال **DB Engine** هنا تمثل ليا ال **SQL SERVER (2022)**

طيب لما بسطب DB Engine تاني
اكيد مش هيقدر يسميه بنفس اسم الجهاز
لازم اسم تاني

ف هنا هختار Named Instance



انا اقدر اسطب Default Instance واحد فقط
لكن اقدر اسطب اكتر من Named Instance

Named Instance (DB Engine) Cairo
Connect

.\Cairo
or local\Cairo
or pc-Name\Cairo
or IP\Cairo

وذه الفرق بين الآتيين

Default Instance (DB Engine)

--Service SQLServer(MSSQLServer)

Connect

.

or local

or Pc-Name

or IP (Current PC)

Named Instance (DB Engine) Cairo

Connect

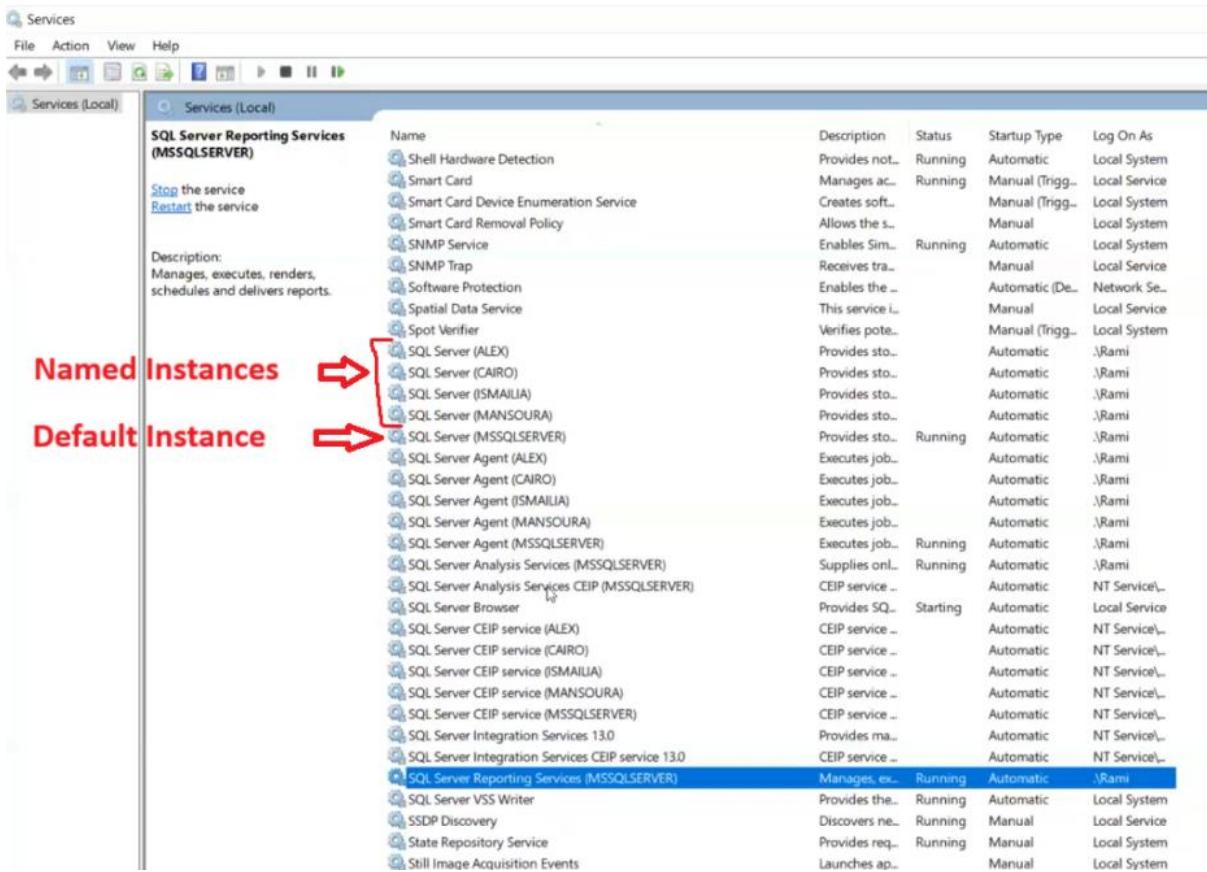
.\\Cairo

or local\\Cairo

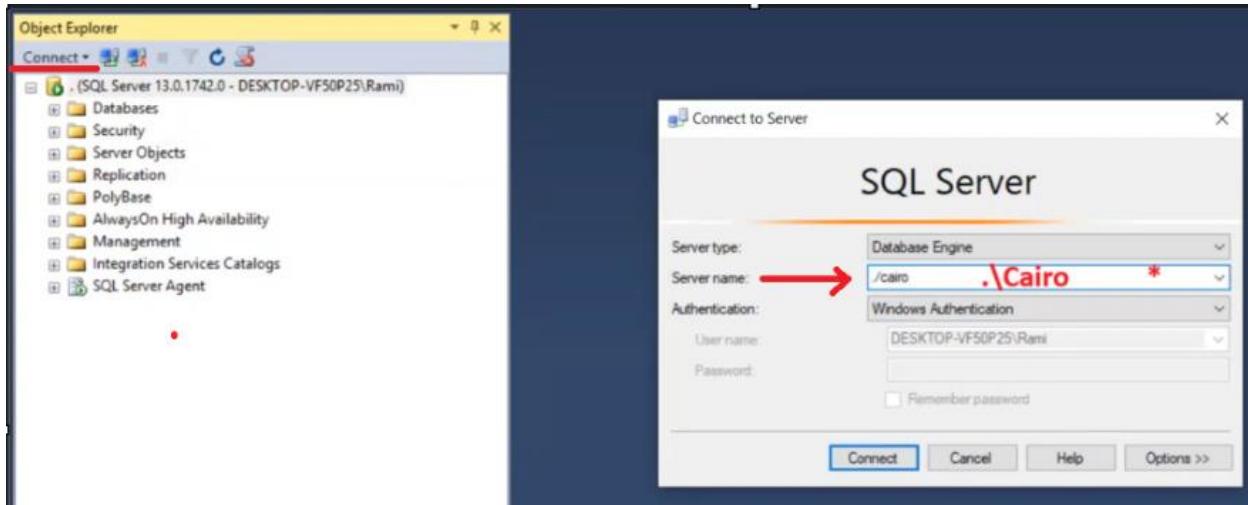
or pc-Name\\Cairo

or IP\\Cairo

يعني انا لو عملت كذا Named Instance ودخلت علي ال PC Services عدي علي ال



ف لو عايز أ Connect على أي واحدة منهم

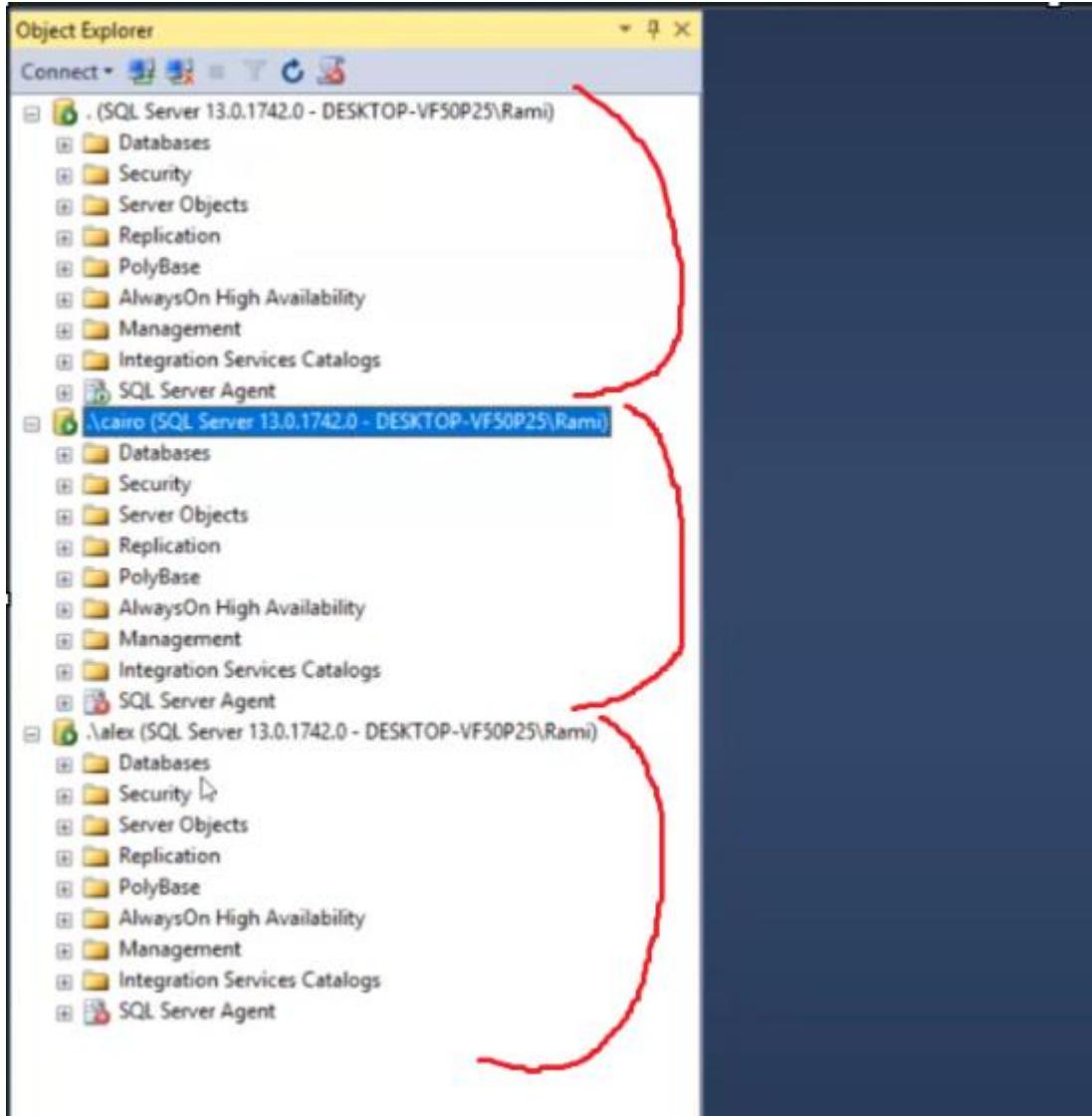


وأقدر اعمل Connect على كذا DB Engine في نفس الوقت

وأقدر اعمل Query لكل واحدة فيهـم

وأقدر اعمل Query يجمعـهم مع بعض (ال 3 Servers المختلفـين دول)

• طبعـا كل DB Engine بـتـاعـته جواـهـ ال Databases



طبعاً أنا مش لازم أعمل **ال الأول Default Instance**
ممكن أعملهم **كلهم Named Instances** و معهمش
عادي جداً

authorizarion (Permisssions)

authentication (UserName & Password)

authorizarion (Permisssions)

authentication (UserName & Password)

----->Windows authentication

Win Admin ===> SQL Admin

----->SQLServer authentication

Dev_ahmed 123

Dev ali 444|

عندی نوعين من ال authentication

Windows authentication - ١

SQL Server authentication - ٢

النوع الأول بيبقي ليانا Windows Admin

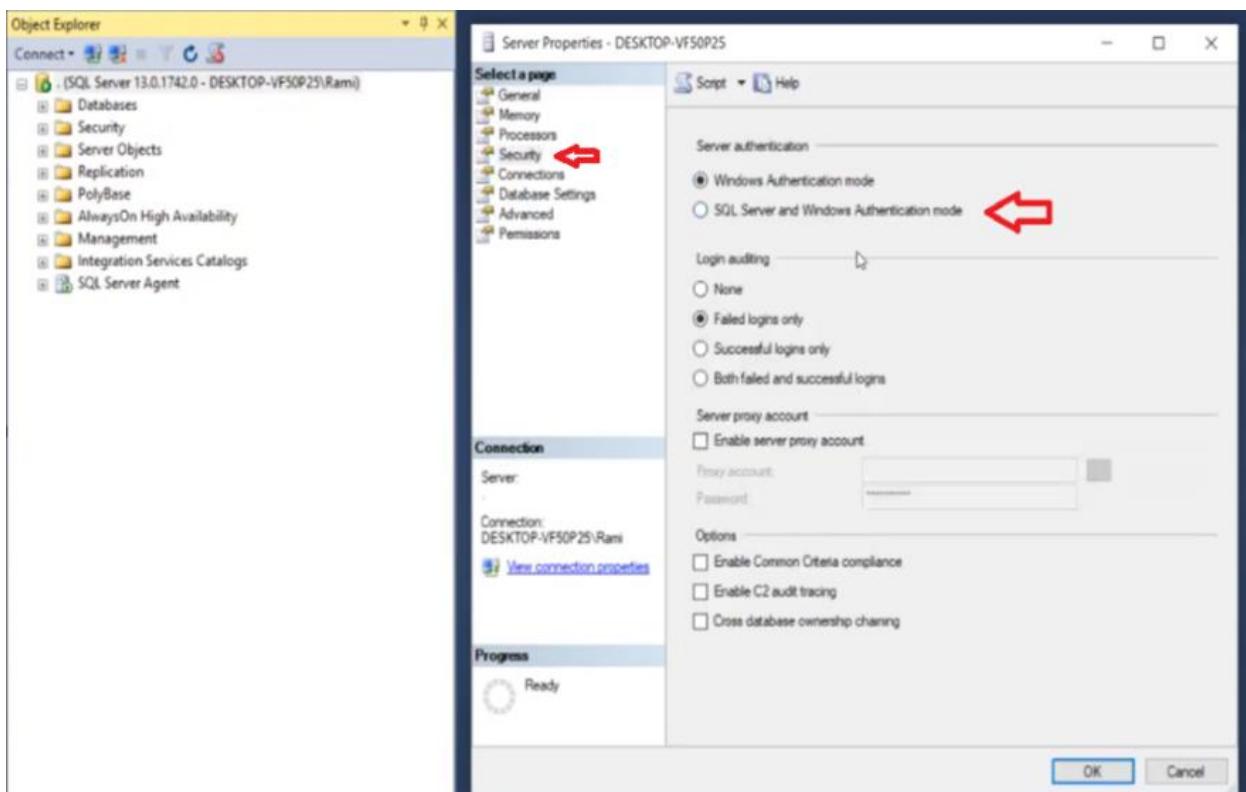
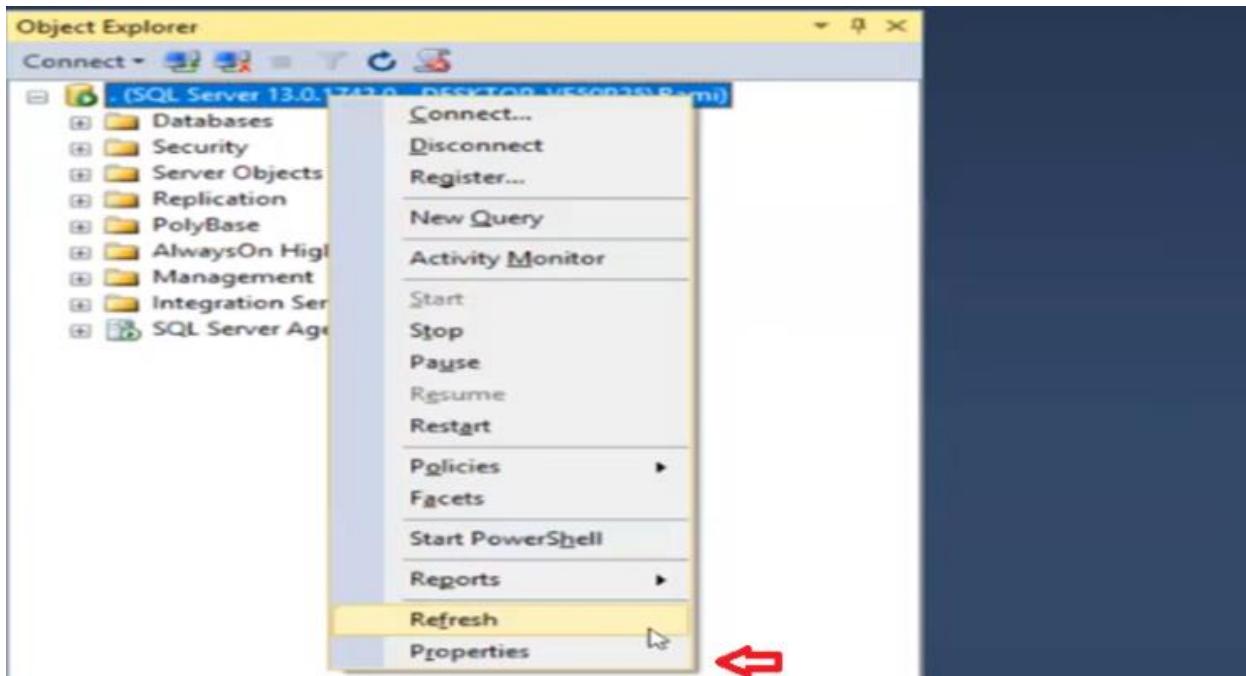
وبالتالي هكون ال SQL Admin

لکن انا طبعاً لو عایز ال Developers Connect فی شرکتی یعملوا ع ال DB
مینفععش ادیهم ال SQL Admin لانه بیکون هو هو ال Windows Admin
(User Name + Password)
وبالتالي یقدروا یعملوا أي حاجة لـ Windows بتاعي

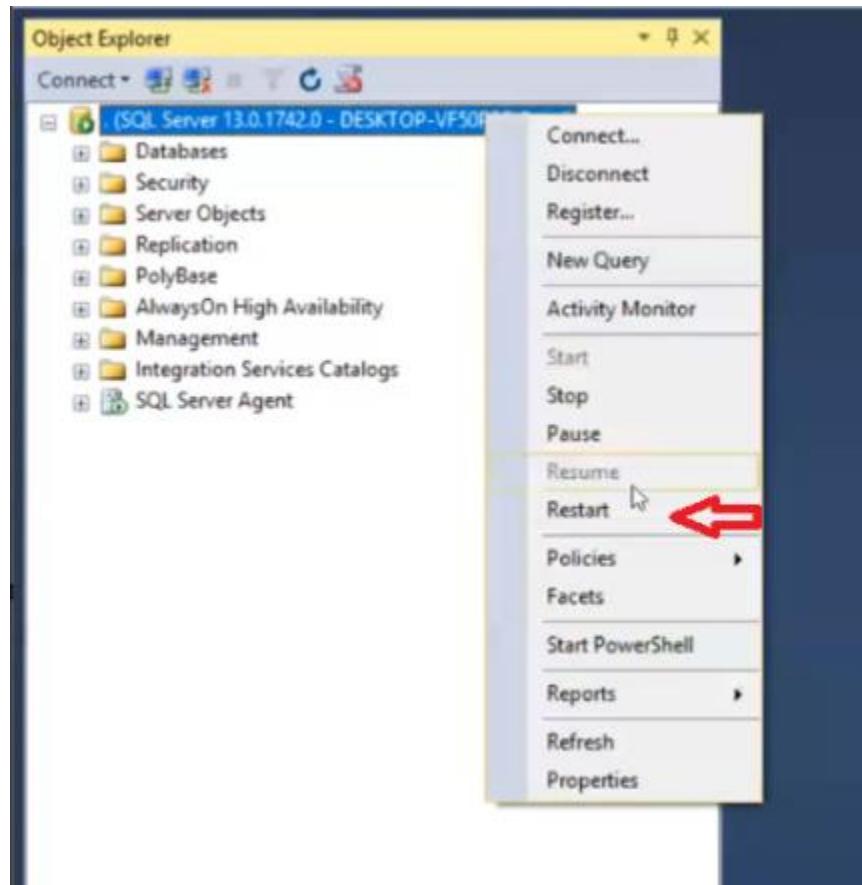
ف انا ممكن استخدم النوع الثاني
بحيث ادي لكل واحد فيهم login (User Name + Password)
ووكلده يبقى هما يقدروا يعملوا Connect ع ال DB بس
بدون اي Access على ال Windows بتاعي
بس عشان اقدر اعمل كده
لازم وانا بعمل Setup لـ Engine من الأول
اعمله **Mixed Mode**

يُعنى أيه Mixed Mode

- يعني يـ Allow الـ Windows authentication Mode الطبيعـي بتـاعـي
- وـيـeـ كـمان الـ SQL Server authentication



بعد کده لازم اعمل Restart لل Server

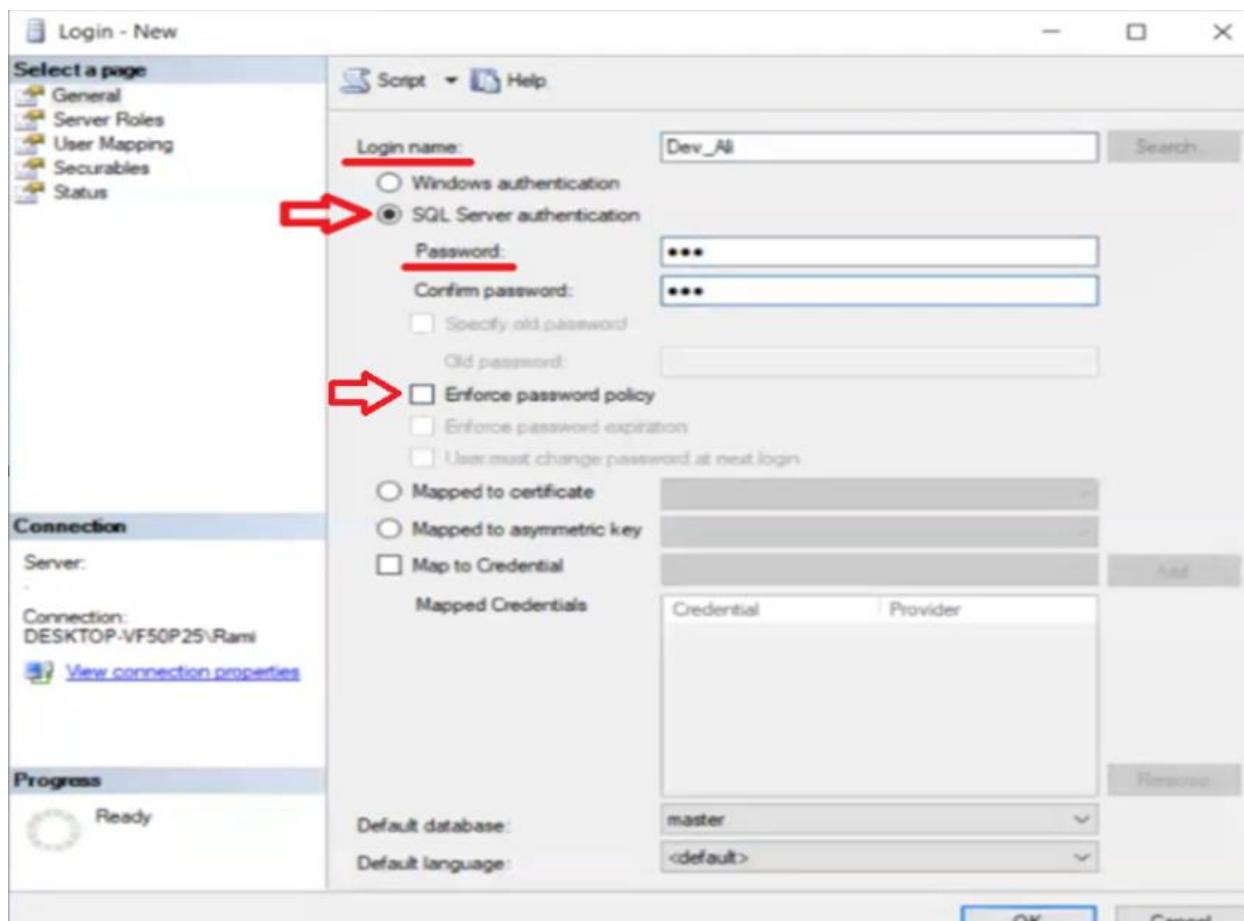
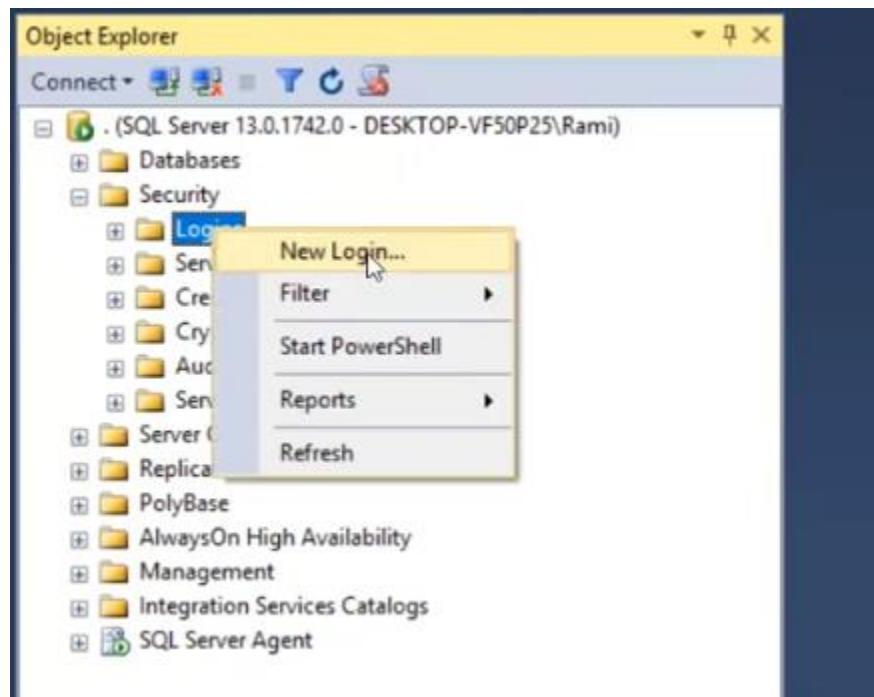


ف انا کده لو عایز ا Allow Remotely Connect حدي علیا

لازم اتکد ان ال authentication Mode مختلط Mixed بتعاعي

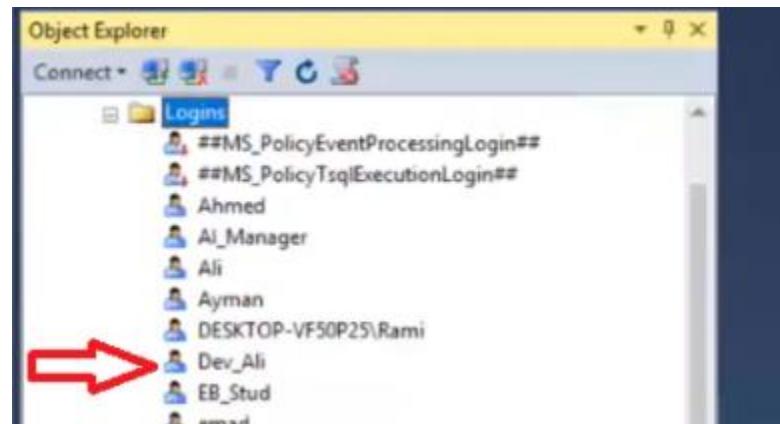
طیب خلاص ظبطت ال Mode مختلط وخلیته Mixed بتعاعي

نعمل بقى ال login لـ Users بتوع شركتى



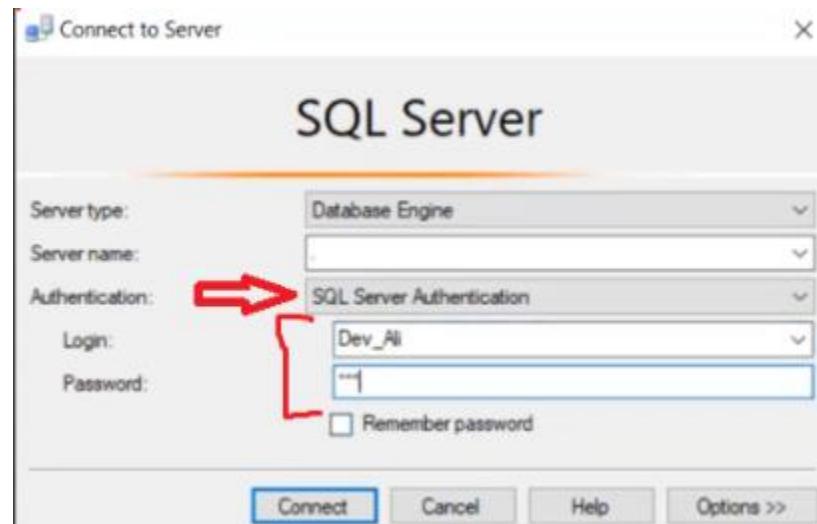
ف لو دخلت اتأكد من جوا ال logins

هلاقي ال User اللي انا لسه عامله



ف لو ال User عايز ي Connect

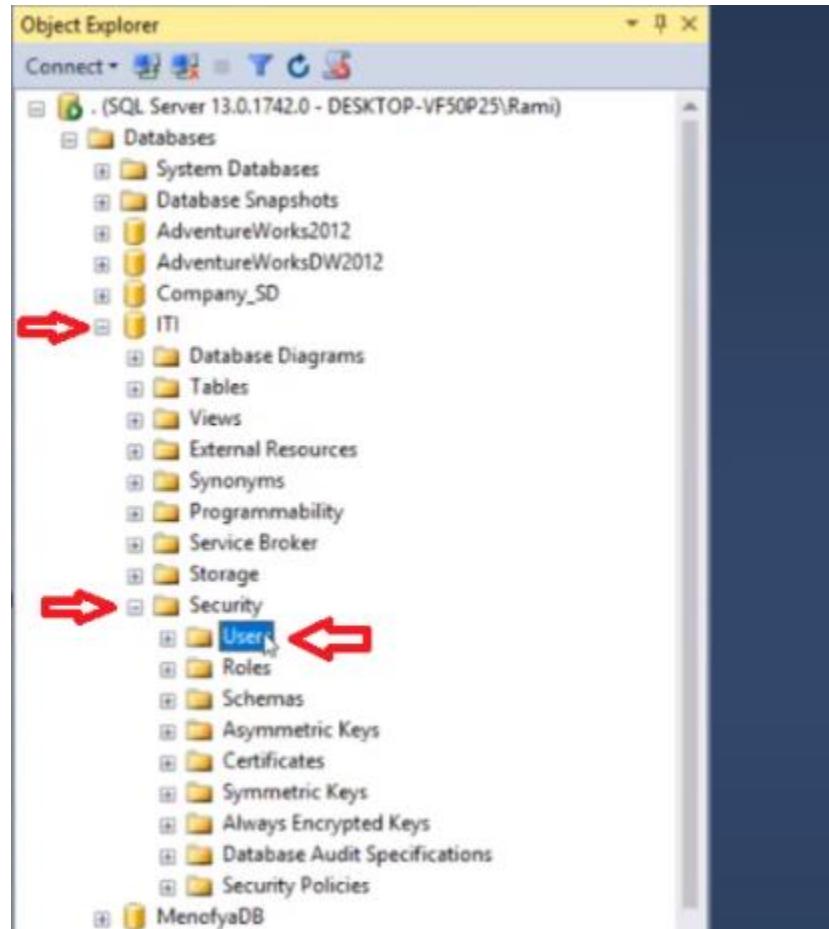
ببيختار SQL Server Authentication



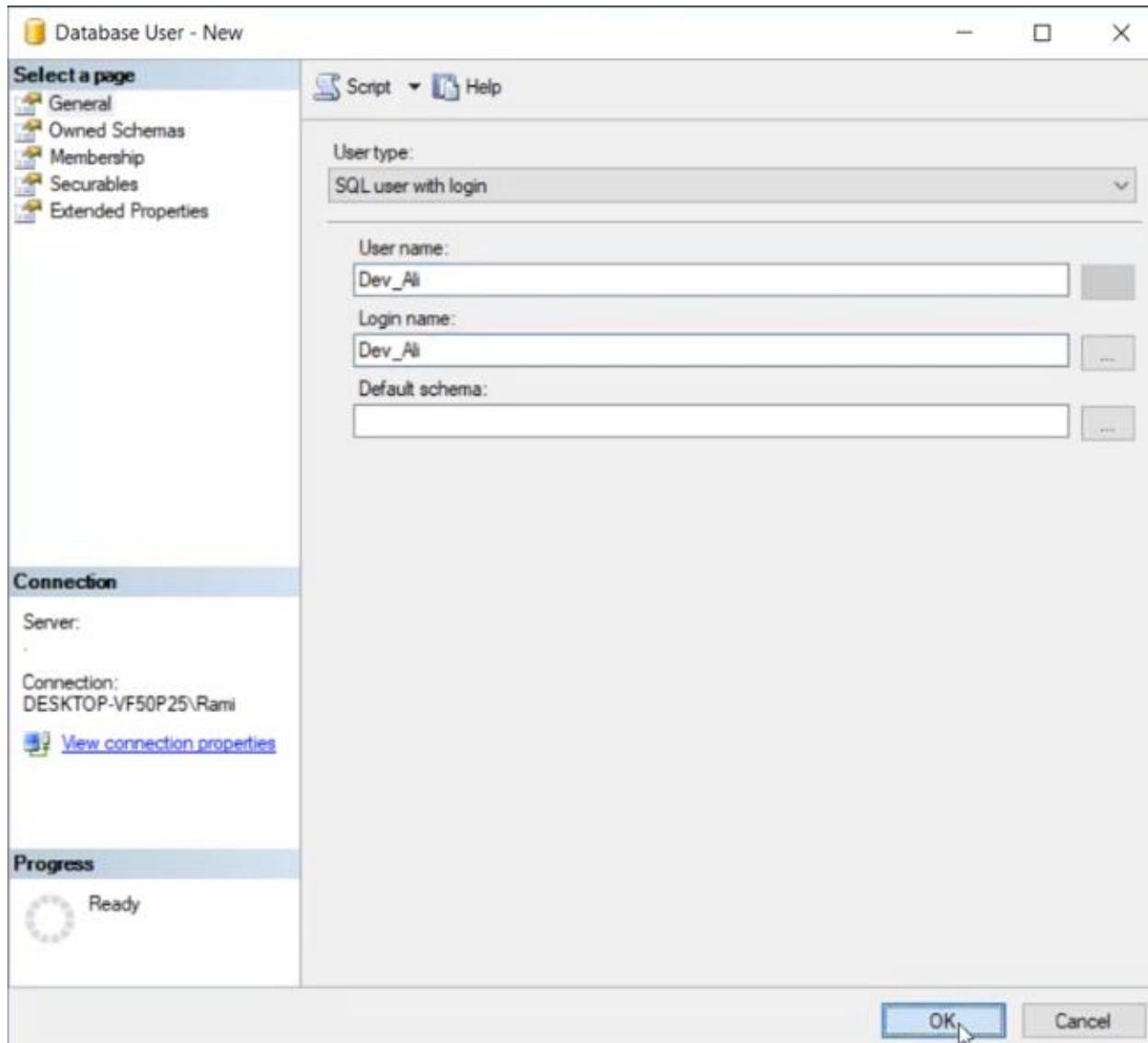
كده ال User عمل Connect على ال Server

لكن للأسف برضو مش هيقدر يدخل ع ال Databases اللي ع ال Server ده

لأن ال User لازم يبقى User في ال DB برضو
ف لازم أنا أك Connect User على ال DB اللي أنا عايز ال User پ
عليها واعمل كده



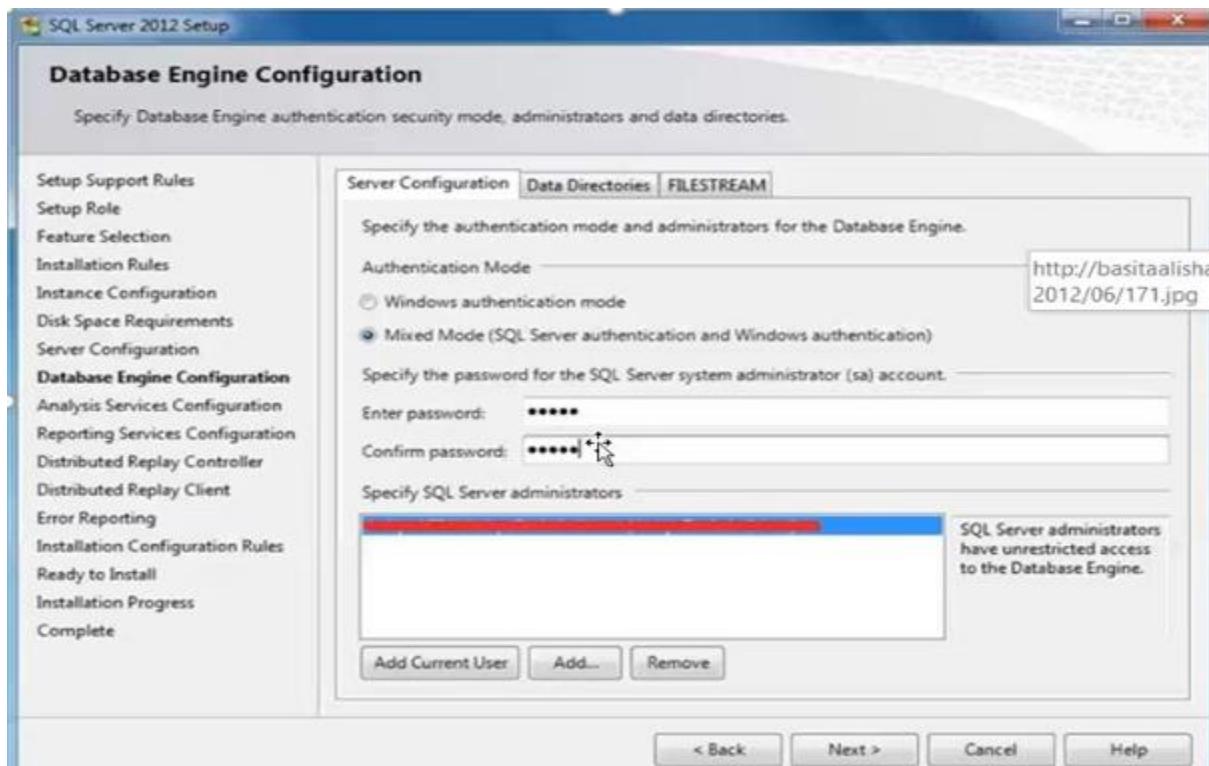
وكل اللي هعمله إني هكتب اسم ال User مرتين



ف كده ال User يقدر يوصل Database على ال Connect
لكن برضو لما يجي يدخل مثلا على ال Tables ممكن ميلاقيهاش كلها
أو يكون في بيانات مش كاملة
طيب ده ليه ؟

لأن ده بقى متعلق بال authorization (Permissions)

هو ليه لما اجي اعمل ال **Mixed Mode** بيطلب مني **Password** ؟



انا لو عندي **Windows authentication**

ف انا عندي كده Admin واحد

ومنعت ال **Remote Connection**

لكن لو **Mixed Mode**

ف انا عملت Allow لـ **Remote Connection**

وبقي عندي 2 Admins

- ال Admin بتاع ال Windows (اللي يستخدمه من الجهاز نفسه أو من ال Service نفسها)

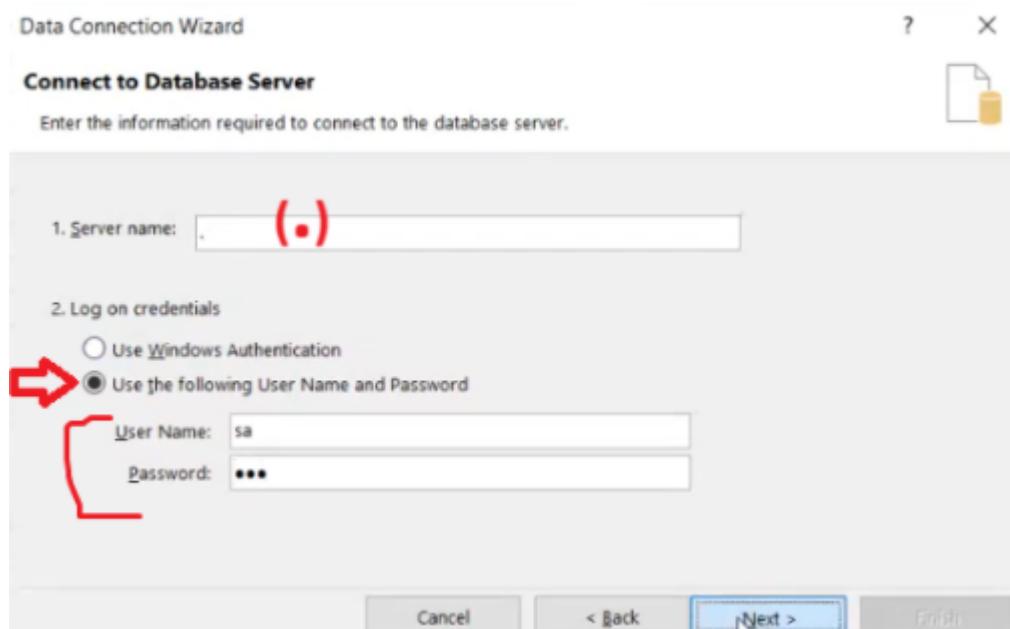
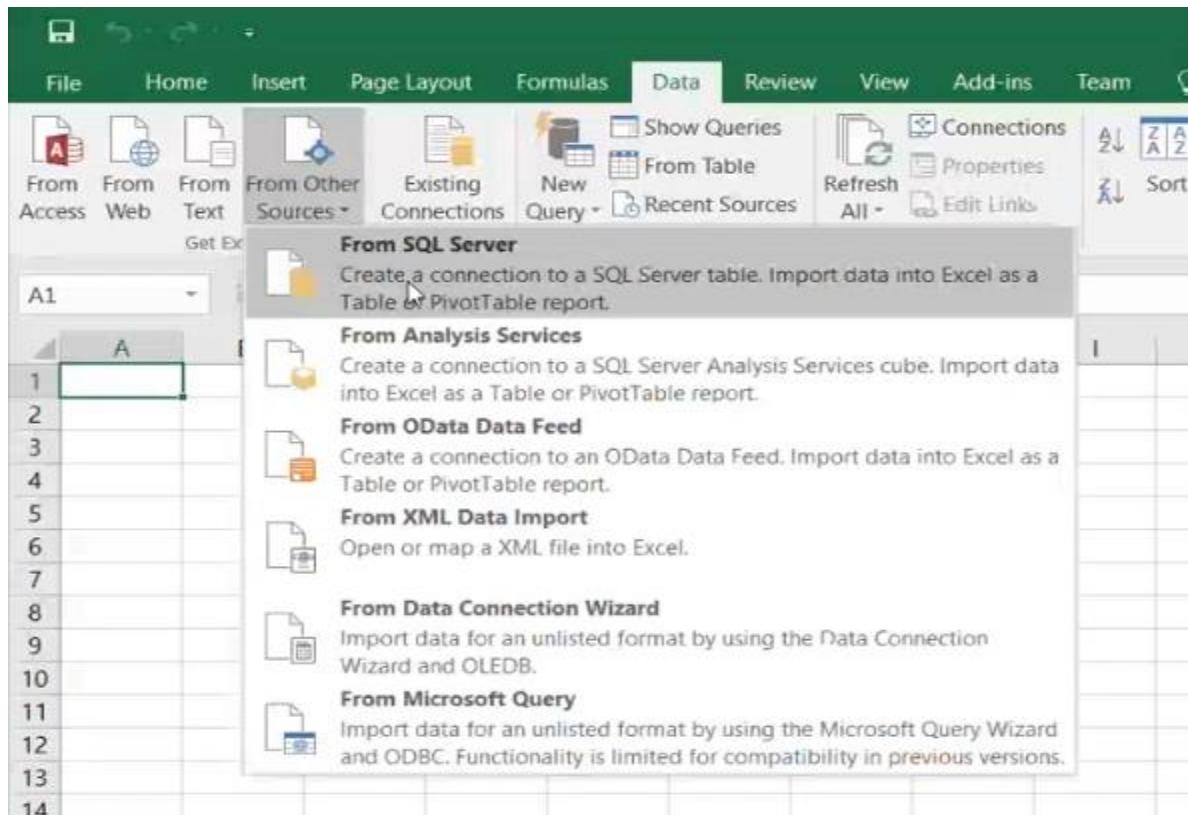
- وبيكون في User تاني بيتعمل اسمه (sa)

بقدر انا ك Admin بيه Connect على ال Server Remotely

انا اهم حاجة عندي هي ال (Engine) Service لكن ال Engine ما هو إلا Tool بن MS SQL Server بيهها على ال يعني أنا أقدر أ Connect من أي Tool تانية ؟
اه أقدر

ف معنی کده اینی ممکن از **Excel** او **CMD** من **Connect** مثل؟

اه ممکن



```
select top(3) *
from Student
```

Results Messages

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Amr	Magdy	Cairo	21	10	1
3	Mona	Saleh	Cairo	22	10	1

```
select top(3) st_fname
from Student
```

Results Messages

st_fname
Ahmed
Amr
Mona

```
select top(3) *  
from Student  
where st_address='alex'
```

200 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	4	Ahmed	Mohamed	Alex	23	10	1
2	5	NULL	Mohamed	Alex	24	10	1
3	8	Mohamed	Fars	Alex	28	20	6

```
select top(3) salary  
from Instructor
```

200 %

	salary
1	1000.00
2	500.00
3	200.00

```
select top(2) salary  
from Instructor  
order by salary desc
```

200 %

	salary
1	100000.00
2	20000.00

معلومات :-

desc : يترتيب القيم من الصغير للكبير

Order by : لازم نستخدمها مع With Ties

: بتجيب ال Tail بتابع اخر قيمة

يعني لو عندي كذا قيمة ل Record واحد بتجيبه معايا

لكن هي ملهاش علاقة بالتكرار اللي فوق

ليها باللي ف الاخر بس

The screenshot shows a SQL query window with the following code:

```
select top(5) with ties *
from Student
order by st_age
```

The results window below shows the output:

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Said	NULL	NULL	NULL	40	12
2	Ahmed	Hassan	Cairo	20	10	NULL
3	Amr	Magdy	Cairo	21	10	1
4	Noha	Omar	Cairo	21	40	NULL
5	Mona	Saleh	Cairo	22	10	1

دي عاديّة مفيهاش أي حاجة ↗

```

select top(4) with ties *
from Student
order by st_age

```

200 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	13	Said	NULL	NULL	NULL	40	12
2	1	Ahmed	Hassan	Cairo	20	10	NULL
3	2	Amr	Magdy	Cairo	21	10	1
4	12	Noha	Omar	Cairo	21	40	NULL

دي برضو عاديه مفيهاش حاجة

```

select top(3) with ties *
from Student
order by st_age

```

200 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	13	Said	NULL	NULL	NULL	40	12
2	1	Ahmed	Hassan	Cairo	20	10	NULL
3	2	Amr	Magdy	Cairo	21	10	1
4	12	Noha	Omar	Cairo	21	40	NULL

لكن هنا جايب ٤ قيم وانا قايله ٣ , طيب ليه ؟

لأن أنا عامل Order by بالـ

ف أول ٣ أعمار بالنسبالي Null , 20 , 21

بس عندي ٢ سنة , فجابلي القيمتين

```

select top(7) with ties *
from Student
order by st_age

```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	13	Said	NULL	NULL	NULL	40
2	1	Ahmed	Hassan	Cairo	20	10
3	2	Amr	Magdy	Cairo	21	10
4	12	Noha	Omar	Cairo	21	40
5	3	Mona	Saleh	Cairo	22	10
6	4	Ahmed	Mohamed	Alex	23	10
7	5	NULL	Mohamed	Alex	24	10
8	9	Saly	Ahmed	Mansoura	24	30
9	10	NULL	NULL	Alex	24	30
10	11	Marwa	Ahmed	Cairo	24	30

برضو هنا جايب ١٠ قيم لأن عندي ٤ عندهم ٢٤ سنة

لكن خد بالك برضو إن **With Ties** ملهاش علاقة بالتكرار اللي فوق (٢١)

select newid() --GUID

ایه ال Newid() دی ؟

دی Global Universal ID بتجیبلي حاجة اسمها Built-in Fun.

وال Random + Unique ده بیکون Global Universal ID

طبعا كل ID بیکون ممیز و Unique بس علي مستوى ال Table بتاعه

لكن ال Server علي مستوى ال Unique بیکون Newid()

```
select *,newid()
from Student
```

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	(No column name)
1	1	Ahmed	Hassan	Cairo	20	10	NULL	9CC6BF7C-EFB-4621-814E-1F7120D6B8AD
2	2	Amr	Magdy	Cairo	21	10	1	89963C96-736E-4750-AA65-50F321067A57
3	3	Mona	Saleh	Cairo	22	10	1	2A110C68-26F7-47F4-AFC3-379880E086AC
4	4	Ahmed	Mohamed	Alex	23	10	1	A4F16672-31C9-4D17-92C8-0868837D4346
5	5	NULL	Mohamed	Alex	24	10	1	9036030B-E6F6-4470-9D50-83E4A5C1E29C
6	6	Heba	Farouk	Mansoura	25	20	NULL	FBB167EE-8080-4854-BD5D-F46C7CD86917
7	7	Ali	Hussien	Cairo	25	20	6	0F4E2B90-6B9F-41A9-8F4D-F42F088864C6
8	8	Mohamed	Fars	Alex	28	20	6	6BFBBC3C-22E1-47F6-9803-4CC6376E4871
9	9	Saly	Ahmed	Mansoura	24	30	NULL	A45D14E4-68B2-46C3-9A9E-894D06FE1F43
10	10	NULL	NULL	Alex	24	30	9	52720ADB-B76B-4DE0-82F5-CDD98AB06093
11	11	Marwa	Ahmed	Cairo	24	30	9	030C8BA2-75C0-4119-A210-CF70AAD84E76
12	12	Noha	Omar	Cairo	21	40	NULL	29EBC096-F26E-4E53-8022-DB801C2D7A26
13	13	Said	NULL	NULL	NULL	40	12	6AAF386B-BD69-4398-A716-4EC2609DC427

ف هنا هو هيرجعي كل بيانات Table ال

+ ID لكل قيمة

وال ID ده بیکون Random + Unique

واکید بیکون مش مرتب لأنه Random

لكن ال ID ده بیکون في ال Memory مش ف ال Table

ف انا كل مرة اعمل فيها Run لـ Query يجيءلي IDs جديدة

طيب لو عملت كده ؟

The screenshot shows a SQL query window with the following code:

```
select *  
from Student  
order by newid()
```

The results grid shows 13 rows of student data. A blue checkmark is on the left of the first row, and a blue arrow points from the text "طيب لو عملت كده ؟" to the ORDER BY clause in the query.

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	10	NULL	Alex	24	30	9
2	7	Ali	Hussien	Cairo	25	20
3	14	NULL	Saleh	Tanta	30	NULL
4	1	Ahmed	Hassan	Cairo	20	10
5	13	Said	NULL	NULL	40	12
6	3	Mona	Saleh	Cairo	22	10
7	5	NULL	Mohamed	Alex	24	10
8	2	Amr	Magdy	Cairo	21	10
9	12	Noha	Omar	Cairo	21	40
10	11	Marwa	Ahmed	Cairo	24	30
11	8	Mohamed	Fars	Alex	28	20
12	6	Heba	Farouk	Mansoura	25	20
13	4	Ahmed	Mohamed	Alex	23	10

اكيd هيرجعي ال Table مترتب ؟

طبعاً لأن ال IDs اللي احنا مرتبين بيها Random

وطبعاً ف كل مرة اعمل فيها Run لـ Query بيجي لي IDs جديدة

وهكذا هنا برضو



```
select top(3)*  
from Student  
order by newid()
```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Heba	Farouk	Mansoura	25	20	NULL
3	Ali	Hussien	Cairo	25	20	6

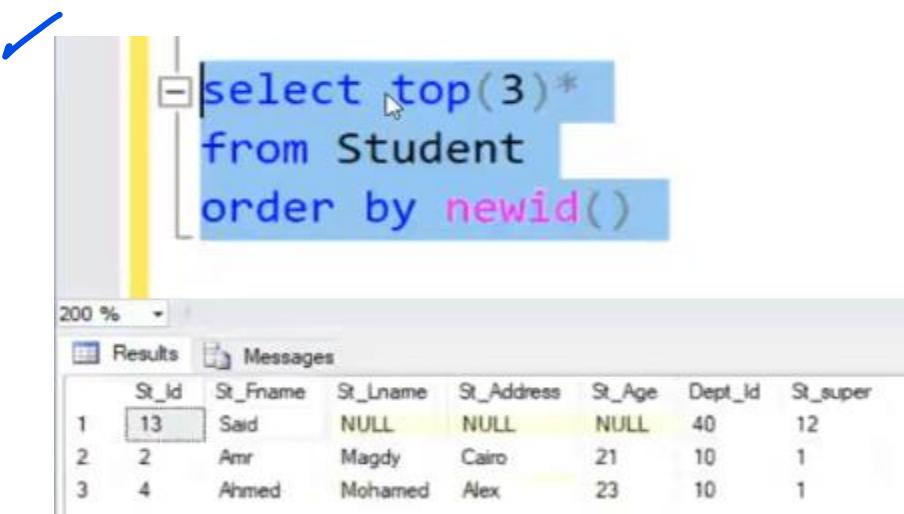
وطبعاً كل مرة اعمل فيها Run لـ Query بيجيلـي IDs جديدة



```
select top(3)*  
from Student  
order by newid()
```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Mona	Saleh	Cairo	22	10	1
2	Saly	Ahmed	Mansoura	24	30	NULL
3	Ahmed	Mohamed	Alex	23	10	1

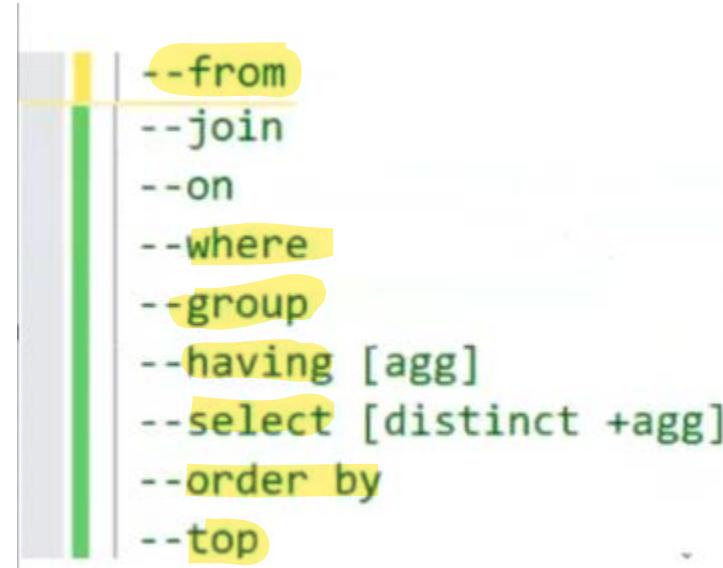


```
select top(3)*  
from Student  
order by newid()
```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Said	NULL	NULL	NULL	40	12
2	Amr	Magdy	Cairo	21	10	1
3	Ahmed	Mohamed	Alex	23	10	1

-----execution order-----



ف انا لو جبت عملت كده

```
2 select st_fname+' '+st_lname as fullname  
1 from Student  
3 order by fullname  
  
3 select st_fname+' '+st_lname as fullname  
1 from Student  
2 where fullname='ahmed ali'
```

A red checkmark is next to the first query, and a red X is next to the second query.

مین من ال 2 Queries دول ہیشتغل ؟

الأولي

1- From

2- Select

3- Order by

لأنها هتنفذ كده

1- From 2- Where 3- Select لكن الثانية هتنفذ كده

ف هو المفروض بيعمل Where لـ Full Name

وهو اصلاً لسه موصلش لـ Select اللي انا عملت فيها Virtualization

لـ Full Name

طيب ايه حل ال Query الثانية دي ؟

في حلين

الأول : إنني اتعامل مع ال Columns الأساسية

```
select st_fname+' '+st_lname as fullname  
from Student  
where st_fname+' '+st_lname='ahmed ali'
```

الثاني : إنني اعمل Sub-Query

```
select *  
from (select st_fname+' '+st_lname as fullname  
      from Student) as Newtable  
where fullname='ahmed ali'
```

ف انا كده عملت ال From لـ Full Name ف ال Virtualization

ف لما عملت بعدها ال Where كانت فاهمه ايه هو ال Full Name

معلومة :-

لازم أي Alias Name ف ال Sub-Query نعملها From

ایه هی ال ؟ DB Objects

--DB Objects [table view function SP Rule]

ال DB Object ده لیه Default Path عشان اوصله

ایه هو ال Default Path ده ؟

-- [ServerName]. [DBName]. [schemaName]. [objectName]

زی کده

✓
select *
from [DESKTOP-VF50P25].iti.dbo.Student

select *
from Student
| ==
select *
from [DESKTOP-VF50P25].iti.dbo.Student

طيب ينفع وانا عامل iti DB لل Use وبشتغل عليها اعمل Query علي DB
تانية؟

اه ينفع

The screenshot shows a SQL query window with the following code:

```
select *  
from Company_SD.dbo.Project
```

Below the query window is a results grid titled "Results". The grid displays the following data:

	Pname	Pnumber	Plocation	City	Dnum
1	AL Solmaniah	100	Cairo_Alex Road	Alex	10
2	Al Rabwah	200	8th of October City	Giza	10
3	Al Rawdah	300	Zaied City	Giza	10
4	Al Rowad	400	Cairo_Faiyom Road	Giza	20
5	Al Rehab	500	Nasr City	Cairo	30
6	Pitcho american	600	Maady	Cairo	30
7	Ebad El Rahman	700	Ring Road	Cairo	20

لكن طبعا مكنش ينفع اعملها كده

select *
from project

لأن احنا هنا كنا عاملين Use لل iti DB

ده انا کمان ممکن اعمل (join) or (Union)

ل 2 من 2 DBs مختلفة Queries

The screenshot shows a SQL query window in SSMS. The query is:

```
select dname
from Company_SD.dbo.Departments
union all
select dept_name
from Department
```

The results pane shows the output:

dname
DP1
DP2
DP3
SD
EL
Java
MM
Unix
NC
EB

ده انا کمان ممکن اعمل (join) or (Union)

ل 2 من 2 Servers مختلفة من 2 DBs Queries

--DDL

طيب ممكن أ Create Table بدلالة Table تاني ؟

اه ممكن

A screenshot of the SQL Server Management Studio interface. In the center, there is a code editor window containing the following SQL query:

```
select * into table2  
from Student
```

The word "select" is highlighted in yellow. Below the code editor, a message bar shows the result of the query: "(14 row(s) affected)".

كده انا عملت Table اسمه Table2 نسخة طبق الأصل من Student Table

طيب ممكن أ Create Table بدلالة Table تاني في DB تانية ؟

اه ممكن

A screenshot of the SQL Server Management Studio interface. In the center, there is a code editor window containing the following SQL query:

```
select * into company_sd.dbo.student  
from Student
```

The word "select" is highlighted in blue. Below the code editor, a message bar shows the result of the query: "(14 row(s) affected)".

طيب ممكن ا Create Table تاني في Server بدلالة Table تاني ؟

اه ممكن

طبعا مش لازم اخذ ال Table كله

ممكن اخذ **Columns** معينة فقط

```
select st_id,st_fname into tab3  
from Student  
where st_address='alex'
```

طيب لو انا عملت Query وكتبت فال Where شرط مش بيتحقق اصلا

- يبقى طبيعي مش هيرجعي أي بيانات

زي كده مثلا

```
select *  
from Student  
where st_age<-1000
```

أو كده

```
select * I  
from Student  
where 1=2|
```

طيب لو عملت نفس الكلام بس Select into

- هي عملني Table فاضي بنفس الـ Structure الـ Table اللي باخد منه البيانات

زي كده

```
select * into tab4  
from Student  
where 1=2
```

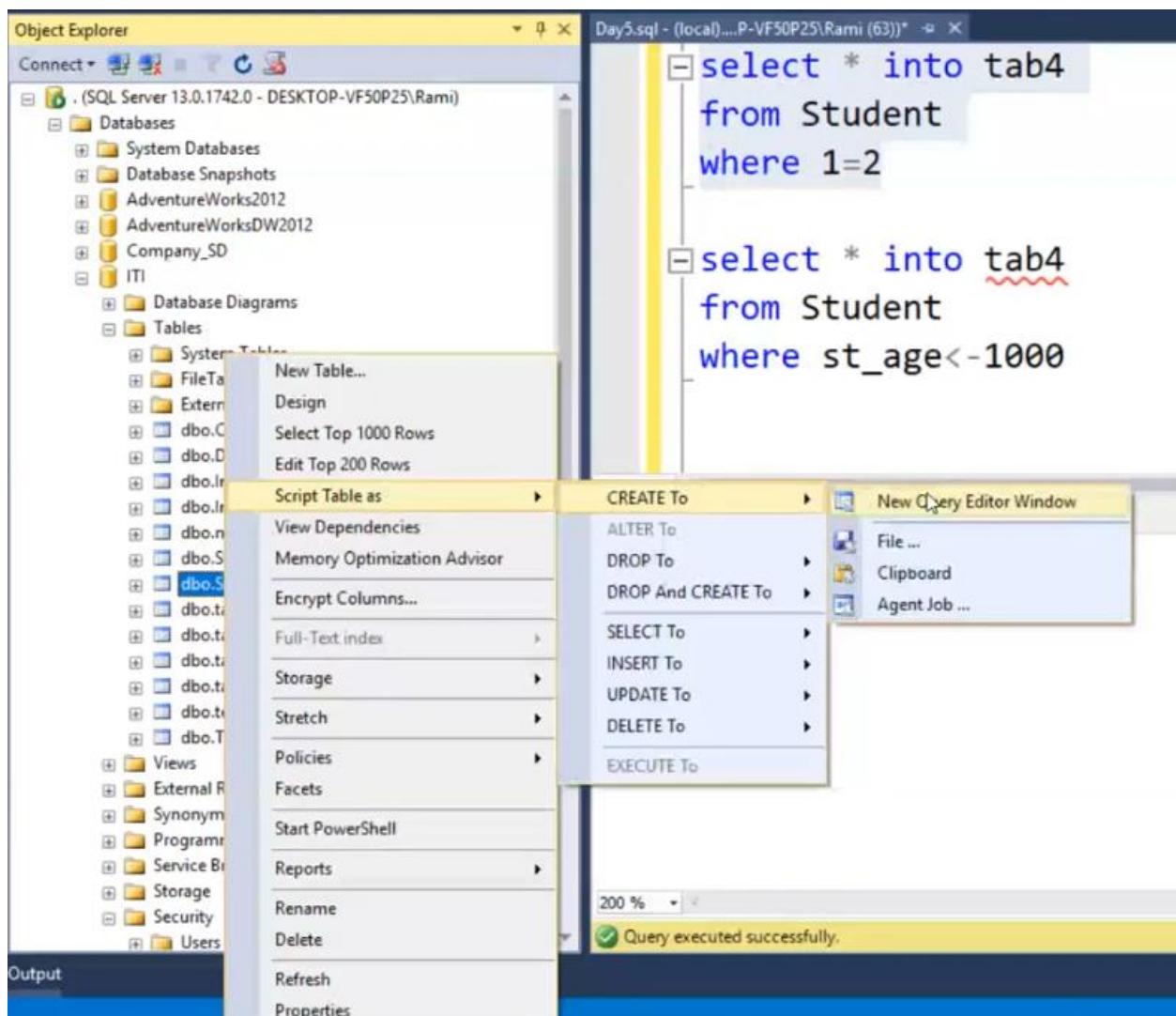
	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL

يبقى انا لو انا عايز اعمل Table فاضي بنفس الـ Structure بتاع Table تاني

- اعمل Select into عادي

- بس احط شرط مش بيتحقق ف ال Where

ممكن برضو اجيب ال Structure بطريقة تانية
اني اجيب ال Structure بتاع ال Table الل عايزة اعمل Script (Code) زيه



طيب نو انا عندي 2 Tables وعايز انقل ال Data من Table الثاني

عن طريق حاجة اسمها

--insert based in select

زي كده

```
insert into tab3  
select st_id,st_fname from student
```

بس لازم ال Structures بتاع ال 2 يبقى زي بعض

هل ممكن استخدم Having من غير Group by

اه لكن في حالة واحدة

إن انا اكون بعمل Select لـ Aggregate Fun. بس من غير أي Columns تانية ف ال Select

زي كده

```
select Sum(salary)  
from Instructor  
having count(ins_id)>100
```

لكن لو في الطبيعي بتاعنا زي كده

```
select ins_name  
from Instructor  
having count(ins_id)<100
```

لا اكيد لازم هنا استخدم Select Having مع Group by لأن اللي ف مش Aggregate Fun.

ولأن أنا بعمل Having على Condition ف ال Aggregate Fun

Ranking Functions

Ranking Functions

Row_Number()
Dense_rank()
NTiles(Group)
Rank()

eid	ename	esal	did	RN
15	ahmed	10000	10	1
14	ali	10000	10	2
12	eman	9000	10	3
1	nada	9000	10	4
2	reem	9000	10	5
3	khalid	8000	10	6
7	mohamed	7000	20	7
8	sayed	7000	20	8
6	hassan	6000	20	9
5	omar	6000	20	10
9	sally	5000	30	11
10	shimaa	4000	30	12
11	hana	4000	30	13
12	lama	3000	30	14

Select *, Row_Number() over(order by esal desc) as RN

I

From employee

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	7000	20	7	4
8	sayed	7000	20	8	4
6	hassan	6000	20	9	5
5	omar	6000	20	10	5
9	sally	5000	30	11	6
10	shimaa	4000	30	12	7
11	hana	4000	30	13	7
12	lama	3000	30	14	8

Select *, Row_Number() over(order by esal desc) as RN

, Dense_rank() over(order by esal desc) as DR

From employee

exe

3

Select *, Row_Number() over(order by esal desc) as RN
, Dense_rank() over(order by esal desc) as DR

1

From employee

2

where RN=1 Not read

طبعاً لو عملت Run لـ Query دي مش هـت Run

واكيد احنا عارفين ليه من الجزئية اللي فوق علطول

ف لازم نعمل كده

Select *
From (
Select *, Row_Number() over(order by esal desc) as RN
, Dense_rank() over(order by esal desc) as DR

From employee) as Newtable

where RN=1



eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	7000	20	7	4
8	sayed	7000	20	8	4
6	hassan	6000	20	9	5
5	omar	6000	20	10	5
9	sally	5000	30	11	6
10	shimaa	4000	30	12	7
11	hana	4000	30	13	7
12	lama	3000	30	14	8

```

Select *
From (
    Select *, Row_Number() over(order by esal desc) as RN
        , Dense_rank() over(order by esal desc) as DR
    From employee ) as Newtable
where RN=3

```

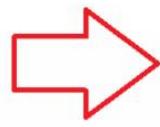
eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	7000	20	7	4
8	sayed	7000	20	8	4
6	hassan	6000	20	9	5
5	omar	6000	20	10	5
9	sally	5000	30	11	6
10	shimaa	4000	30	12	7
11	hana	4000	30	13	7
12	lama	3000	30	14	8

```

Select *
From (
    Select *, Row_Number() over(order by esal desc) as RN
        , Dense_rank() over(order by esal desc) as DR
    From employee ) as Newtable
where DR=1

```

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	7000	20	7	4
8	sayed	7000	20	8	4
6	hassan	6000	20	9	5
5	omar	6000	20	10	5
9	sally	5000	30	11	6
10	shimaa	4000	30	12	7
11	hana	4000	30	13	7
12	lama	3000	30	14	8



```
Select *
From (
    Select *, Row_Number() over(order by esal desc) as RN
        , Dense_rank() over(order by esal desc) as DR
    From employee ) as Newtable
where DR<=2
```

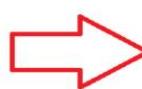
eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	7000	20	7	4
8	sayed	7000	20	8	4
6	hassan	6000	20	9	5
5	omar	6000	20	10	5
9	sally	5000	30	11	6
10	shimaa	4000	30	12	7
11	hana	4000	30	13	7
12	lama	3000	30	14	8

```
Select *
From (
    Select *, Row_Number() over(order by esal desc) as RN
        , Dense_rank() over(order by esal desc) as DR
        , NTile(3) over(order by esal desc) as G
    From employee ) as Newtable
```

eid	ename	esal	did	RN	DR	G
15	ahmed	10000	10	1	1	1
14	ali	10000	10	2	1	1
12	eman	9000	10	3	2	1
1	nada	9000	10	4	2	1
2	reem	9000	10	5	2	1
3	khalid	8000	10	6	3	2
7	mohamed	7000	20	7	4	2
8	sayed	7000	20	8	4	2
6	hassan	6000	20	9	5	2
5	omar	6000	20	10	5	2
9	sally	5000	30	11	6	3
10	shimaa	4000	30	12	7	3
11	hana	4000	30	13	7	3
12	lama	3000	30	14	8	3



هذا هو هي عمل Order by Salary ويفصلهم لـ 3 Groups



eid	ename	esal	did	RN	DR	G
15	ahmed	10000	10	1	1	1
14	ali	10000	10	2	1	1
12	eman	9000	10	3	2	1
1	nada	9000	10	4	2	1
2	reem	9000	10	5	2	1
3	khalid	8000	10	6	3	2
7	mohamed	7000	20	7	4	2
8	sayed	7000	20	8	4	2
6	hassan	6000	20	9	5	2
5	omar	6000	20	10	5	2
9	sally	5000	30	11	6	3
10	shimaa	4000	30	12	7	3
11	hana	4000	30	13	7	3
12	lama	3000	30	14	8	3

5

4

3

```
Select *
From (
    Select *, Row_Number() over(order by esal desc) as RN
        , Dense_rank() over(order by esal desc) as DR
        , NTile(3) over(order by esal desc) as G
    From employee ) as Newtable
```

where G=1

- لازم لما نقسم ميكونش الفرق اكتر من 1 بين ال (5-4-4) (5-5-4) Groups

ويكون ال Groups الصغيرة هي ال الأخير

RANK Function in SQL Server

The RANK function in the SQL server is used to assign a rank to each row based on its value.

The same rank is assigned to the rows which have the same values. The ranks may not be consecutive in the **RANK() function** as it adds the number of repeated rows to the repeated rank to calculate the rank of the next row.

Syntax

The Syntax to use the RANK function in SQL Server is:

```
RANK() OVER (  
    [PARTITION BY expression,]  
    ORDER BY expression (ASC | DESC);
```

تقریباً ف ال **Rank()**

بن ب ای حاجة **Rank**

Name
A
B
B
C
C
D
E

Query:

```
SELECT Name,  
       RANK () OVER (  
           ORDER BY Name  
) AS Rank_no  
FROM geek_demo;
```

Output –

Name	Rank_no
A	1
B	2
B	2
C	4
C	4
D	6
E	7

partition by

زي ال Group by لكنها مش بتخفي ال Rows الباقيه من النتيجه

لكن ال Group by كنت بستخدمها مع ال Aggregate Funs.

وكانت بتطلعلي القيمه بتاعتي بس وتخفي باقى ال Rows

Select *, Row_Number() over(partition by did order by esal desc) as RN
 ,Dense_Rank() over (Partition by did order by esal desc) as DR

From employee

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	17000	20	1	1
8	sayed	17000	20	2	1
6	hassan	6000	20	3	2
5	omar	6000	20	4	2
9	sally	15000	30	1	1
10	shimaa	4000	30	2	2
11	hana	4000	30	3	2
12	lama	3000	30	4	3

Select *
 From(Select *,Row_Number() over(partition by did order by esal desc) as RN
 ,Dense_Rank() over (Partition by did order by esal desc) as DR

From employee) as newtable

Where RN=1

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	17000	20	1	1
8	sayed	17000	20	2	1
6	hassan	6000	20	3	2
5	omar	6000	20	4	2

eid	ename	esal	did	RN	DR
9	sally	15000	30	1	1
10	shimaa	4000	30	2	2
11	hana	4000	30	3	2
12	lama	3000	30	4	3

Select *

From(Select *,Row_Number() over(partition by did order by esal desc) as RN
,Dense_Rank() over (Partition by did order by esal desc) as DR

From employee) as newtable

Where RN=3

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	17000	20	1	1
8	sayed	17000	20	2	1
6	hassan	6000	20	3	2
5	omar	6000	20	4	2
9	sally	15000	30	1	1
10	shimaa	4000	30	2	2
11	hana	4000	30	3	2
12	lama	3000	30	4	3

Select *

From(Select *,Row_Number() over(partition by did order by esal desc) as RN
,Dense_Rank() over (Partition by did order by esal desc) as DR

From employee) as newtable

Where DR=1

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	17000	20	1	1
8	sayed	17000	20	2	1
6	hassan	6000	20	3	2
5	omar	6000	20	4	2
9	sally	15000	30	1	1
10	shimaa	4000	30	2	2
11	hana	4000	30	3	2
12	lama	3000	30	4	3

Select *

From(Select *,Row_Number() over(partition by did order by esal desc) as RN
,Dense_Rank() over (Partition by did order by esal desc) as DR

From employee) as newtable

Where DR<=2

eid	ename	esal	did	RN	DR
15	ahmed	10000	10	1	1
14	ali	10000	10	2	1
12	eman	9000	10	3	2
1	nada	9000	10	4	2
2	reem	9000	10	5	2
3	khalid	8000	10	6	3
7	mohamed	17000	20	1	1
8	sayed	17000	20	2	1
6	hassan	6000	20	3	2
5	omar	6000	20	4	2
9	sally	15000	30	1	1
10	shimaa	4000	30	2	2
11	hana	4000	30	3	2
12	lama	3000	30	4	3

طبعاً أنا أقدر اتعامل بال Table ده

زي إني اعمله Select into

```
Select * into tab2  
From(Select *,Row_Number() over(partition by did order by esal desc) as RN  
,Dense_Rank() over (Partition by did order by esal desc) as DR
```

From employee) as newtable

Where RN=1 DR=1

RN=3 DR<=2

أو إني اعمله insert into

```
insert into  
Select *  
From(Select *,Row_Number() over(partition by did order by esal desc) as RN  
,Dense_Rank() over (Partition by did order by esal desc) as DR
```

From employee) as newtable

Where RN=1 DR=1

RN=3 DR<=2

أو Join

أو أي حاجة

أمثلة تاني

```
select *,Row_number() over(order by st_Age desc) as RN  
from Student
```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	RN	
1	13	Said	NULL	NULL	30	12	1	
2	14	NULL	Saleh	Tanta	30	30	NULL	2
3	8	Mohamed	Fars	Alex	28	20	6	3
4	6	Heba	Farouk	Mansoura	25	20	NULL	4
5	7	Ali	Hussien	Cairo	25	20	6	5
6	9	Saly	Ahmed	Mansoura	24	20	NULL	6
7	10	NULL	NULL	Alex	24	30	9	7
8	11	Marwa	Ahmed	Cairo	24	30	9	8
9	4	Ahmed	Mohamed	Alex	24	10	1	9
10	5	NULL	Mohamed	Alex	24	10	1	10
11	3	Mona	Saleh	Cairo	22	10	1	11
12	2	Amr	Magdy	Cairo	21	10	1	12
13	12	Noha	Omar	Cairo	21	30	NULL	13

```
select *,Dense_rank() over(order by st_Age desc) as DR  
from Student
```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	DR	
1	13	Said	NULL	NULL	30	12	1	
2	14	NULL	Saleh	Tanta	30	30	NULL	1
3	8	Mohamed	Fars	Alex	28	20	6	2
4	6	Heba	Farouk	Mansoura	25	20	NULL	3
5	7	Ali	Hussien	Cairo	25	20	6	3
6	9	Saly	Ahmed	Mansoura	24	20	NULL	4
7	10	NULL	NULL	Alex	24	30	9	4
8	11	Marwa	Ahmed	Cairo	24	30	9	4
9	4	Ahmed	Mohamed	Alex	24	10	1	4
10	5	NULL	Mohamed	Alex	24	10	1	4
11	3	Mona	Saleh	Cairo	22	10	1	5
12	2	Amr	Magdy	Cairo	21	10	1	6
13	12	Noha	Omar	Cairo	21	30	NULL	6
14	1	Ahmed	Hassan	Cairo	20	10	NULL	7

↑

```
Select *
from (
    select *,Row_number() over(order by st_Age desc) as RN
    from Student) as Newtable
where RN=1
```

100 % 4

Results Messages

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	RN
1	13	Said	NULL	NULL	30	30	12	1

↑

```
select *
from (
    select *,Dense_rank() over(order by st_Age desc) as DR
    from Student) AS NEWTABLE
where DR=1
```

200 % 4

Results Messages

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	DR
1	13	Said	NULL	NULL	30	30	12	1
2	14	NULL	Saleh	Tanta	30	30	NULL	1

```
select *, Row_number() over(Partition by dept_id order by st_Age desc)
from Student) as Newtable
```

Results

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	RN
1	4	Ahmed	Mohamed	Alex	24	10	1	1
2	5	NULL	Mohamed	Alex	24	10	1	2
3	3	Mona	Saleh	Cairo	22	10	1	3
4	2	Amr	Magdy	Cairo	21	10	1	4
5	1	Ahmed	Hassan	Cairo	20	10	NULL	5
6	8	Mohamed	Fars	Alex	28	20	6	1
7	6	Heba	Farouk	Mansoura	25	20	NULL	2
8	7	Ali	Hussien	Cairo	25	20	6	3
9	9	Saly	Ahmed	Mansoura	24	20	NULL	4
10	13	Said	NULL	NULL	30	30	12	1
11	14	NULL	Saleh	Tanta	30	30	NULL	2
12	10	NULL	NULL	Alex	24	30	9	3
13	11	Manwa	Ahmed	Cairo	24	30	9	4
14	12	Noha	Omar	Cairo	21	30	NULL	5

```
select *, Dense_rank() over(partition by dept_id order by st_Age desc)
from Student) AS NEWTABLE
```

Results

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	DR
1	4	Ahmed	Mohamed	Alex	24	10	1	1
2	5	NULL	Mohamed	Alex	24	10	1	1
3	3	Mona	Saleh	Cairo	22	10	1	2
4	2	Amr	Magdy	Cairo	21	10	1	3
5	1	Ahmed	Hassan	Cairo	20	10	NULL	4
6	8	Mohamed	Fars	Alex	28	20	6	1
7	6	Heba	Farouk	Mansoura	25	20	NULL	2
8	7	Ali	Hussien	Cairo	25	20	6	2
9	9	Saly	Ahmed	Mansoura	24	20	NULL	3
10	13	Said	NULL	NULL	30	30	12	1
11	14	NULL	Saleh	Tanta	30	30	NULL	1
12	10	NULL	NULL	Alex	24	30	9	2
13	11	Manwa	Ahmed	Cairo	24	30	9	2
14	12	Noha	Omar	Cairo	21	30	NULL	3

↑

```
Select *
from (
    select *,Row_number() over(Partition by dept_id order by st_Age desc)
    from Student) as Newtable
where RN=1
```

200 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	RN
1	4	Ahmed	Mohamed	Alex	24	10	1	1
2	8	Mohamed	Fars	Alex	28	20	6	1
3	13	Said	NULL	NULL	30	30	12	1

↑

```
select *
from (
    select *,Dense_rank() over(partition by dept_id order by st_Age desc)
    from Student) AS NEWTABLE
where DR=1
```

200 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	DR
1	4	Ahmed	Mohamed	Alex	24	10	1	1
2	5	NULL	Mohamed	Alex	24	10	1	1
3	8	Mohamed	Fars	Alex	28	20	6	1
4	13	Said	NULL	NULL	30	30	12	1
5	14	NULL	Saleh	Tanta	30	30	NULL	1

SQL Query:

```
(select *,Ntile(4) over(order by st_age desc) as G  
from Student) as Newtable
```

Results:

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	G
1	13	Said	NULL	NULL	30	30	12	1
2	14	NULL	Saleh	Tanta	30	30	NULL	1
3	8	Mohamed	Fars	Alex	28	20	6	1
4	6	Heba	Farouk	Mansoura	25	20	NULL	1
5	7	Ali	Hussien	Cairo	25	20	6	2
6	9	Saly	Ahmed	Mansoura	24	20	NULL	2
7	10	NULL	NULL	Alex	24	30	9	2
8	11	Manwa	Ahmed	Cairo	24	30	9	2
9	4	Ahmed	Mohamed	Alex	24	10	1	3
10	5	NULL	Mohamed	Alex	24	10	1	3
11	3	Mona	Saleh	Cairo	22	10	1	3
12	2	Amr	Magdy	Cairo	21	10	1	4
13	12	Noha	Omar	Cairo	21	30	NULL	4
14	1	Ahmed	Hassan	Cairo	20	10	NULL	4

SQL Query:

```
select *  
from  
(select *,Ntile(4) over(order by st_age desc) as G  
from Student) as Newtable  
where G=1
```

Results:

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super	G
1	13	Said	NULL	NULL	30	30	12	1
2	14	NULL	Saleh	Tanta	30	30	NULL	1
3	8	Mohamed	Fars	Alex	28	20	6	1
4	6	Heba	Farouk	Mansoura	25	20	NULL	1

-Data types

-Numeric DT

```
bit      --bool    0:1    true:false  
tinyint 1 Byte   -128:+127   unsigned   0:255  
smallint 2B      -32768:+32767  unsigned   0:65555  
int       4B  
bigint 8B
```

Decimal DT

الاختصار لـ decimal

يُعنى الـ 5 = Total digits بس 2 منهم decimal بحد اقصى $\text{dec}(5,2)$

يعنى ممكن رقم أو اتنين بعده العلامة (عشان كده الأخيرة غلط)

والي 5 digits پكون Total

وحجم ال Fixed Dynamic Data Type مش ثابت

Char DT

```
char(10) [fixed length character] ahmed 10B ali 10B . علـ ???? X
varchar(10) [variable length character] ahmed 5B ali 3B
nchar(10) unicode على ←
nvarchar(10) unicode على
nvarchar(max) up to 2GB
```

لو عايز اكتب بأي لغة بستخدم **unicode** : ممكن اكتب فيها لحد **2 GB** Max

Date/Time

```
Date MM/DD/yyyy
Time hh:mm:12.765
time(7) hh:mm:12.7659876
smalldatetime MM/DD/yyyy hh:mm:00
datetime MM/DD/yyyy hh:mm:ss.987
datetime2(7) MM/DD/yyyy hh:mm:ss.9879876
datetimeoffset 11/24/2020 10:30 +2:00 Timezone
```

binary DT

binary	0111100	11111100
image		

ممكن أ **Save Images** على ال DB بطريقتين

- عن طريق ال **Path**
- عن طريق ال **Binary Code**

وطبعا كل نوع من الآلتین لیه استخدامه
عن طريق ال Path : لو مش بتنقل كتير بال Data
يعني مبعملش Restore و Backup كتير
لكن عن طريق ال Binary Code : لو مش بتنقل كتير بال Data
وبعمل Restore و Backup كتير

others

XML

unique_identifier

sql_variant

(Search)

case

ممكن استخدامها في الـ Select

```
select ins_name, salary,
       case
           when salary >= 3000 then 'high sal'
           when salary < 3000 then 'low'
           else 'No value'
       end as Newsal
  from Instructor
```

Results

	ins_name	salary	Newsal
1	Ahmed	1000.00	low
2	Hany	500.00	low
3	Reham	200.00	low
4	Yasmin	9000.00	high sal
5	Amany	6000.00	high sal
6	Eman	4000.00	high sal
7	Saly	200.00	low
8	Amr	3000.00	high sal
9	Hussien	200.00	low
10	Khalid	4000.00	high sal
11	Salah	6000.00	high sal

لـ و عملت كـ ده

```
update Instructor
      set salary=salary*1.20
```

Messages

(15 row(s) affected)

كل المرتبات هـ تـ زـ يـ دـ بـ نـ سـ بـةـ 1.20 %

لكن ممكن استخدم Case ف ال Update برضو

ف لو هستخدم Case

عملها كده

```
update Instructor
set salary=
case
when salary>=30000 then salary*1.10
else salary*1.20
end
```

(15 row(s) affected)

كده اللي مرتباتهم أعلى من 3000 هيزيدوا بنسبة 1.10 %

واللي مرتباتهم أقل من 3000 هيزيدوا بنسبة 1.20 %

iif

دي if + else کأنها Fun.

بستخدمها لو عندي 2 Conditions بس

بتخليني اعمل كده

The screenshot shows a SQL query in the Query Editor window:

```
select ins_name,iif(salary>=3000, 'high', 'low')  
from Instructor
```

Three red arrows point from the text "Condition", "True", and "False" to the corresponding parts of the iif function in the query. Below the query is a Results grid:

	ins_name	(No column name)
1	Ahmed	low
2	Hany	low
3	Reham	low
4	Yasmin	high
5	Amany	high
6	Eman	high
7	Saly	low
8	Amr	high
9	Hussien	low

لكن لو عندي اكتر من Condition

هستخدم Case

ممكن احول ال Date ل String ؟

ا

ازاي ؟

```
select convert(varchar(20),getdate())
```

أو

```
select cast(getdate() as varchar(20),)
```

ف الناتج هيكون كده

The screenshot shows a SQL query window with two queries and their results. The first query is:

```
select convert(varchar(20),getdate())
```

The second query is:

```
select cast(getdate() as varchar(20))
```

Both queries return the same result:

	(No column name)
1	Nov 23 2020 1:59PM

وال 2 Funs دول ممكن يحولوا أي حاجة ل أي حاجة

مش شرط من Date ل String

لو بحول من date ل String Cast : ه تكون أفضل من Convert
لأنى ممكن اعملها Overload برقم بيحدلى ال Format اللي انا عايزه
ممكن تعملى كذا date Format لـ Convert

The screenshot shows a SQL query window with four SELECT statements demonstrating date conversion:

```
select convert(varchar(20),getdate(),102)
select convert(varchar(20),getdate(),103)
select convert(varchar(20),getdate(),104)
select convert(varchar(20),getdate(),105)
```

The results pane displays the output for each statement:

	Results
1	(No column name) 2020.11.23
1	(No column name) 23/11/2020
1	(No column name) 23.11.2020
1	(No column name) 23-11-2020

بس عشان صعب احفظ الأرقام دي

ف موجود Fun. تانية اسمها Format

بحيث احدد ال Format اللي انا عايزه

```

select format(getdate(),'dd-MM-yyyy')           23-11-2020
select format(getdate(),'dddd MMMM yyyy')       Monday November 2020
select format(getdate(),'ddd MMM yy')            Mon Nov 20
select format(getdate(),'dddd')                  Monday
select format(getdate(),'MMMM')                  November
select format(getdate(),'hh:mm:ss')              02:02:55
select format(getdate(),'HH')                   14
select format(getdate(),'hh tt')                02 PM
select format(getdate(),'dd-MM-yyyy hh:mm:ss tt') 23-11-2020 02:03:15 PM

```

200 %

	Results	Messages
(No column name)	1 23	
(No column name)	1 23	

```

select format(getdate(), 'dd')
select day(getdate())

```

الأثنين دول زي بعض بس لكن مختلفين ف ال **return Type**

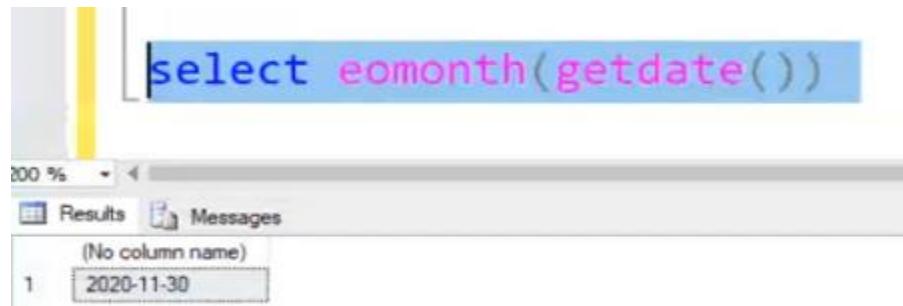
الأولي بترجم **String**

والثانية بترجم **Int**

eomonth

دي Date Fun. بتأخذ وترجع Date

بترجع اخر يوم في الشهر اللي انا هديهولها



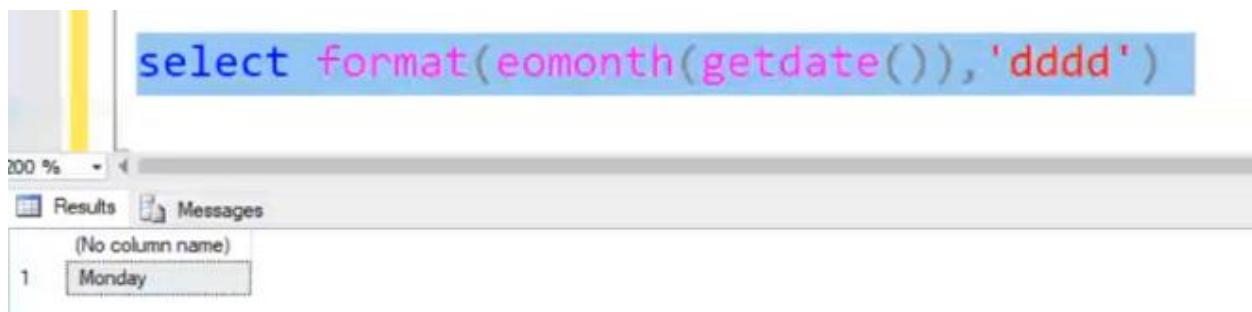
The screenshot shows a SQL query window with the following content:

```
select eomonth(getdate())
```

Below the query window, the results pane shows:

(No column name)
1 2020-11-30

يعني هنا هترجع اخر يوم في الشهر اللي انا اديتهولها



The screenshot shows a SQL query window with the following content:

```
select format(eomonth(getdate()), 'ddd')
```

Below the query window, the results pane shows:

(No column name)
1 Monday

هنا هيقولي اخر يوم في الشهر هيكون يوم ايه



The screenshot shows a SQL query window with the following content:

```
select format(eomonth(getdate()), 'dd')
```

Below the query window, the results pane shows:

(No column name)
1 30

هنا هيقولي الشهر ده 30 يوم ولا 31 يوم

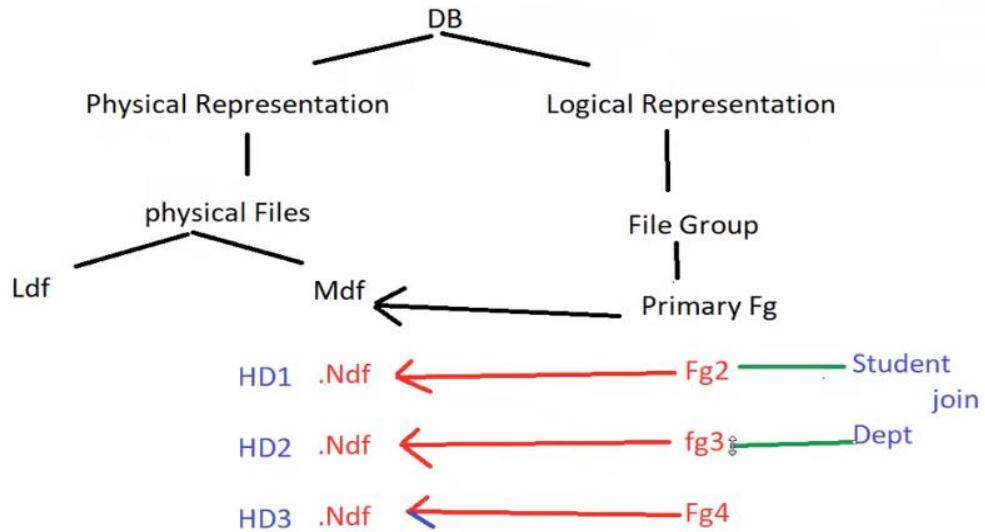
A screenshot of a SQL query window. The query is:

```
select eomonth('1/1/2000')
```

The results pane shows one row with the value '2000-01-31'.

(No column name)
1 2000-01-31

هنا هيرجعلي اخر يوم في الشهر اللي انا اديتهوله (شهر 1)



هنا يستحسن اخلي ال Mdf لل حاجات الأساسية بس زي اسمى

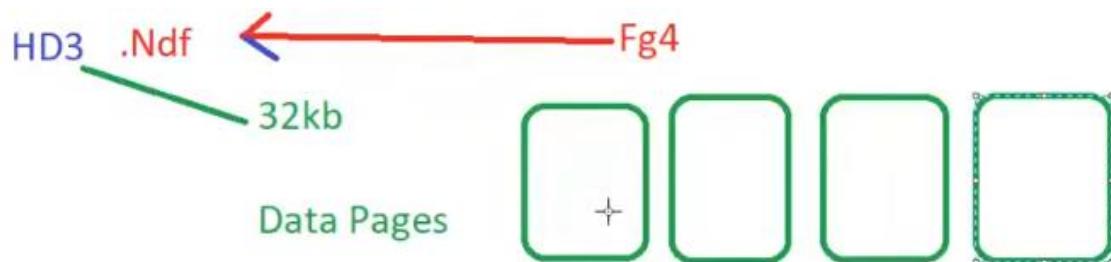
Built-in – Relations – Tables– stored procedures– views
(Fun's)

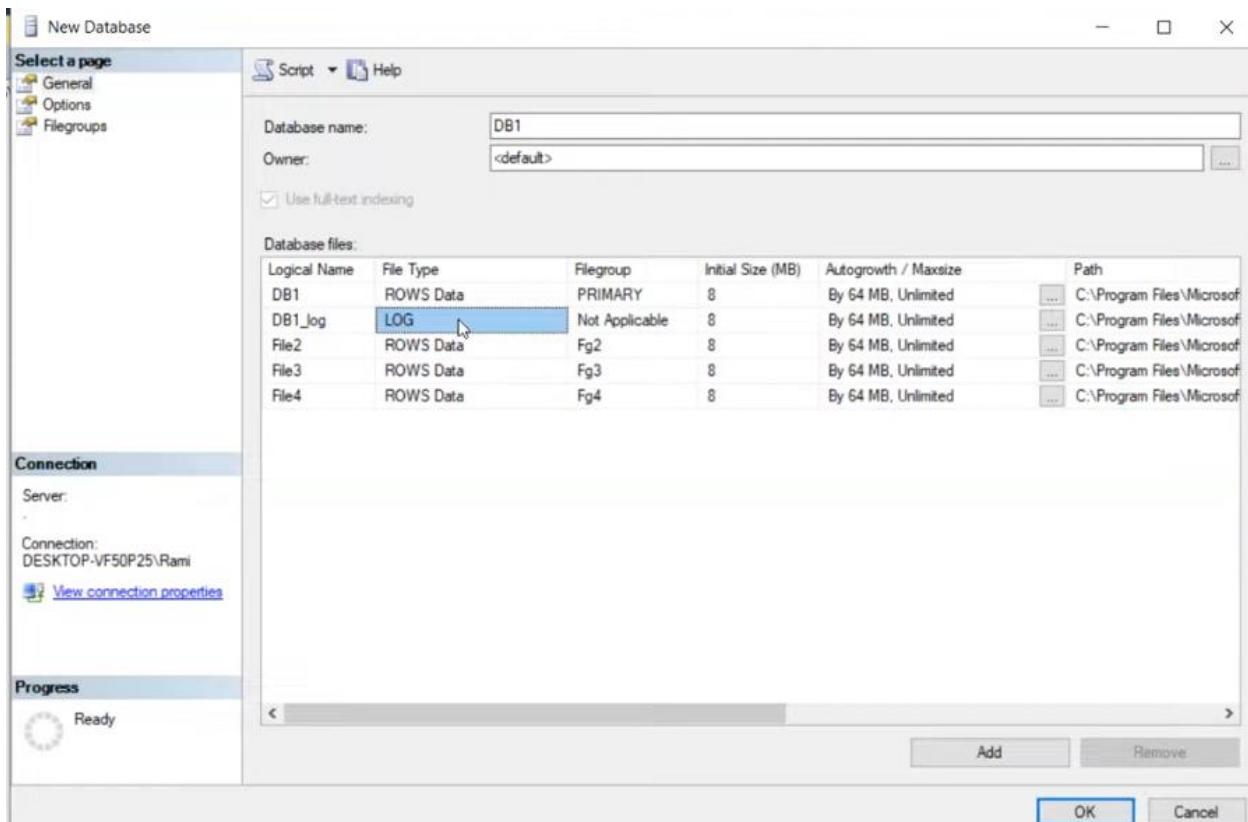
وال اوزعهم على ال .Ndf على Secondry file groups different hard disks

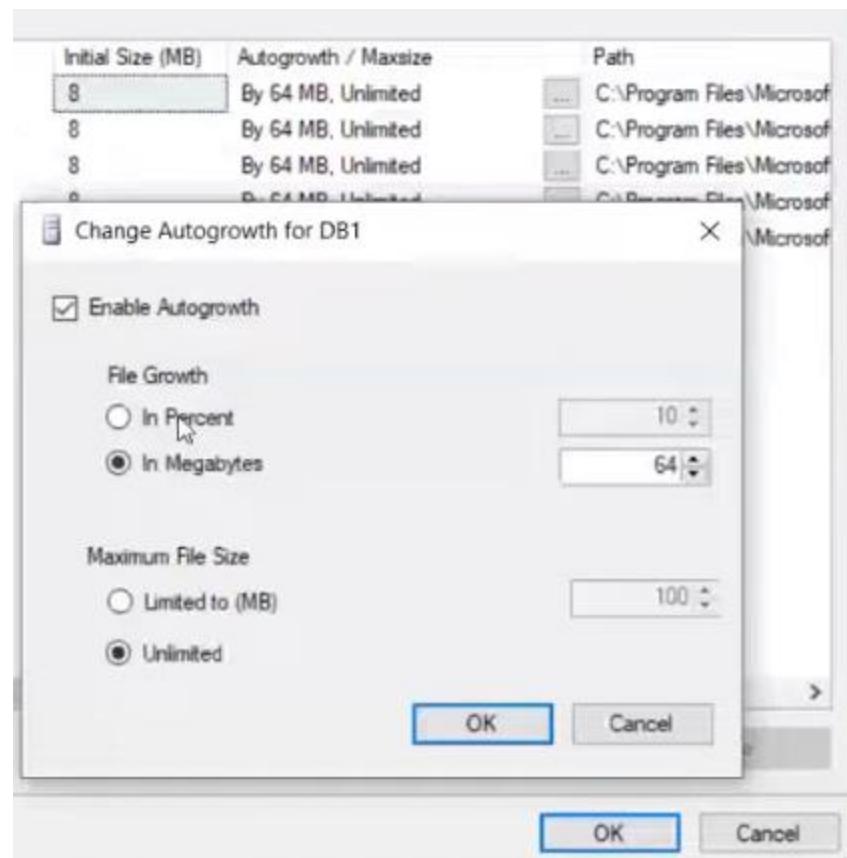
لأن ال data sequential لكن لما نوزعهم كده ف هنقرأ ال data parallel

وبرضو لما نعمل backup مش هحتاج نعمل backup لكل ال file groups

لكن هنعمل بس لـ file group اللي حصل فيه التغيير







DESKTOP-VF50P25.DB1 - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input type="checkbox"/>
eadd	varchar(50)	<input type="checkbox"/>
hiredate	date	<input type="checkbox"/>
sal	int	<input type="checkbox"/>
overtime	int	<input type="checkbox"/>
netsal	int	<input type="checkbox"/>
Dnum	int	<input type="checkbox"/>

Properties [Tbl] dbo.Employee

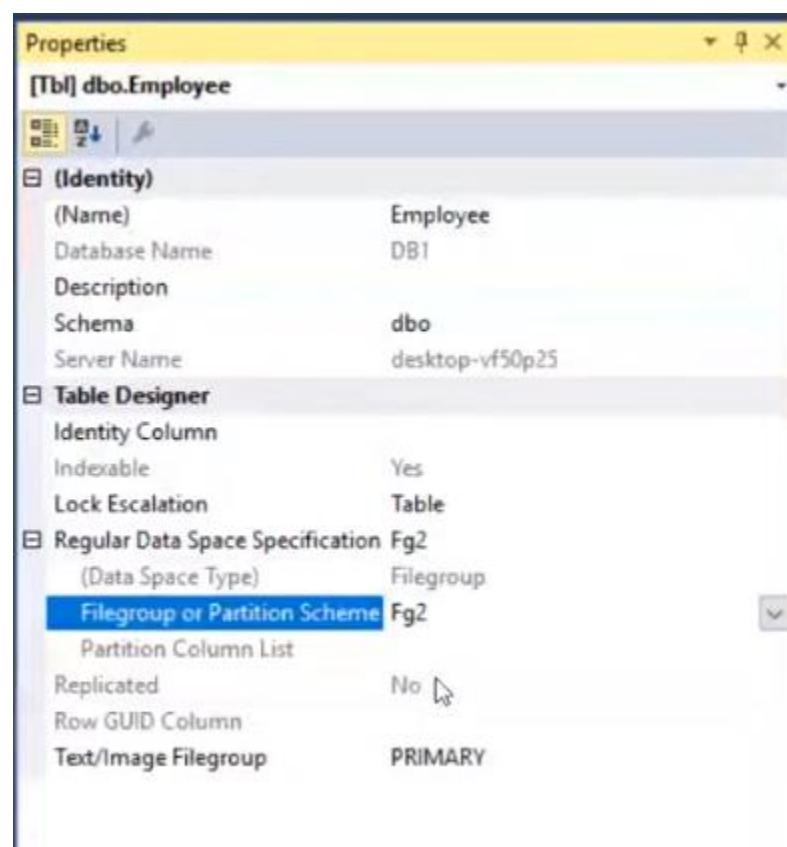
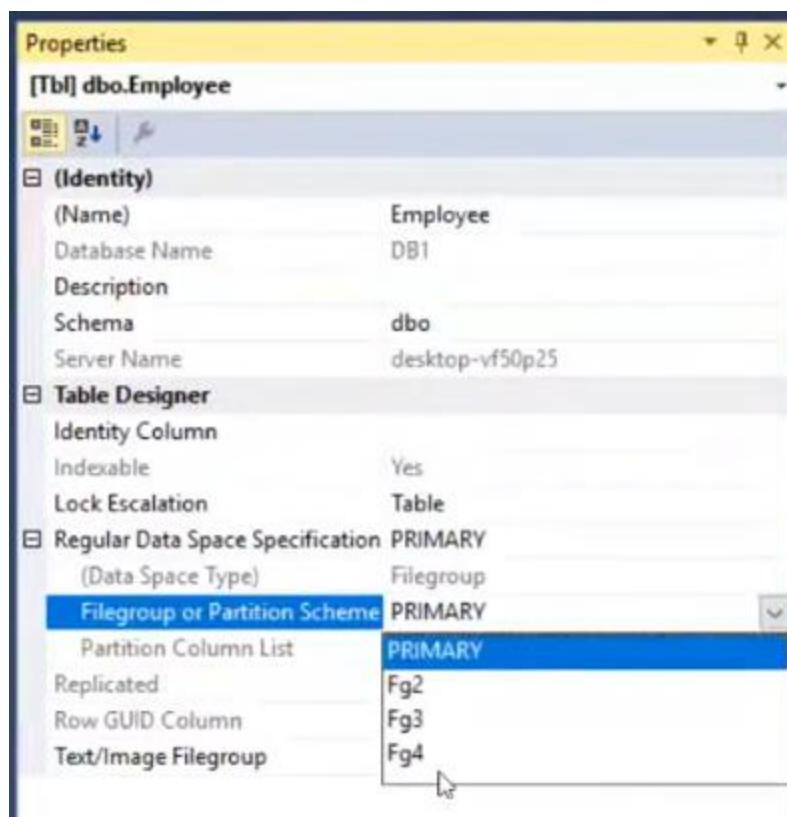
- (Name)** Employee
- Database Name DB1
- Description
- Schema dbo
- Server Name desktop-vf50p25
- Table Designer**
 - Identity Column
 - Indexable Yes
 - Lock Escalation Table
- Regular Data Space Specification PRIMARY
- (Data Space Type) Filegroup
- Filegroup or Partition Scheme** PRIMARY
- Partition Column List
- Replicated No
- Row GUID Column
- Text/Image Filegroup PRIMARY

Column Properties

(General)

(Name) eadd
Allow Nulls Yes
Data Type varchar
Default Value or Binding
Length 50

Filegroup or Partition Scheme Name



DESKTOP-VF50P25.DB1 - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

Is Identity	No
Identity Increment	1
Identity Seed	1
Indexable	Yes
Is Columnset	No
Is Sparse	No
Merge-published	No
Not For Replication	No
(Is Identity)	

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

identity

Column Properties

Column Properties dialog box showing properties for the 'id' column.

Property	Value
DTS-published	No
Full-text Specification	No
Has Non-SQL Server Subscriber	No
Identity Specification	Yes
(Is Identity)	Yes
Identity Increment	1
Identity Seed	1
Indexable	Yes
Is Columnset	No
Is Sparse	No
Merge-published	No
Not For Replication	No

Identity Increment

DESKTOP-VF50P25.DB1 - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

(General)

- (Name) eadd
- Allow Nulls Yes
- Data Type varchar
- Default Value or Binding | 50

Table Designer

- Collation <database default>
- Computed Column Specification
- Condensed Data Type varchar(50)
- Description
- Deterministic Yes

Default Value or Binding

DESKTOP-VF50P25.DB1 - dbo.Table_1*

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

default
value

Column Properties

(General)

- (Name) eadd
- Allow Nulls Yes
- Data Type varchar
- Default Value or Binding** ('cairo')
- Length 50

Table Designer

- Collation <database default>
- Computed Column Specification
- Condensed Data Type varchar(50)
- Description
- Deterministic Yes

Default Value or Binding

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
► hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

default
value

Column Properties

Column Properties window showing properties for the 'hiredate' column:

(Name)	hiredate
Allow Nulls	Yes
Data Type	date
Default Value or Binding	(getdate())
Table Designer	
Collation	<database default>
Computed Column Specification	
Condensed Data Type	date
Description	
Deterministic	Yes
DTS-published	No
Default Value or Binding	

DESKTOP-VF5OPZ5.DB1 - dbo.table_1

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal	int	<input checked="" type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

derived
attribute

Column Properties

Data Type	int
Default Value or Binding	
Table Designer	
Collation	<database default>
Computed Column Specification	(Formula)
Is Persisted	No
Condensed Data Type	int
Description	
Deterministic	Yes
DTS-published	No
Full-text Specification	No

Computed Column Specification

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal		<input type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

derived
attribute

Column Properties

Column Properties

Table Designer

Computed Column Specification

(Formula) Is Persisted

Expression: sal+overtime

Is Computed: No

not saved
on Hard Disk

DESKTOP-VF50P25.DB1 - dbo.Table_1

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal	int	<input type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>

Column Properties

Is Persisted: Yes

Computed Column Specification (Formula): $sal + overtime$

deriven
attribute

Saved on
Hard Disk

بس هنا لو عندي اي قيمة من ال (sal) او ال (overtime) بـ Null
الناتج كله هيطبع بـ Null

ايه الحل ؟

استخدم `isnull()`

DESKTOP-VF50P25.DB1 - dbo.Table_1* □ X

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal		<input type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

Table Designer

Computed Column Specification

(Formula) `isnull(sal,0)+isnull(overtime,0)`

Is Persisted Yes

Condensed Data Type

Description

Deterministic Yes

DTS-published No

Full-text Specification No

(Formula)

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
► age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal		<input type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties	
(Formula)	
Is Persisted	No
Condensed Data Type	int
Description	
Deterministic	Yes
DTS-published	No
► Full-text Specification	No
Has Non-SQL Server Subscriber	No
► Identity Specification	No
Indexable	Yes
Is Columnset	No
► Is Sparse	No
Is Sparse	

هنا هو بيحجز مكان ف ال NullHard Disk لأنّي

DESKTOP-VF50P25.DB1 - dbo.Table_1

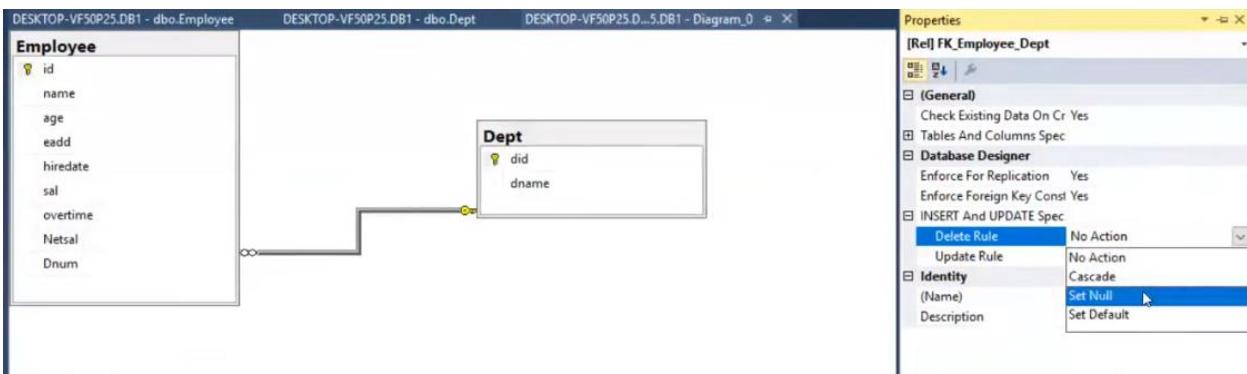
Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
age	int	<input checked="" type="checkbox"/>
eadd	varchar(50)	<input checked="" type="checkbox"/>
hiredate	date	<input checked="" type="checkbox"/>
sal	int	<input checked="" type="checkbox"/>
overtime	int	<input checked="" type="checkbox"/>
Netsal		<input type="checkbox"/>
Dnum	int	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

DTS-published	No
Full-text Specification	No
Has Non-SQL Server Subscriber	No
Identity Specification	No
Indexable	Yes
is Columnset	No
Is Sparse	Yes
Merge-published	No
Not For Replication	No
Replicated	No
RowGuid	No
Size	4

Is Sparse

لكن هنا مش هيحجز لأي Null space



On delete set Null

On delete Cascade

On delete set Default

On update set Null

On update Cascade

On update set Default

فی عندي Relation بتجبرني اعمل

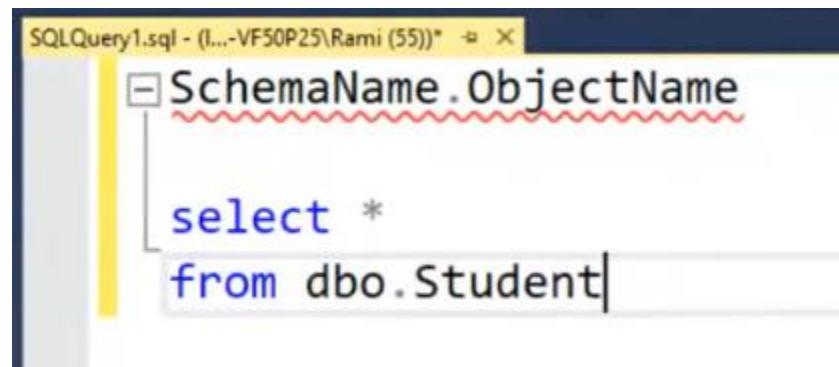
On delete Cascade

On update cascade

ايه هي ؟

لو عندي Weak Entity

Tables لل logical grouping عن هي عبارة Schema



The screenshot shows a SQL query window titled "SQLQuery1.sql - (I...-VF50P25\Ramí (55))". The query is:

```
SchemaName.ObjectName
select *
from dbo.Student
```

The "SchemaName.ObjectName" part of the query is underlined with a red wavy line, indicating it's a potential error or a placeholder.

وده بيسهلي حاجات كتير زي ال Permissions بدل م ادي للا Permission على table user

طيب اعمل ال Schema ازاي ؟

The screenshot shows the SQL Server Management Studio interface. On the left, the Object Explorer pane displays a tree view of database objects, including Database Diagrams, Tables, Views, External Resources, Synonyms, Programmability, Service Broker, Storage, Security (with subfolders for Users, Roles, and Schemas), and various system schemas like db_accessadmin, db_backupoperator, db_datareader, db_datawriter, db_ddladmin, db_denydatareader, db_denydatawriter, db_owner, db_securityadmin, dbo, guest, and sys. A red arrow points to the 'HR' schema node under the 'Schemas' folder. On the right, the SQL Query window contains a query script:

```
SchemaName.ObjectName
select *
from dbo.Student

create schema HR
```

A red arrow points to the 'create schema HR' statement. Below the query window, the 'Messages' pane shows the message "Command(s) completed successfully." At the bottom of the screen, a yellow bar indicates "Query executed successfully."

The screenshot shows the Object Explorer on the left and a query window on the right. In the Object Explorer, under the 'schemas' node, there is a 'sales' schema highlighted with a red arrow. The query window contains the following SQL code:

```
SchemaName.ObjectName
select *
from dbo.Student

create schema HR

create schema sales
```

A red arrow points to the 'sales' schema name in the code. Below the code, the message 'Command(s) completed successfully.' is displayed.

The screenshot shows the Object Explorer on the left and a query window on the right. In the Object Explorer, under the 'Tables' node of the 'HR' database, there is a 'Student' table highlighted with a red arrow. The query window contains the following SQL code:

```
select *
from dbo.Student

create schema HR

create schema sales

alter schema HR transfer Student
```

A red arrow points to the 'alter schema' statement. Below the code, the message 'Command(s) completed successfully.' is displayed. At the bottom, a red text box contains the Arabic translation of the command:

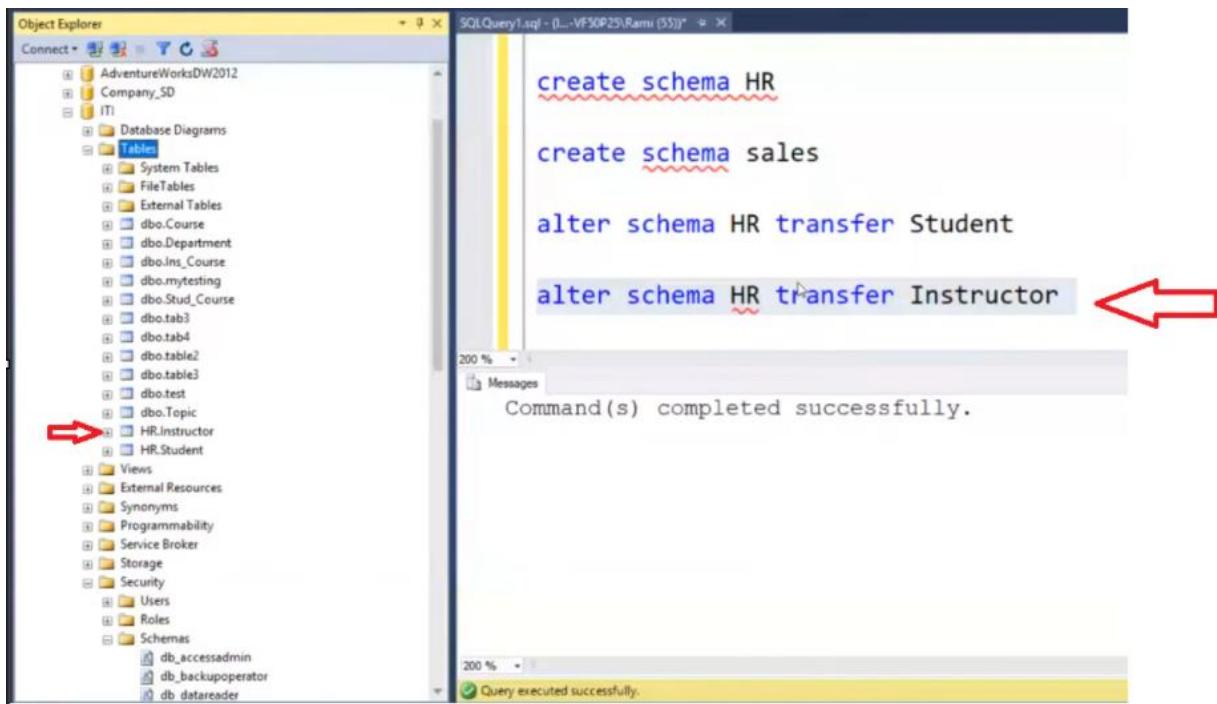
هنا انا عملت Transfer لـ Table Student
من ال Schema HR لـ Schema dbo

Object Explorer

```
create schema HR
create schema sales
alter schema HR transfer Student
alter schema HR transfer Instructor
```

Command(s) completed successfully.

Query executed successfully.

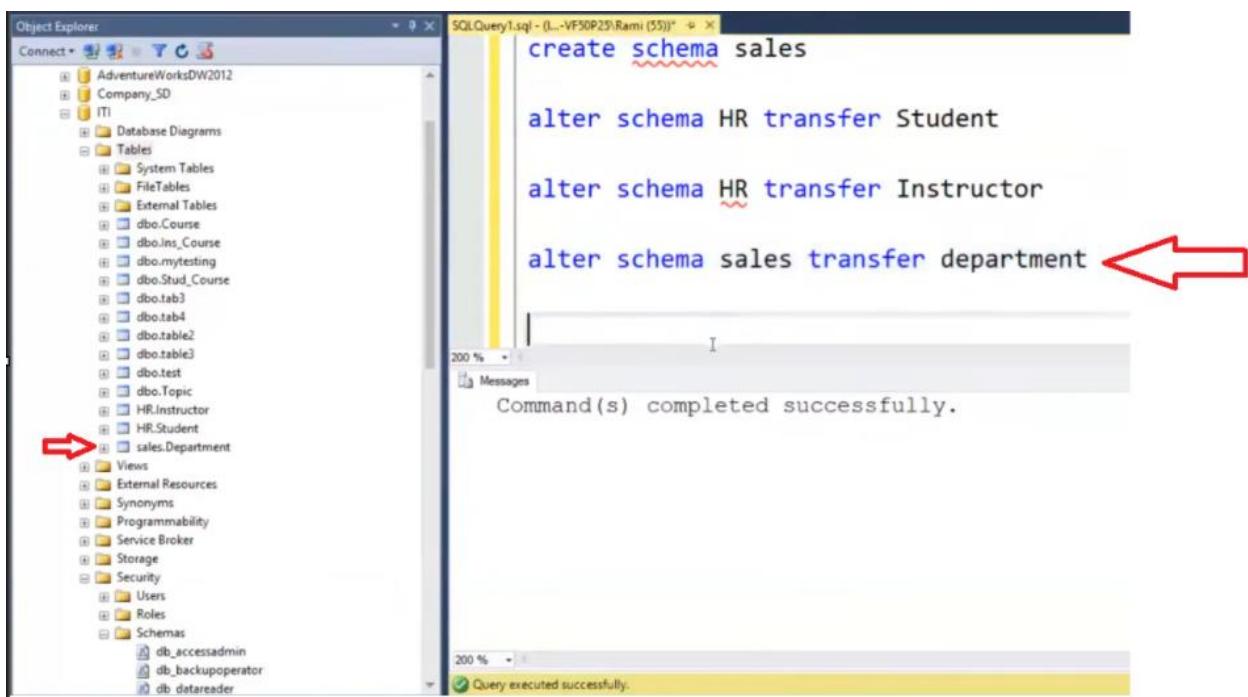


Object Explorer

```
create schema sales
alter schema HR transfer Student
alter schema HR transfer Instructor
alter schema sales transfer department
```

Command(s) completed successfully.

Query executed successfully.



طيب نو انا عملت Student جديد اسمه Table

هي عمل ايه ؟

هي تعمل Table جديد عادي بس لـ Schema

وكده بقى عندي 2 Tables بنفس الاسم لكن ف different Schemas

The screenshot shows the SQL Server Management Studio interface. On the left, the Object Explorer pane displays a tree view of database objects. A red arrow points to the 'Tables' node under the 'IT' schema, which contains a table named 'dbo.student'. Another red arrow points to the 'Tables' node under the 'sales' schema, which also contains a table named 'student'. In the center, the SQL Query Editor window shows the following T-SQL code:

```
alter schema sales transfer department

create table student
(
    id int,
    name varchar(20)
)
```

A red curly brace highlights the 'student' table definition. Below the code, the message 'Command(s) completed successfully.' is displayed. At the bottom of the editor, a yellow status bar shows 'Query executed successfully.'

Object Explorer

Connect ▾

- AdventureWorksDW2012
- Company_SD
- ITI
- Database Diagrams
- Tables
 - System Tables
 - FileTables
 - External Tables
 - dbo.Course
 - dbo.Ins_Course
 - dbo.mytesting
 - dbo.Stud_Course
 - dbo.student** (New)
 - dbo.tab3
 - dbo.tab4
 - dbo.table2
 - dbo.table3
 - dbo.test
 - dbo.Topic
 - HR.Instructor
 - HR.Student** (New)
 - sales.Department** (New)
 - sales.student** (New)
- Views
- External Resources
- Synonyms
- Programmability
- Service Broker
- Storage
- Security
 - Users
 - Roles
 - Schemas
- db accessedadmin

SQLQuery1.sql - (l...-VF50P25\Ram (55)) * X

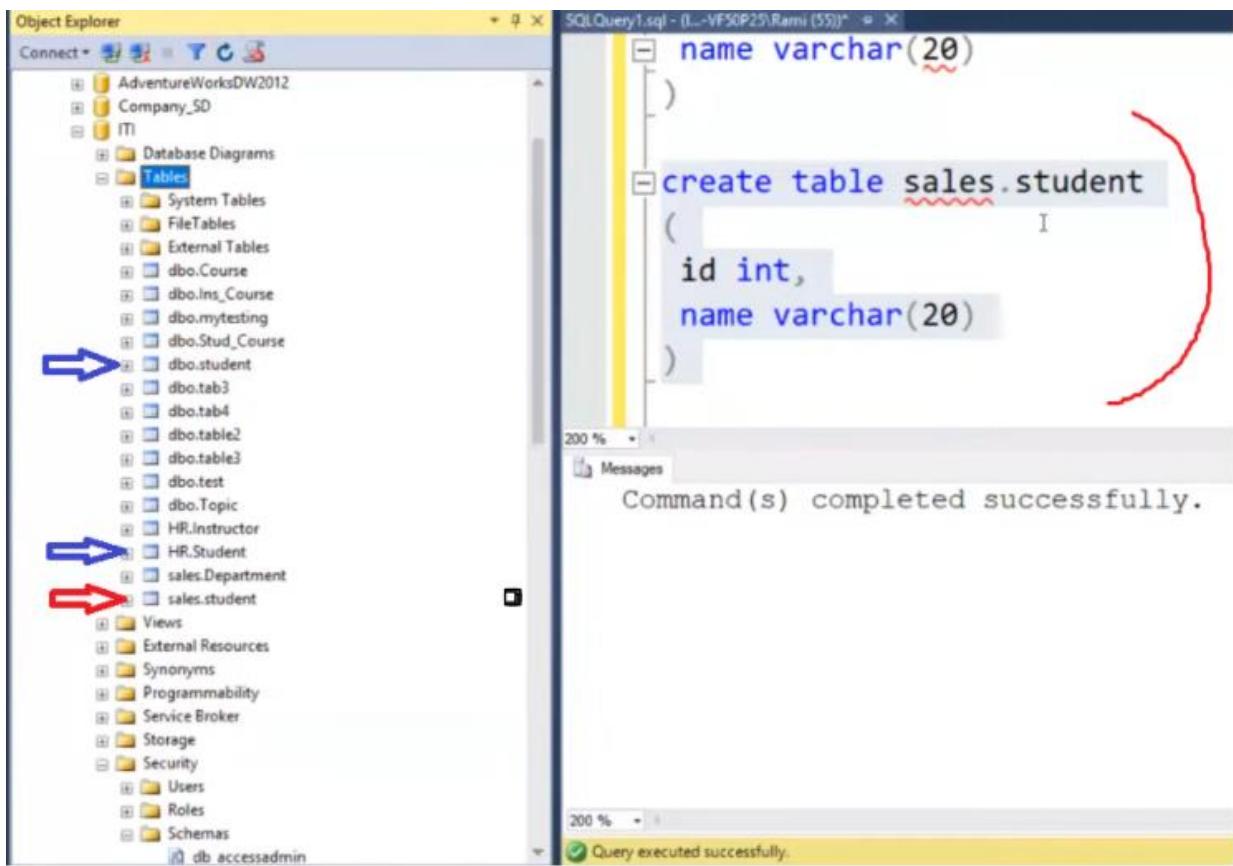
```
name varchar(20)
)
create table sales.student
(
    id int,
    name varchar(20)
)
```

200 %

Messages

Command(s) completed successfully.

Query executed successfully.



طيب نو عملت كده هتشتغل ؟

```
select * from Instructor
```

لا : عشان لازم تكتب اسم ال Schema

The screenshot shows a SQL query window with the following content:

```
select * from hr.Instructor
```

The results grid displays 13 rows of data from the Instructor table, structured as follows:

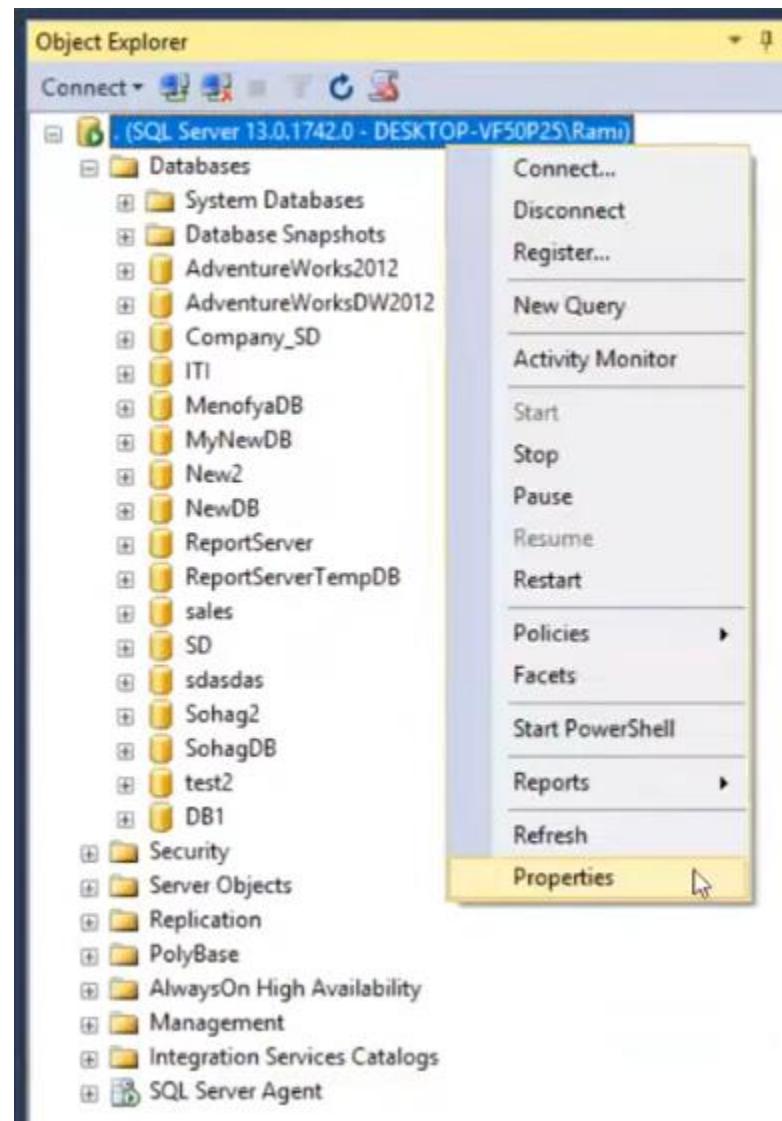
	Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	1	Ahmed	Master	1440.00	10
2	2	Hany	Master	720.00	10
3	3	Reham	Master	288.00	10
4	4	Yasmin	PHD	12960.00	10
5	5	Amany	PHD	8640.00	10
6	6	Eman	Master	5760.00	10
7	7	Saly	NULL	288.00	10
8	8	Amr	NULL	4320.00	30
9	9	Hussien	NULL	288.00	30
10	10	Khalid	NULL	5760.00	30
11	11	Salah	NULL	8640.00	30
12	12	Adel	NULL	11520.00	30
13	13	Fakry	NULL	12960.00	20

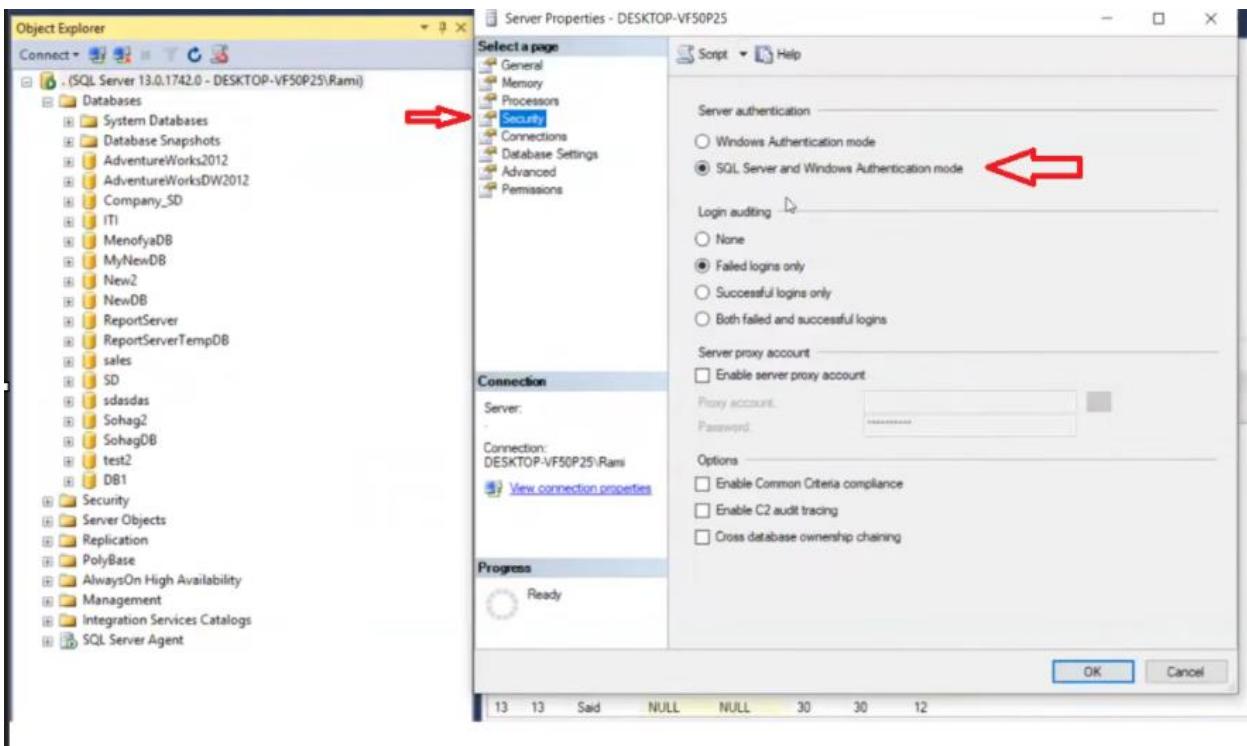
لكن الحالة الوحيدة اللي ممكن اكتب فيها بالطريقي دي
لو ال Table بتعايي ف ال dbo Schema

طیب نو عایز ادی (permission) user ؟ Schema علی

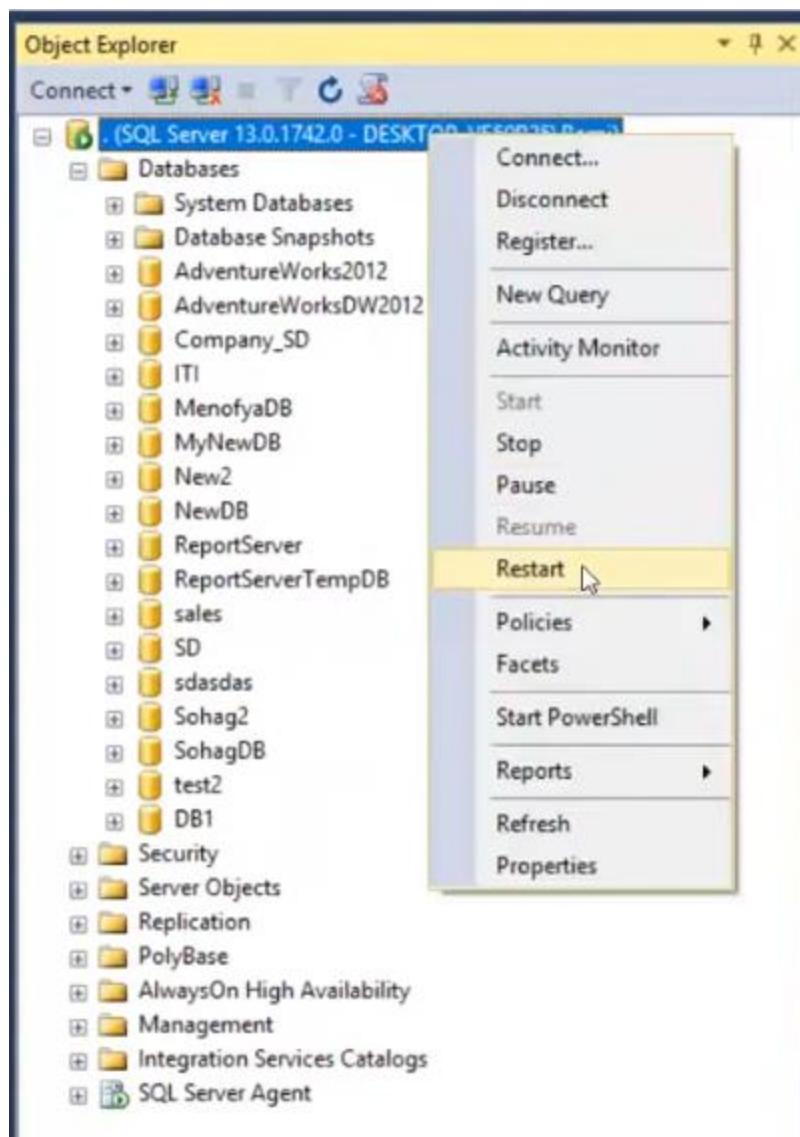
عندی ۱۰ خطوات

Mixed Mode ()





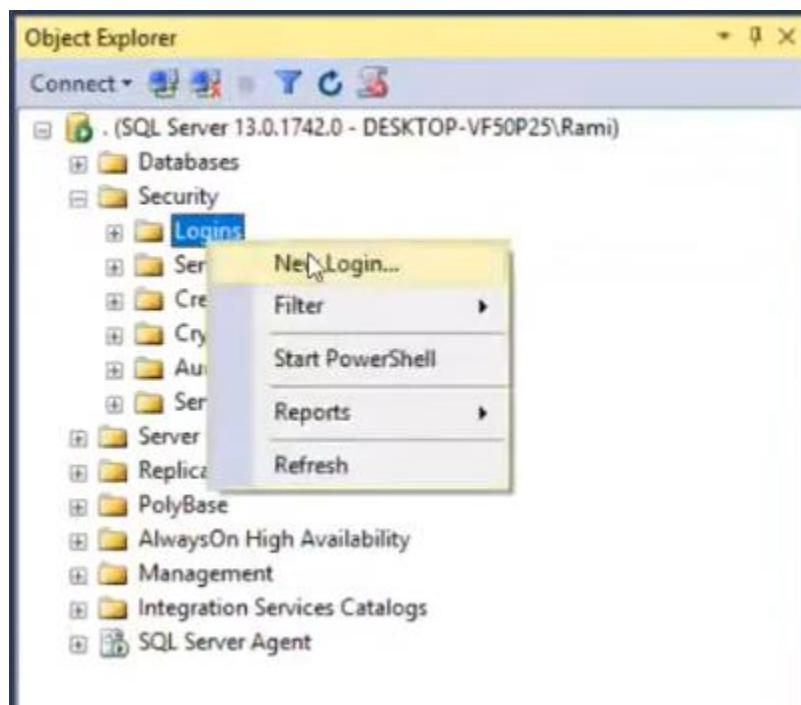
Restart Server (↻)

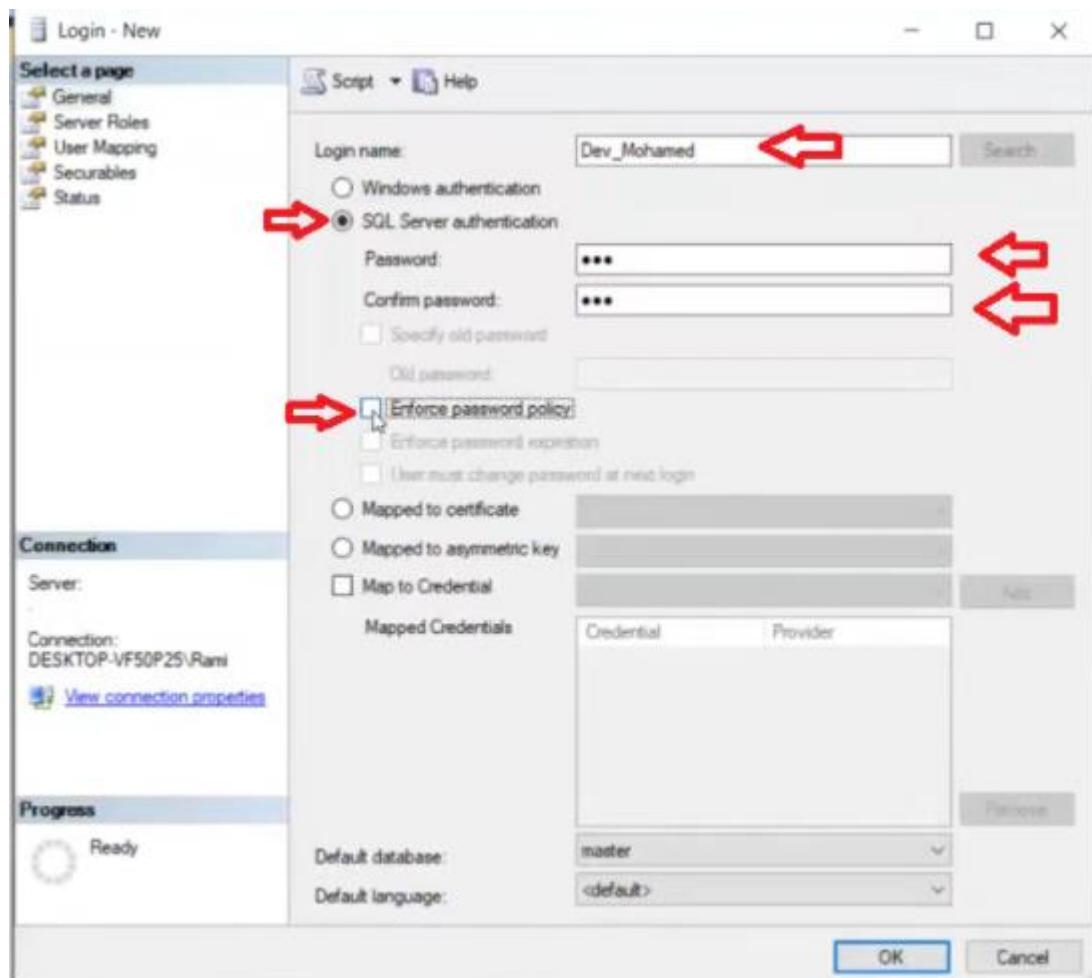


Microsoft SQL Server Management Studio



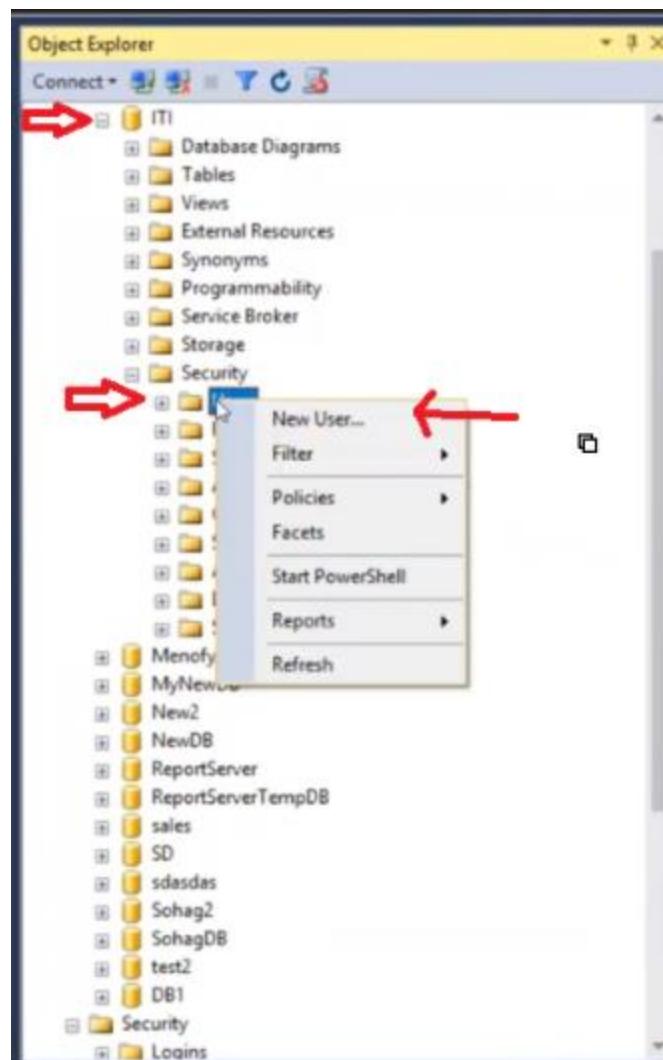
New Login (⌚)

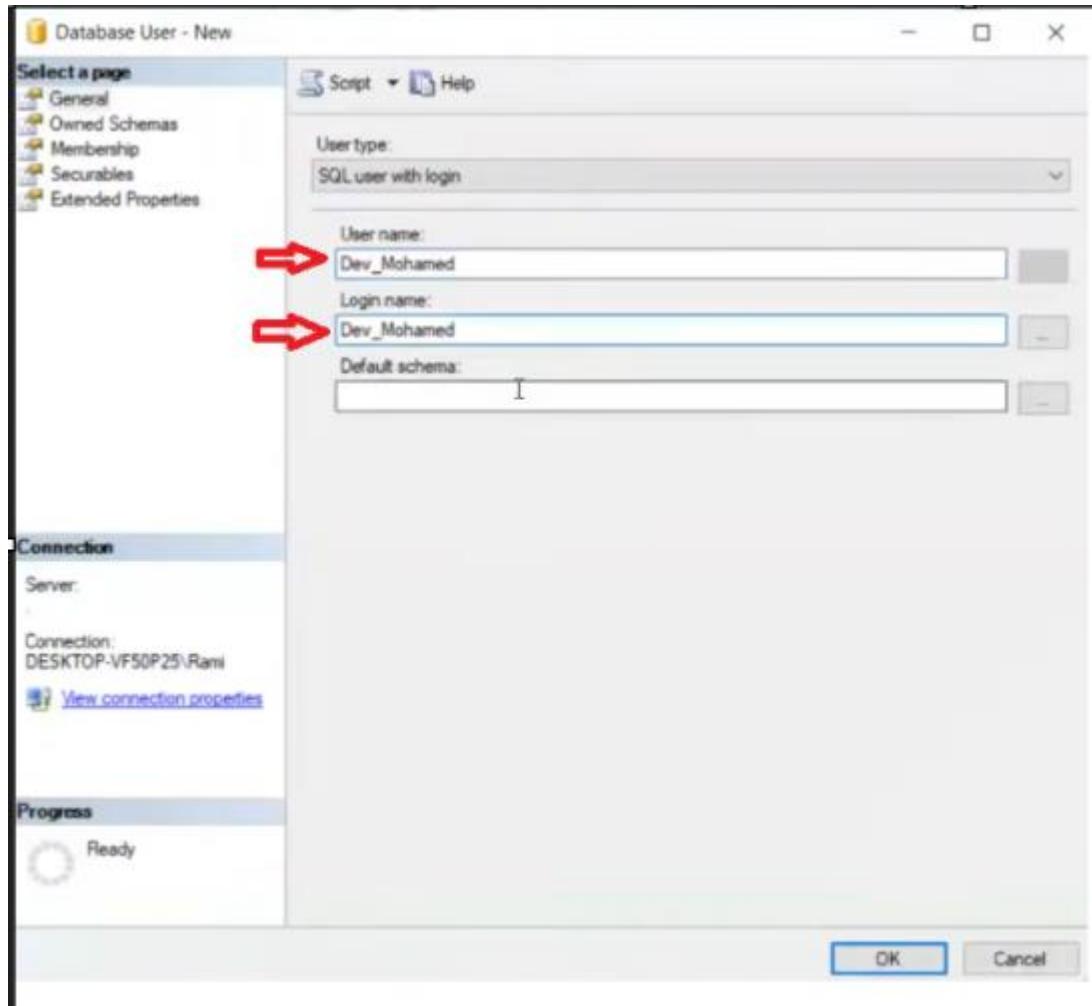




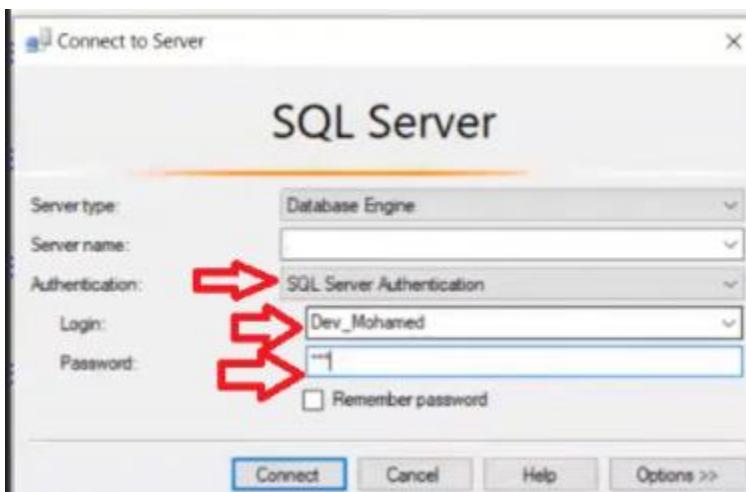
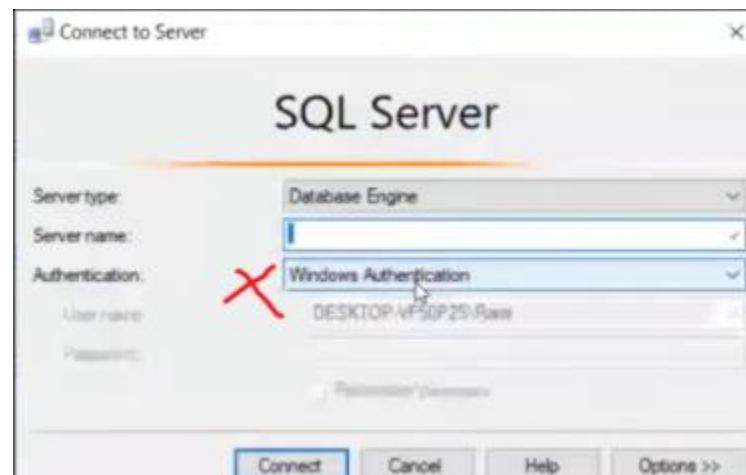
كده الشخص يقدر يعمل login على ال Server

بس عشان يقدر يشوف Database معينة
لازم اخلي ال login اللي انا عملته يبقى user
ازاي ؟





Disconnect and Reconnect Server (disconnecting from the server)
لکن کہ windows authentication مش sql server authentication



کده ال login لیه Access علی ال
لکن برضو لما یحاول یدخل علی ای Table مش هیلاقی نفسه قادر یشوف حاجة
لأنی لسه مربطش ال user ده باł Schema

Create Schema (°

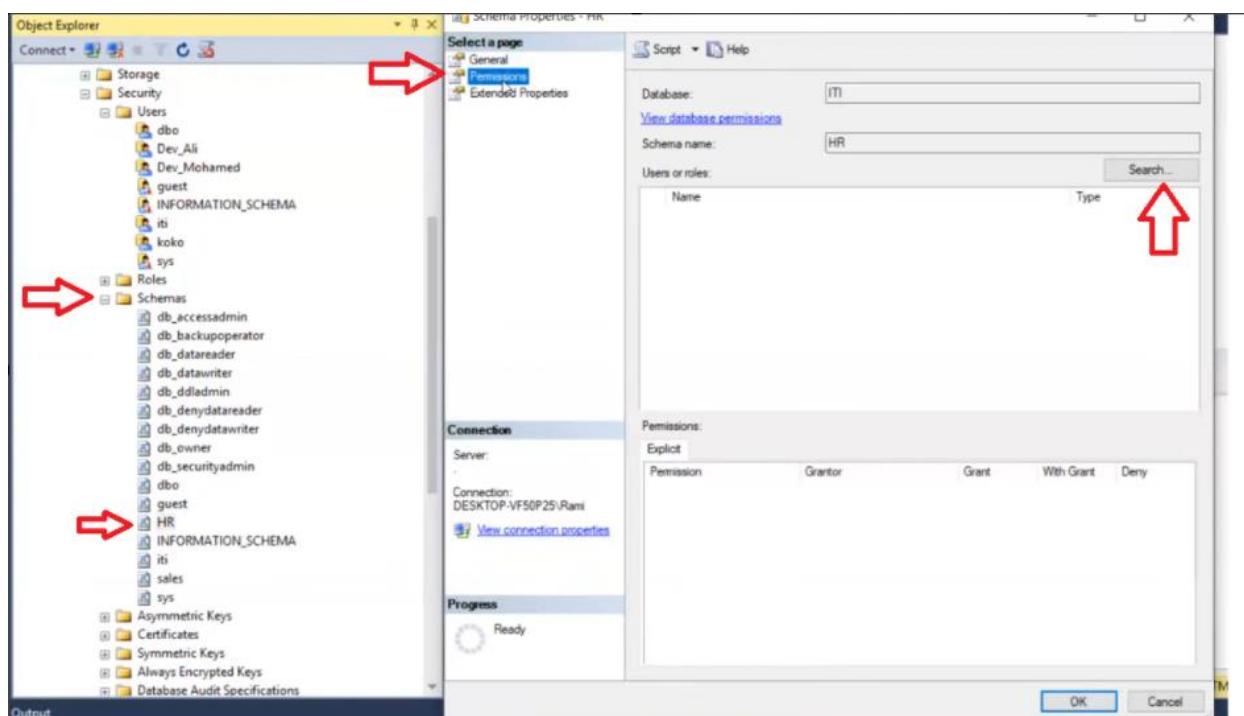
create schema HR

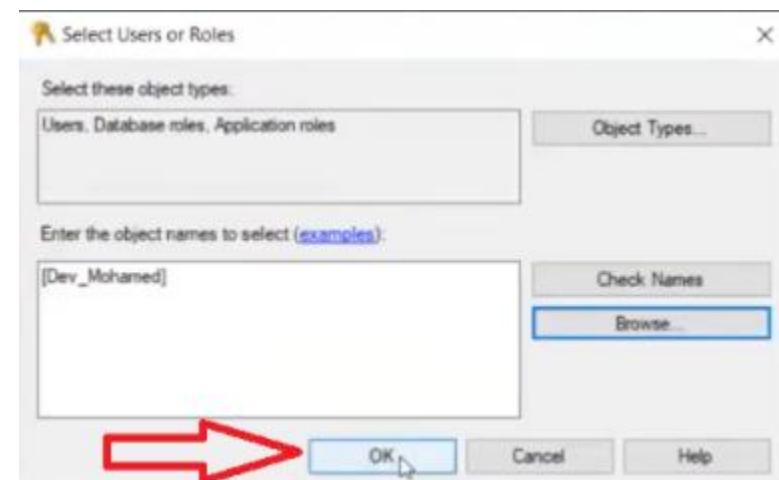
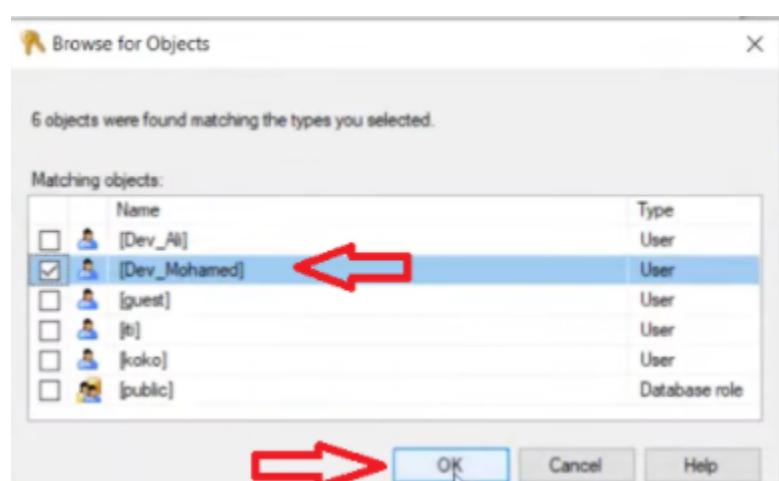
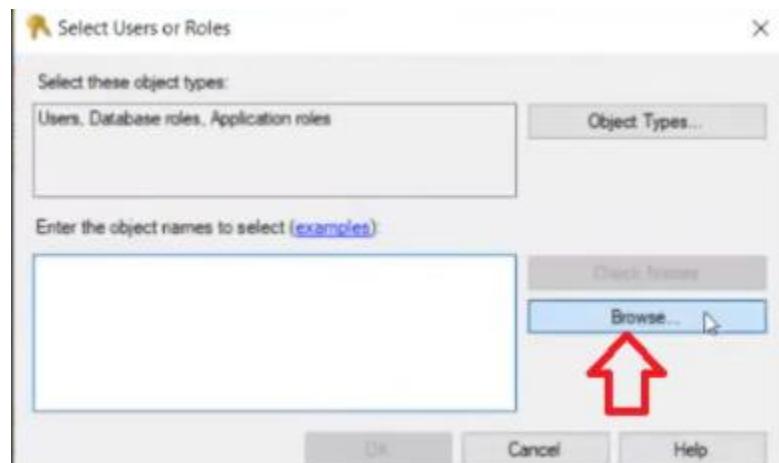
Put a set of objects on Schema (۱)

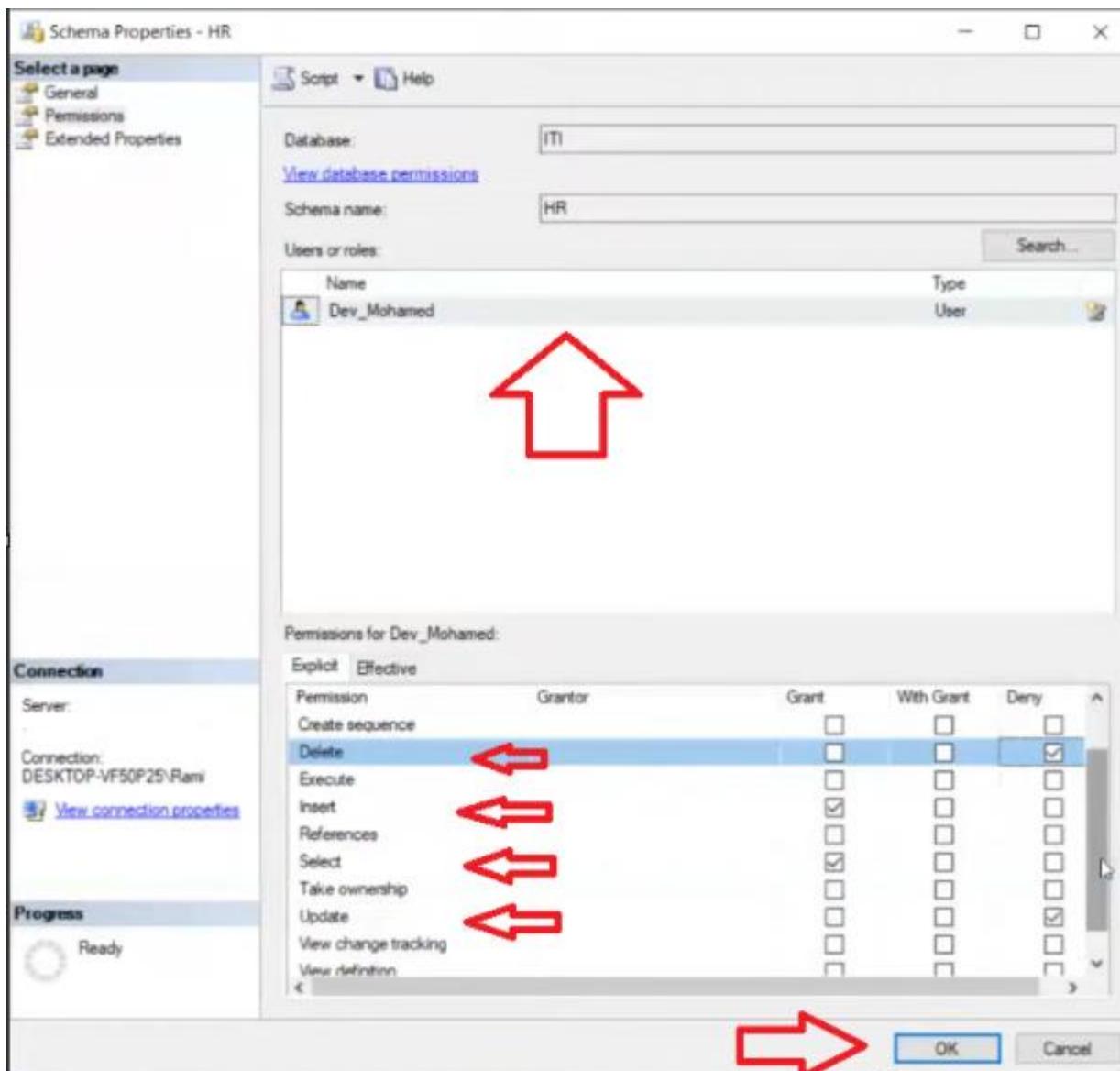
```
alter schema HR transfer Student
```

```
alter schema HR transfer Instructor
```

ربط ال user بال Schema (۷)







طيب افرض انا بعمل ال Query دي كتير وبستخدمها كتير ف ال program
باتاعي

وحبينا نعدل اسم ال Schema

فف كده انا مضطر اغير اسم ال Schema ف كل ال Calls اللي مرتبطة بيها

بس ده طبعا صعب جدا

ف لقينا طريقة نعمل بيه زي Dynamic Alias name بحيث لو اسم ال Schema اتغير

ف هيبي عادي ومش هيحصل مشكلة ف ال Calling بمجرد م اعمل Alter لـ Synonym ده واعمل فيه التعديل اللي حصل

ف كل ال Calls بتتأثر مش بتغيير اسم ال Schema او اسم ال Table

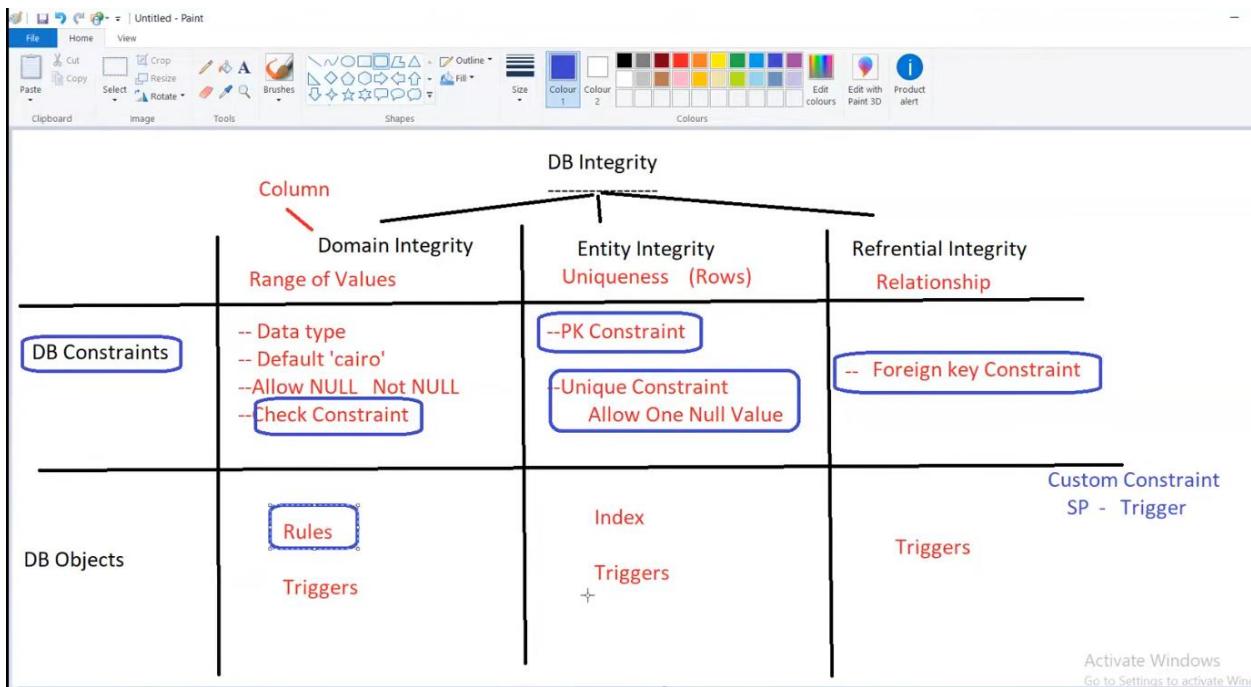
```
create synonym HE  
for HumanResources.EmployeeDepartmentHistory
```

و هستخدموها كده

```
select * from HE
```

ف ده هيوفر عليا وقت ف الكتابة طبعا والأهم انه يحل المشكلة اللي اتكلمنا عنها فوق

هو من الآخر شغال كأنه Pointer مش أكثر



شویة Constraints

```
create table emp
(
    eid int primary key identity(1,1),
    ename varchar(20) ,
    eadd varchar(20) default 'alex',
    hiredate date default getdate(),
    sal int,
    overtime int,
    netsal as(isnull(sal,0)+isnull(overtime,0)) persisted,
    BD date,
    age as(year(getdate())-year(BD)),
    gender int,
    hour_rate int not null,
```

طيب لو عايز اعمل Composite Pk

constraint c1 primary key(eid,ename),

لو عايزة اخلي Column يبقى unique

```
sal int unique,
```

أو كده

```
constraint c2 unique(sal),  
constraint c3 unique(overtime)
```

لكن كينفعش اعملها كده
 لأن كده ال Unique هو اللي Combination

```
constraint c2 unique(sal,overtime),
```

لو عايزة اعمل Check

```
constraint c4 check(sal>1000),
```

```
constraint c5 check(eadd in ('cairo','mansoura','alex')),
```

بس طبعاً اللي فوق دي لو عامل Default value لازم تكون من ضمن القيم

```
constraint c6 check(gender='F' or gender='M'),
```

```
constraint c7 check(overtime between 100 and 500),
```

طيب لو عايزة اعرف Foreign key

```
constraint c8 foreign key(did) references dept(dept_id)|
```

```
constraint c8 foreign key(did) references dept(dept_id)  
on delete set NULL on update cascade|
```

لو انا هضيف Constraint بعد م عملت ال Table
ف انا لازم اتأكد إن ال Constraint ده هينفع يتطبق مع ال Data القديمة
بتعاوني وإلا مش هيقبل اصلا
زى كده

rate

The screenshot shows a SQL developer interface. In the main pane, there is a code editor with the following SQL statement:

```
alter table emp add constraint c100 check(hour_rate>100)
```

In the bottom pane, under the "Messages" tab, there is an error message:

Msg 547, Level 16, State 0, Line 102
The ALTER TABLE statement conflicted with the CHECK constraint "c100". The conflict occurred in object 'emp'.

هنا اعترض لأن انا كان عندي اصلا hour_rate اقل من 100

ف كده نقدر نقول إن ال Constraints بتطبق على ال Data القديمة والجديدة

طيب ممكن اعمل Drop لل Constraint
اه اقدر

alter table emp drop constraint c3

طيب هل اقدر اعمل Constraint يتطبق على ال Data الجديدة
وميتطبقش على ال Data القديمة ؟
اه اقدر

ال Condition لما بعمله بيكون مخصص ل Column معين
طيب ممكن اعمل Constraint يكون Shared بين اكتر من Column
او حتى ما بين كذا ؟ Table
اه

طيب ممكن اعمل Data type جديد
اعمل عليه Condition واعمله Default Value
اه

```
]--Constraint      ---> New Data  
  --Constraint     --->shared  
  --Datatype       Constraint      Default
```

طيب اعمل كل ده إزاي ؟

--Rule

دي بيعملها Create على مستوى ال Database أو على مستوى ال Schema

The screenshot shows the SSMS interface. In the Object Explorer on the left, a red arrow points to the 'Tables' node under the 'DB1' database. The 'Tables' node is expanded, showing several table names. In the center, a query window titled 'Day6.sql - (local)...P-VF50P25\Ram (55)' contains the following SQL code:

```
alter table emp drop constraint c3  
--Constraint      ---> New Data  
--Constraint      --->shared  
--Datatype        Constraint    Default  
  
--Rule  
create rule r1 as @x>1000
```

The 'create rule' statement is highlighted with a red underline. Below the query window, the status bar shows 'Command(s) completed successfully.' and 'Query executed successfully.'

```
--Rule  
create rule r1 as @x>1000  
  
sp_bindrule r1, 'instructor.salary'
```

طيب يبقى كده احنا عرفنا الفرق بين ال Constraint وال Rule العاديّة

```
alter table instructor add constraint c200 check(salary>1000)
```

```
--Rule  
create rule r1 as @x>1000  
  
sp_bindrule r1, 'instructor.salary'
```

طيب هل اقدر اطبق على ال Rule دي على Column ثاني او حتى ب Table ثاني ؟

٥

```
--Rule
create rule r1 as @x>1000
sp_bindrule r1,'instructor.salary'
sp_bindrule r1,'emp.overtime'
```

بس انا مقدرش اعمل Drop لـ Rule دي

إلا لما اعمل unbind لـ Rule دي

```
sp_unbindrule 'instructor.salary'
```

```
_ sp_unbindrule 'emp.overtime'
```

```
I
| drop rule r1
```

```
--Rule
create rule r1 as @x>1000
sp_bindrule r1,'instructor.salary'
sp_bindrule r1,'emp.overtime'
sp_unbindrule 'instructor.salary'
sp_unbindrule 'emp.overtime'
drop rule r1
```

طيب ينفع اعمل 2 Rules على Column واحد

لأن

وبمجرد م اعمل كده ال Rule الثانية هتعمل override على ال Rule الأولى

لكن ممكن اعمل كذا Constraint على نفس ال Column مفيش اي مشكلة

طيب ممكن اعمل Shared Constraint كـ Default Value ؟ Column

٥

The screenshot shows the SSMS interface. On the left, the Object Explorer tree view is expanded to show the database structure, including DB1, ITI, and various system and user databases. A red arrow points to the 'dbo.defaults' node under DB1. The main window displays a T-SQL script:

```
create default def1 as 5000  
sp_bindefault def1, 'instructor.salary'  
sp_unbindefault 'instructor.salary'  
drop rule r1
```

In the status bar at the bottom, it says "Command(s) completed successfully."

وبرضو بتطبق على القيم الجديدة بس
وبرضو مينفعش اعملها Drop من غير Bind

طيب لو عايز اعمل Data type

هنا بقى بجمع بين الحاجتين اللي انا لسه عاملهم فوق

```
--Create Datatype      ComplexDT  (int      >1000      default 5000)
```

```

--Create Datatype    ComplexDT  (int      >1000      default 5000)
create rule r1 as @x>1000
create default def1 as 5000

sp_addtype ComplexDT, 'int'

sp_bindrule r1,ComplexDT
I
sp_bindefault def1,ComplexDT

```

هنا انا عملت ComplexDT ل Data type جديد اسمه Create int واحد صفات ال و في Rule انه يكون اكبر من 1000 و في Default Value ب 5000 وفي

وممكن عادي استخدمه زي أي Data type

```

|create table test3
(
    id int,
    name varchar(20),
    salary ComplexDT
)

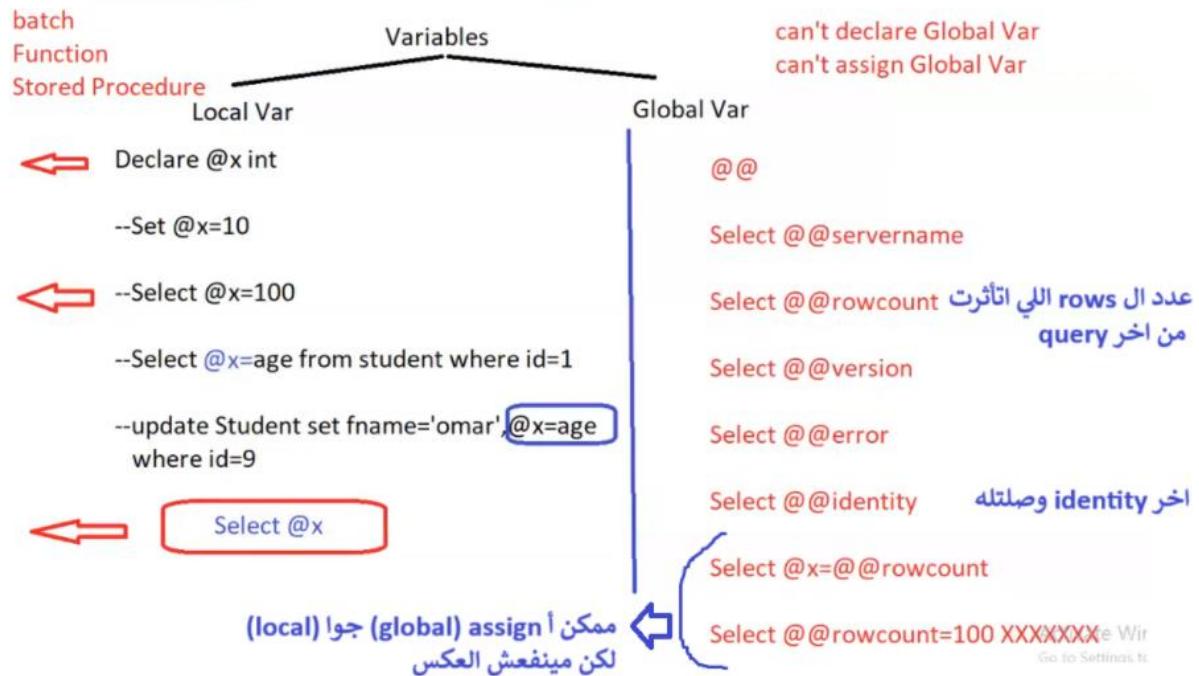
```

ف هنا انا عندي ال Salary اسمها Data type عندنـه int نوعـه وال Default value = 5000 ، عندـه Rule بـتخليـه مـيقبلـش اـرقـام أقلـ من 1000 وـعـنـدـه

طيب ينفع Column يبقي عليه Constraint و Rule ؟

اه بس طبعا مينفعش يتعارضوا مع بعض

بس ال Rule هيتنفذ الأول بعد كده ال Constraint



```

declare @x int
set @x=10
select @x

```

Results

(No column name)
1 10

لازم ال ٣ حاجات ينكتبوا مع بعض
لأنه بي run ك batch

```
declare @x int  
select @x=10  
select @x
```

200 %

Results Messages

(No column name)

1 10

وهنا انا عملت select ب assign مش ب set

```
declare @x int=100  
select @x
```

200 %

Results Messages

(No column name)

1 100

وهنا انا عملت declare و assign ف نفس السطر مع بعض

```
declare @x int=(select avg(st_age) from student)  
select @x
```

200 %

Results Messages

(No column name)

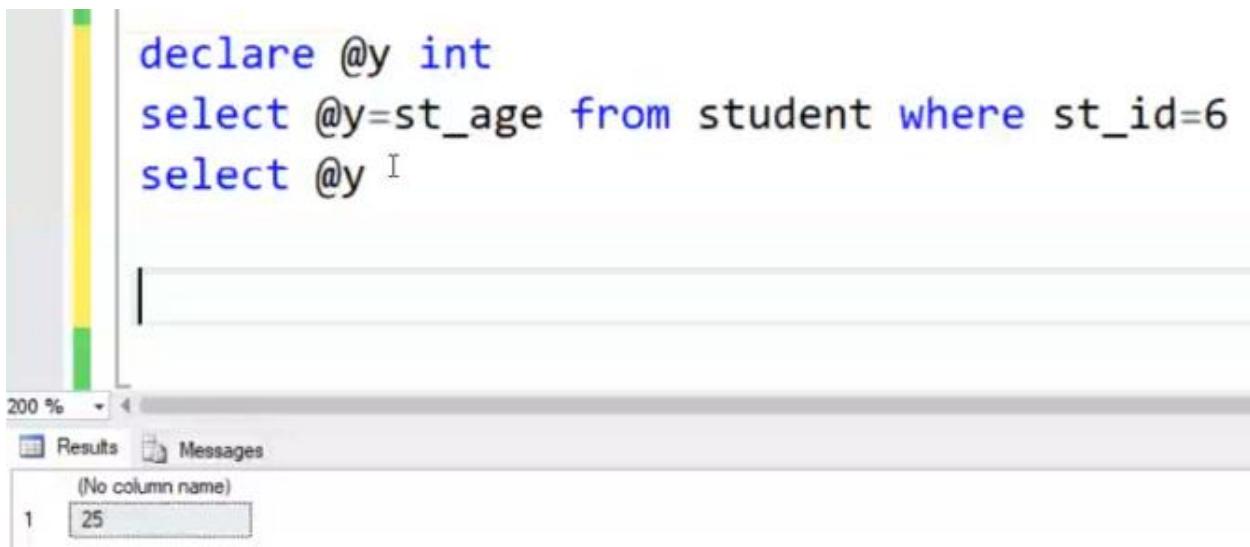
1 24

وهنا انا عملت sub-query عن طريق استخدام assign

```
declare @y int  
select @y=st_age from student where st_id=6
```

وهنا انا عملت assign برضو

لكن عملت assign بس معرضتش حاجة



```
declare @y int  
select @y=st_age from student where st_id=6  
select @y
```

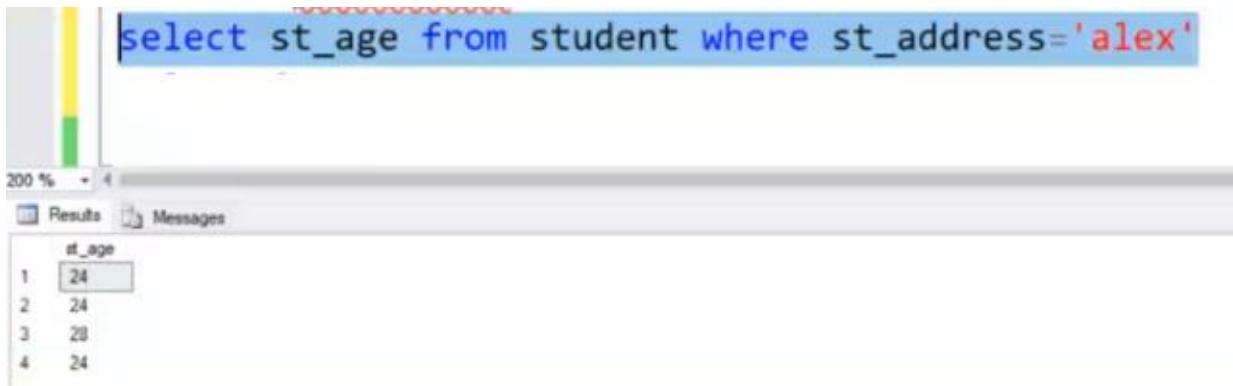
Results Messages

(No column name)
1 25

لكن هنا انا عملت assign وعرضت

طيب كل اللي فوق ده ال variable كان بي return قيمة واحدة بس

طيب لو المفروض ي return كذا قيمة : هو هي اخر قيمة بس



```
select st_age from student where st_address='alex'
```

Results Messages

st_age
1 24
2 24
3 28
4 24

لكن لو عندي query زي دي بترجع كذا قيمة ؟

```
declare @y int=100  
select @y=st_age from student where st_address='alex'  
select @y
```

The screenshot shows an SQL query window in SSMS. The code declares a variable @y with a value of 100, then selects it from the student table where the address is 'alex', and finally selects the variable @y again. The results pane shows one row with the value 24.

	(No column name)
1	24

زي م قولنا هيرجع اخر قيمة بس
انا فوق كنت ب retrieve ال age بس
طيب لو انا عايز ارجع ال first name وال age
ف لازم اعرف 2 variables مش واحد بس

```
declare @y int,@name varchar(20)  
select @y=st_age,@name=st_fname from student where st_id=4  
select @y,@name
```

The screenshot shows an SQL query window in SSMS. The code declares two variables @y and @name, both initialized from the student table where st_id is 4. It then selects both variables. The results pane shows one row with the values 24 and Ahmed.

	(No column name)	(No column name)
1	24	Ahmed

طيب هل ممكن اعمل update و select في نفس الوقت ؟

اه

```
declare @z int
update student set st_fname='ali',@z=dept_id
where st_id=7
select @z
```

The screenshot shows a MySQL Workbench interface. The query editor contains the provided SQL code. The results pane shows a single row with column name '(No column name)' and value '20'.

هنا هو عمل update لـ first name

وف نفس الوقت عمل select لـ department ID

طيب ده حصل إزاي اصلا ؟

ده حصل لأن أثناء مـ هو بيعمل الـ update فـ هو واقف على الـ row اللي
هيغيرله الـ first name فـ هو شايف الـ row كلـه

عشان كده قدر يعمل select و department ID retrieve الـ

طيب لو انا المفروض يرجعي اكتر من قيمة (array)

اعمل كده ازاي ؟

عن طريق اني اعمل variable من النوع Table

واعمل بقـي insert based on select

وطبعـا كلـه في الـ memory

وطبعـا اقدر اشتغل على الـ Table دـه لو انا عايزـ

```

declare @t table(x int)
insert into @t
select st_id from student where st_address='alex'
select * from @t

```

Results

	x
1	4
2	5
3	8
4	10

ف هنا هو عمل return لكل ال rows دي في Table
وممكن بعد كده اشتغل علي ال Table ده واعمل اي حاجة
زي اني اجيبي ال Count لـ rows مثلا

```

declare @t table(x int)
insert into @t
select st_id from student where st_address='alex'
select count(*) from @t

```

Results

	(No column name)
1	4

وده كده 1-D array
وممكن اعمل برضو 2-D array

```

declare @t table(x int,y varchar(20))
insert into @t
select st_id,st_fname from student where st_address='alex'
select * from @t

```

Results

	x	y
1	4	Ahmed
2	5	NULL
3	8	Mohamed
4	10	NULL

طيب هنا

```

select top(2)*
from student

```

Results

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Amr	Magdy	Cairo	21	10	1

انا عندي ال Static Top

لكن هل اقدر استخدم variable مع ال Top

اه

```
declare @x int=5
select top(@x)*
from student
```

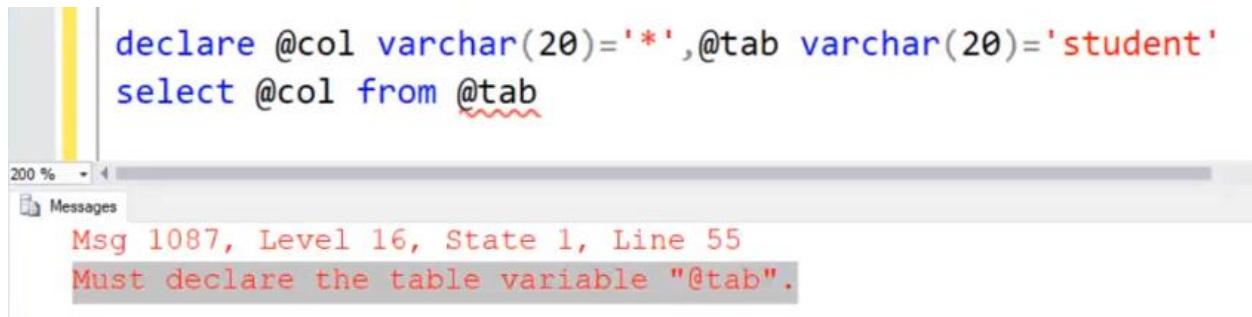
Results Messages

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Amr	Magdy	Cairo	21	10	1
3	Mona	Saleh	Cairo	22	10	1
4	Ahmed	Mohamed	Alex	24	10	1
5	NULL	Mohamed	Alex	24	10	1

ف كده ال Top هتتغير كل م اغير قيمة X variable

ف يعتبر كده Dynamic سيكا

طيب هل ممكن استخدم varchar مع ال From ؟ لا



declare @col varchar(20)= '*',@tab varchar(20)='student'
select @col from @tab

Msg 1087, Level 16, State 1, Line 55
Must declare the table variable "@tab".

هو هنا كان عايز يعمل كده

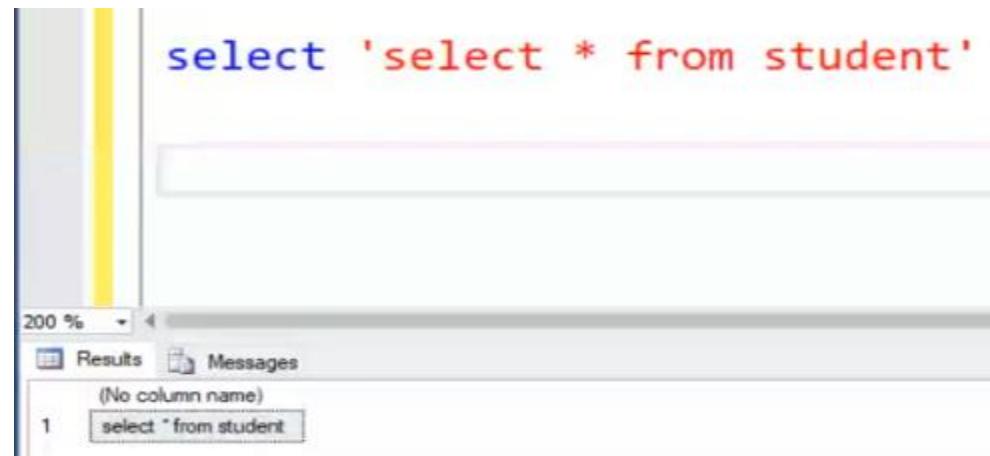
select * from student

بس طبعاً مينفعش لأن لازم استخدم Table مع ال From لأن مينفعش

زي م عملت فوق

```
declare @t table(x int,y varchar(20))  
insert into @t  
select st_id,st_fname from student where st_address='alex'  
select * from @t
```

طيب انا لو عملت كده



```
select * from student
```

هو هيفهم إن ده string

طيب لو انا عايز اكتب ال query as string

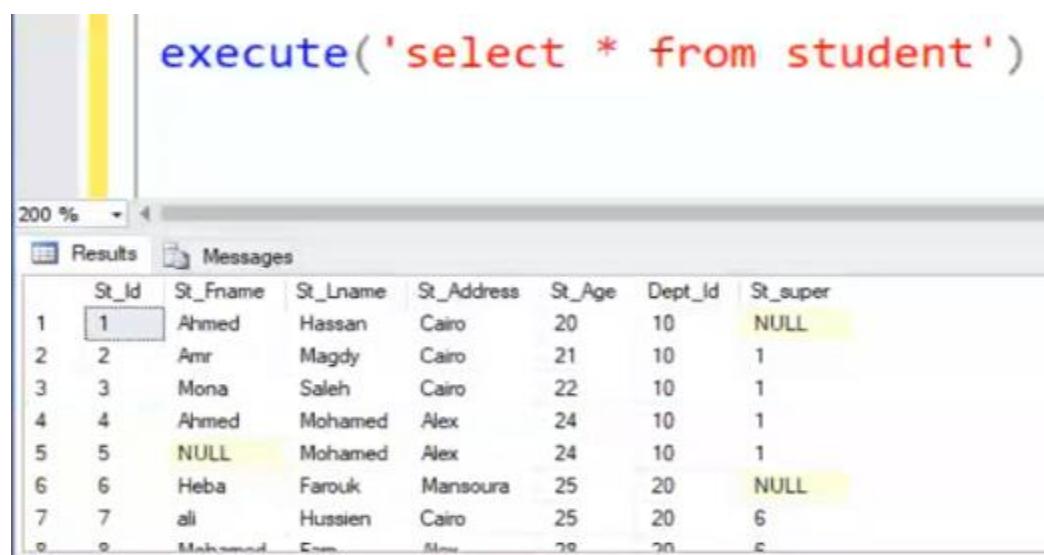
هل اقدر اعمل كده ؟

اه

عن طريق Execute

دي بستقبل string وتحول ال query ده ل string وبعد كده تعمله

ده طبعاً لو ال query string ده اساساً كان ينفع يتحول ل

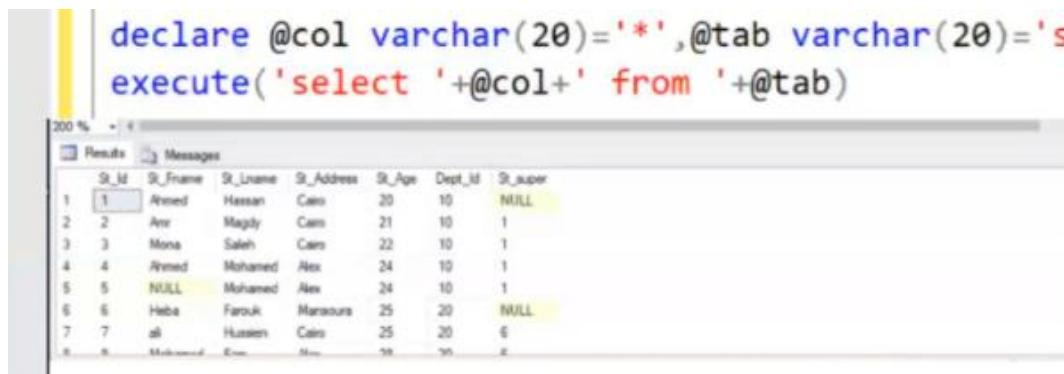


```
execute('select * from student')
```

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Amr	Magdy	Cairo	21	10	1
3	Mona	Saleh	Cairo	22	10	1
4	Ahmed	Mohamed	Alex	24	10	1
5	NULL	Mohamed	Alex	24	10	1
6	Heba	Farouk	Mansoura	25	20	NULL
7	ali	Hussien	Cairo	25	20	6
8	Mahmoud	Eman	Mena	29	20	6

ف طبعا انا ممكن استخدم Execute

ف اني اعمل Dynamic query



```
declare @col varchar(20)='*',@tab varchar(20)='student'
execute('select '+@col+' from '+@tab)
```

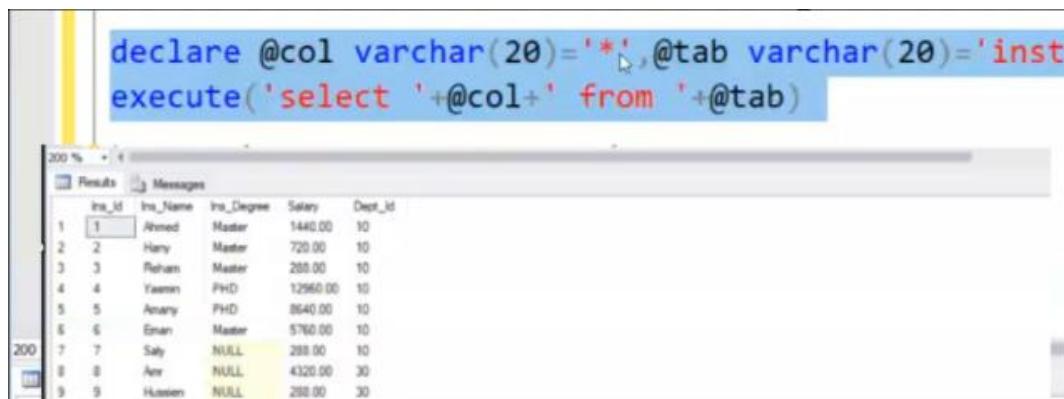
The screenshot shows a SQL query window with the following code:

```
declare @col varchar(20)='*',@tab varchar(20)='student'
execute('select '+@col+' from '+@tab)
```

The results pane displays the data from the student table:

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_Super
1	Ahmed	Hassan	Cairo	20	10	NULL
2	Anr	Magdy	Cairo	21	10	1
3	Mona	Saleh	Cairo	22	10	1
4	Ahmed	Mohamed	Alex	24	10	1
5	NULL	Mohamed	Alex	24	10	1
6	Heba	Farouk	Marsaoura	25	20	NULL
7	ali	Hussein	Cairo	25	20	6
8	Mohamed	Eman	Marsaoura	26	20	2

هنا انا استخدمتها مع Student table



```
declare @col varchar(20)='*',@tab varchar(20)='instructor'
execute('select '+@col+' from '+@tab)
```

The screenshot shows a SQL query window with the following code:

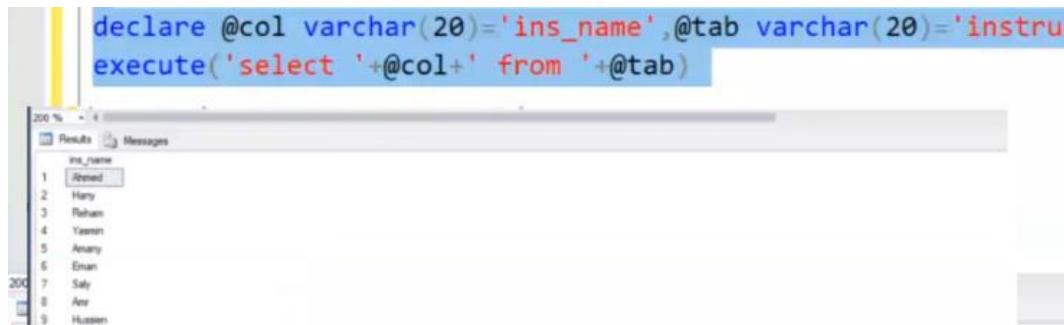
```
declare @col varchar(20)='*',@tab varchar(20)='instructor'
execute('select '+@col+' from '+@tab)
```

The results pane displays the data from the instructor table:

Inr_Id	Inr_Name	Inr_Degree	Salary	Dept_Id
1	Ahmed	Master	1440.00	10
2	Hany	Master	720.00	10
3	Reham	Master	288.00	10
4	Yasmin	PHD	12960.00	10
5	Anany	PHD	3640.00	10
6	Eman	Master	5760.00	10
7	Saly	NULL	288.00	10
8	Anr	NULL	4320.00	30
9	Hussein	NULL	288.00	30

هنا استخدمتها مع instructor table

وممكن بقى اعمل اي حاجة عادي



```
declare @col varchar(20)='ins_name',@tab varchar(20)='instructor'
execute('select '+@col+' from '+@tab)
```

The screenshot shows a SQL query window with the following code:

```
declare @col varchar(20)='ins_name',@tab varchar(20)='instructor'
execute('select '+@col+' from '+@tab)
```

The results pane displays the data from the instructor table filtered by ins_name:

ins_name
Ahmed
Hany
Reham
Yasmin
Anany
Eman
Saly
Anr
Hussein

```
--Global Var  
select @@SERVERNAME  
  
Select @@version
```

Results Messages

(No column name)
1 DESKTOP-VF5OP25

(No column name)

1 Microsoft SQL Server 2016 (RTM-GDR) (KB4019088...)

```
update student  
set st_age+=1
```

Messages

(15 row(s) affected)

```
update student  
set st_age+=1  
Select @@ROWCOUNT
```

Results Messages
(No column name)
1 15

```
update student  
set st_age+=1  
Select @@ROWCOUNT  
Select @@ROWCOUNT
```

Results Messages
(No column name)
1 15

Results Messages
(No column name)
1 1

الاولي جاب عدد ال affected rows ف ال update query لكن الثانية جاب عدد ال affected rows ف اخر select اللي هي الاولي وهو كان بيعرض row واحد بس ف عشان كده رجطي row واحد بس ف select الثانية

```
Select @@error
```

وهنا جابلي 0 لأن اخر query كان سليم
لكن لو كتبت query غلط
ف هيطلعني error عادي

```
select * from stud
go
Select @@error
```

Msg 208, Level 16, State 1, Line 72
Invalid object name 'stud'.
(1 row(s) affected)

وكمان ظعلي رقم ال (208) error

A screenshot of the SQL Server Management Studio interface. The query window contains the command `select @@IDENTITY`. The results pane shows a single row with the value `NULL`. The toolbar at the top has a zoom level of `200%`. Below the toolbar are tabs for `Results` and `Messages`.

(No column name)
1 NULL

وهنا طبعا هيجيلي Null
لأن identity دي هتأثر امتى ؟
لو انا عملت insert فيه Table اصلا
وانا عايزة اعرف اخر identity استخدمنها ف ال Table كام

--Control of flow statement

```
--if
--begin
--end
--if exists if not exists
--while
--constinue
--break
--case
--iif
--waitfor
--choose
```

```
--if
declare @x int
update student
    set st_age+=1
Select @x=@@ROWCOUNT
if @x>0
    select 'multi rows Affected'
else
    select 'No Rows Affected'
```

Results

(No column name)	
1	multi rows Affected

وبستخدم else لو عندي اكتر من سطر جوا ال if او ال else

```
declare @x int
update student
    set st_age+=1
Select @x=@@ROWCOUNT
if @x>0
begin
    select 'multi rows Affected'
end
else
begin
    select 'No Rows Affected'
end
```

Results

(No column name)	
1	multi rows Affected

طبعاً احنا عارفين ان عندنا زي ال **dbo built-in Schemas**

طيب ايه تاني غيرها :

دي فيها كل ال **meta data** بتعطي اللي جوا ال

The screenshot shows a SQL query window with the following content:

```
select * from sys.all_columns
```

The results grid displays columns for object_id, name, column_id, system_type_id, user_type_id, max_length, precision, scale, collation_name, is_nullable, is_ansi_padded, is_rowguidcol, is_identity, is_computed, and is_filestream.

	object_id	name	column_id	system_type_id	user_type_id	max_length	precision	scale	collation_name	is_nullable	is_ansi_padded	is_rowguidcol	is_identity	is_computed	is_filestream
1	3	rsid	1	127	127	8	19	0	NULL	0	0	0	0	0	0
2	3	rsolid	2	56	56	4	10	0	NULL	0	0	0	0	0	0
3	3	hbcolid	3	56	56	4	10	0	NULL	0	0	0	0	0	0
4	3	romodified	4	127	127	8	19	0	NULL	0	0	0	0	0	0
5	3	ti	5	56	56	4	10	0	NULL	0	0	0	0	0	0
6	3	cid	6	56	56	4	10	0	NULL	0	0	0	0	0	0
7	3	ordkey	7	52	52	2	5	0	NULL	0	0	0	0	0	0
8	3	maxinro...	8	52	52	2	5	0	NULL	0	0	0	0	0	0
9	3	status	9	56	56	4	10	0	NULL	0	0	0	0	0	0
10	3	offset	10	56	56	4	10	0	NULL	0	0	0	0	0	0
11	3	nullbit	11	56	56	4	10	0	NULL	0	0	0	0	0	0
12	3	hidden	12	52	52	2	5	0	NULL	0	0	0	0	0	0

ف هنا هي عمل return لكل ال **Columns** اللي عندي ف ال **database**

The screenshot shows a SQL query window with the following content:

```
select * from sys.tables
```

The results grid displays columns for name, object_id, principal_id, schema_id, parent_object_id, type, type_desc, create_date, modify_date, is_ms_shipped, is_published, and is_schema_published.

	name	object_id	principal_id	schema_id	parent_object_id	type	type_desc	create_date	modify_date	is_ms_shipped	is_published	is_schema_published
1	Course	21575115	NULL	1	0	U	USER_TABLE	2009-01-11 08:09:41.070	2010-08-26 13:14:59.520	0	0	0
2	Stud_Course	53575229	NULL	1	0	U	USER_TABLE	2009-01-11 08:11:05.820	2010-08-26 13:05:38.207	0	0	0
3	Topic	85575343	NULL	1	0	U	USER_TABLE	2009-01-11 08:11:55.210	2010-08-26 13:05:38.440	0	0	0
4	sysdiagrams	133575514	NULL	1	0	U	USER_TABLE	2009-01-11 08:11:59.210	2009-01-11 08:11:59.213	0	0	0
5	Ins_Course	693577509	NULL	1	0	U	USER_TABLE	2010-08-26 13:14:21.360	2010-08-26 13:36:58.207	0	0	0
6	Instructor	757577737	NULL	1	0	U	USER_TABLE	2010-08-26 13:30:00.127	2020-11-24 14:03:07.863	0	0	0
7	test	1173579219	NULL	1	0	U	USER_TABLE	2020-11-19 13:49:14.423	2020-11-19 13:49:14.423	0	0	0
8	mytesting	1477580302	NULL	1	0	U	USER_TABLE	2020-11-23 11:53:03.310	2020-11-23 11:53:03.310	0	0	0
9	table2	1493580359	NULL	1	0	U	USER_TABLE	2020-11-23 12:22:05.567	2020-11-23 12:22:05.567	0	0	0
10	table3	1525580473	NULL	1	0	U	USER_TABLE	2020-11-23 12:22:43.530	2020-11-23 12:22:43.530	0	0	0
11	tab3	1557580587	NULL	1	0	U	USER_TABLE	2020-11-23 12:24:09.760	2020-11-23 12:24:09.760	0	0	0
12	tab4	1573580644	NULL	1	0	U	USER_TABLE	2020-11-23 12:26:19.457	2020-11-23 12:26:19.457	0	0	0

وهنا هي جبلي معلومات عن كل ال **Tables** اللي عندي

The screenshot shows a SQL query window with the following content:

```
select * from sys.all_views
```

Results

	name	object_id	principal_id	schema_id	parent_object_id	type	type_desc	create_date	modify_date	is_ms_shipped	is_published
1	TABLE_PRIVILEGES	-1072372588	NULL	3	0	V	VIEW	2017-07-06 01:01:58.203	2017-07-06 01:01:58.207	1	0
2	dm_resource_governor_resource_pool_volumes	-1067705889	NULL	4	0	V	VIEW	2017-07-06 01:01:42.450	2017-07-06 01:01:42.453	1	0
3	dm_os_hosts	-1061705188	NULL	4	0	V	VIEW	2017-07-06 01:01:42.153	2017-07-06 01:01:42.157	1	0
4	dm_os_memory_brokers	-105124494	NULL	4	0	V	VIEW	2017-07-06 01:01:42.267	2017-07-06 01:01:42.270	1	0
5	openkeys	-1047118026	NULL	4	0	V	VIEW	2017-07-06 01:01:31.833	2017-07-06 01:01:31.837	1	0
6	dm_os_memory_allocations	-1045383193	NULL	4	0	V	VIEW	2017-07-06 01:01:42.170	2017-07-06 01:01:42.173	1	0
7	dm_db_xtp_nonclustered_index_stats	-1040815568	NULL	4	0	V	VIEW	2017-07-06 01:03:11.277	2017-07-06 01:03:11.280	1	0
8	dm_db_mirroring_past_actions	-1040075447	NULL	4	0	V	VIEW	2017-07-06 01:01:42.487	2017-07-06 01:01:42.490	1	0
9	dm_xe_session_object_columns	-1039848107	NULL	4	0	V	VIEW	2017-07-06 01:01:42.350	2017-07-06 01:01:42.353	1	0
10	dm_os_loaded_modules	-1035533931	NULL	4	0	V	VIEW	2017-07-06 01:01:42.163	2017-07-06 01:01:42.167	1	0
11	dm_db_task_space_usage	-1030289985	NULL	4	0	V	VIEW	2017-07-06 01:01:41.847	2017-07-06 01:01:41.860	1	0
12	dm_no_maintenance_objects	-1021262241	NULL	4	0	V	VIEW	2017-07-06 01:01:42.197	2017-07-06 01:01:42.200	1	0

Query executed successfully.

وهنا هيجيلي معلومات عن كل ال views اللي عندي ف ال database

ف كل اللي فوق ده : انا بكلم ال meta data

The screenshot shows a SQL query window with the following content:

```
select name from sys.tables
```

Results

	name
1	Course
2	Stud_Course
3	Topic
4	sysdiagrams
5	Ins_Course
6	Instructor
7	test
8	mytesting
9	table2
10	table3
11	tab3
12	tab4

هنا رجطي اسماء كل ال Tables اللي عندي

طيب ايه هي Exist وامتي بستخدمها وليه بستخدمها ؟

هي بترجملي (T) or (F)

بستخدمها عشان اعرف لو ال query اللي جواها (T) يكمل

لكن لو (F) ميعملش حاجة

لأن ال Error ممكن يضرب البرنامج بتاعي

ف كده امان اكتر

وممكن بقى استخدم معاهها if-else

```
if exists(select name from sys.tables where name='students')
    select 'table is existed'
else
    create table student|
    (
        id int,
        name varchar(20)
    )
```

The screenshot shows an SQL query window in SSMS. The query uses an if-else block to first check if a table named 'students' exists in the system tables. If it does, it selects the message 'table is existed'. If it doesn't, it creates a new table 'student' with two columns: 'id' (int) and 'name' (varchar(20)). The results pane shows a single row with the message 'table is existed'.

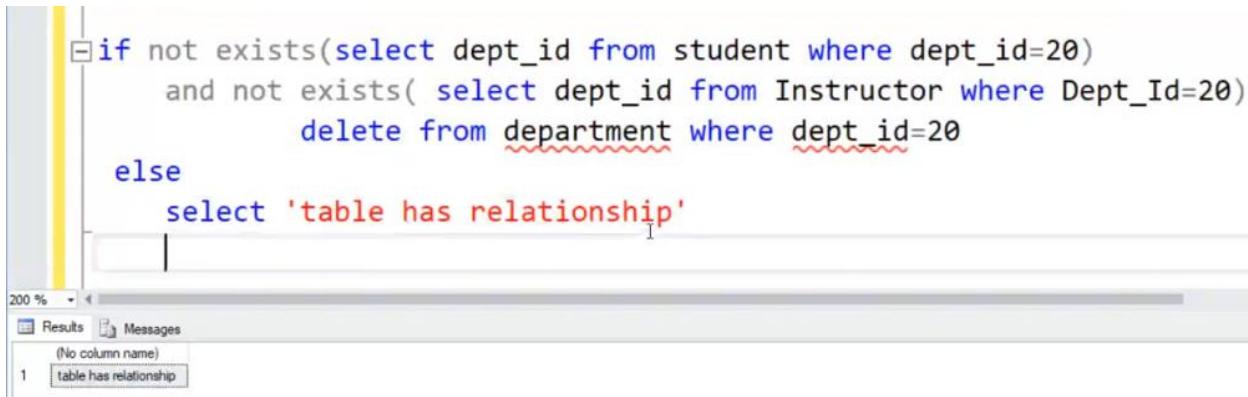
ف هنا انا بعمل Check على Student Table

لو موجود اكتبلي (table is existed)

لو مش موجود اعمل Create لـ Table

طيب لو انا عايز حاجة من Table وانا عارف ان ممكن يكون موجود علاقة بينها
وبين Tables تانية

ممكن استخدم **Not Exist**



```
if not exists(select dept_id from student where dept_id=20)
    and not exists( select dept_id from Instructor where Dept_Id=20)
        delete from department where dept_id=20
else
    select 'table has relationship'
```

The screenshot shows a SQL query in the top pane and its results in the bottom pane. The results grid has one row with the value 'table has relationship'.

هنا انا عايز امسح ال ID = 20
ف انا مقدرش امسحه لو ليه Child احنا مستخدمنيه ف
(student & instructor Tables)

ف استخدمنا **Not Exist**

ف لو الشرطين بتوع Not Exist مبيتحقققوش : امسح
لو حاجة منهم بتتحقق : اكتبلي **(table has relationship)**

طيب في طريقة احسن

عشان لو انا خايف يطلعلي error غير ده وانا مش عارف ؟

اه

Try – Catch

The screenshot shows two separate sessions in SQL Server Management Studio (SSMS) illustrating the use of Try-Catch blocks.

Session 1:

```
begin try
    delete from department where dept_id=20
end try
begin catch
    select 'error'
end catch
```

Results pane output:

(No column name)
1 error

Session 2:

```
begin try
    delete from department where dept_id=20
end try
begin catch
    select 'error'
    select ERROR_LINE(), ERROR_NUMBER(), ERROR_MESSAGE()
end catch
```

Results pane output:

(No column name)
1 error

Messages pane output:

(No column name)	(No column name)	(No column name)
1	2	547

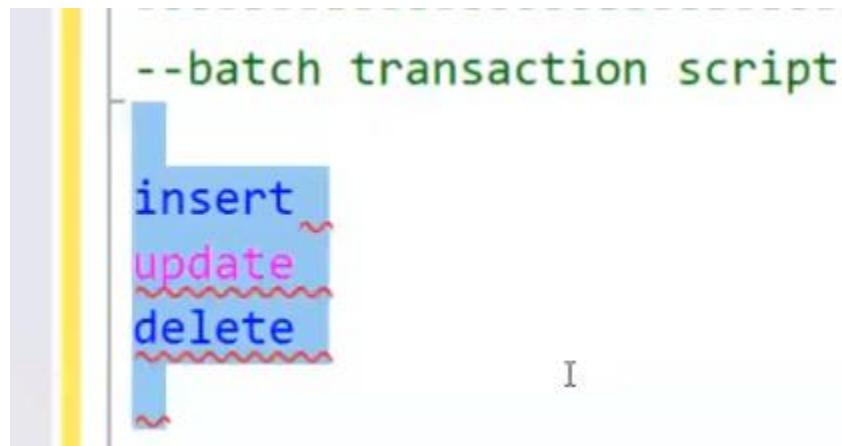
The message details the error: "The DELETE statement conflicted with the REFERENCE constraint "FK_Student_Department". The conflict occurred in database "ITI", table "dbo.Stude..."

While

```
declare @x int=10
while @x<=20
begin
    Set @x+=1
    if @x=14
        continue
    if @x=16
        break
    select @x
end
```

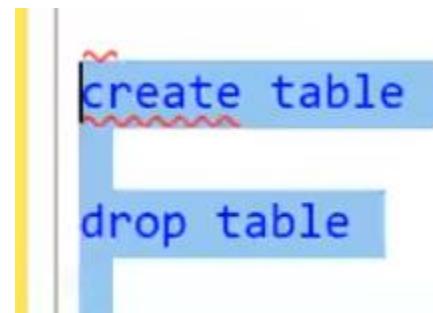
Results	
(No column name)	
1	11
(No column name)	
1	12
(No column name)	
1	13
(No column name)	
1	15

```
--batch transaction script
```



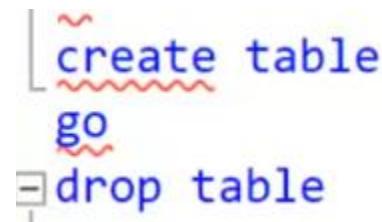
مجموّعة من ال Run queries بت Batch و بتكون DML queries

بس طبعاً في queries مينفعش ت Run مع بعض ف نفس ال Batch زي دول



لأنّهم

ف لازم افصل بينهم بـ

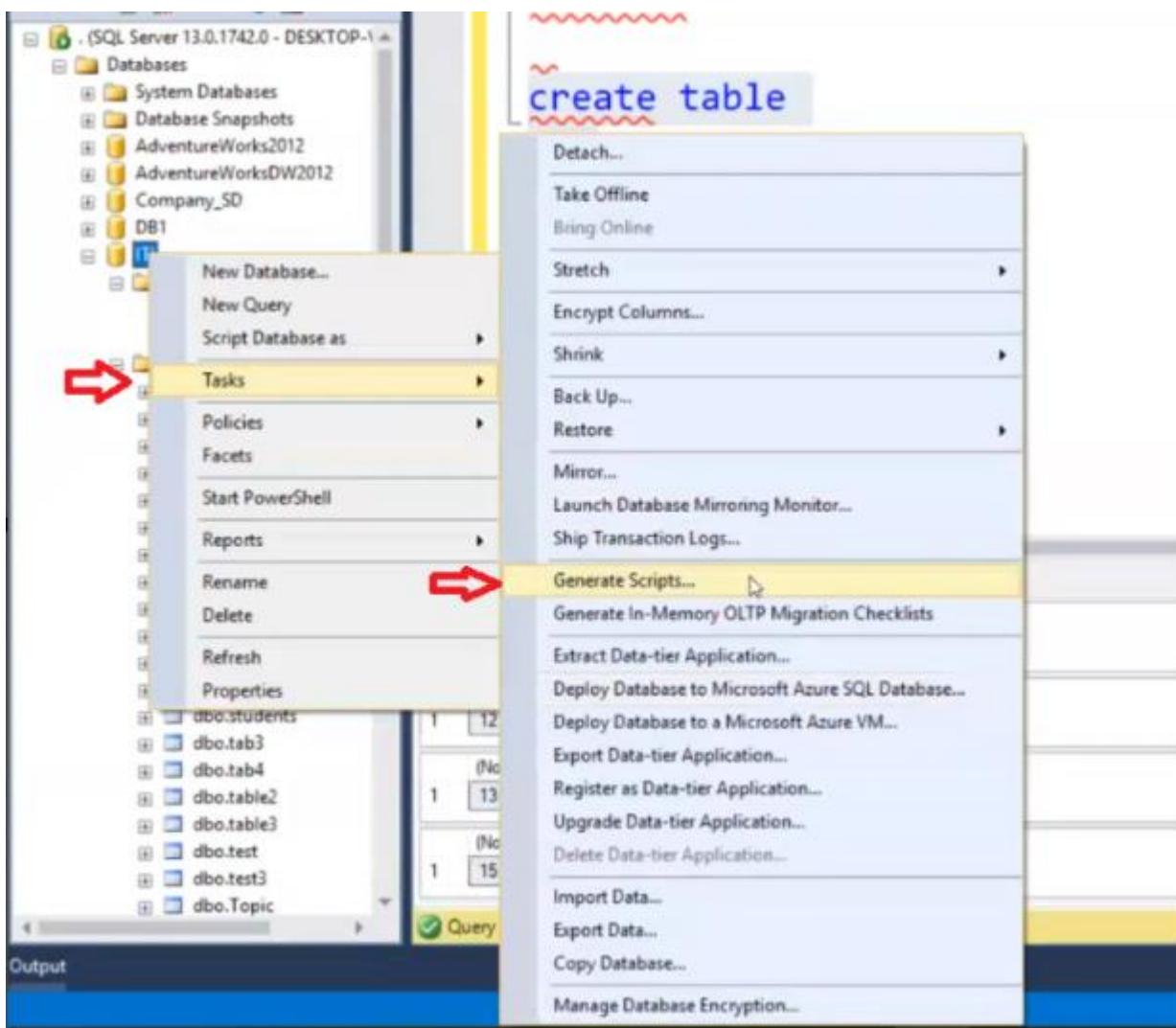
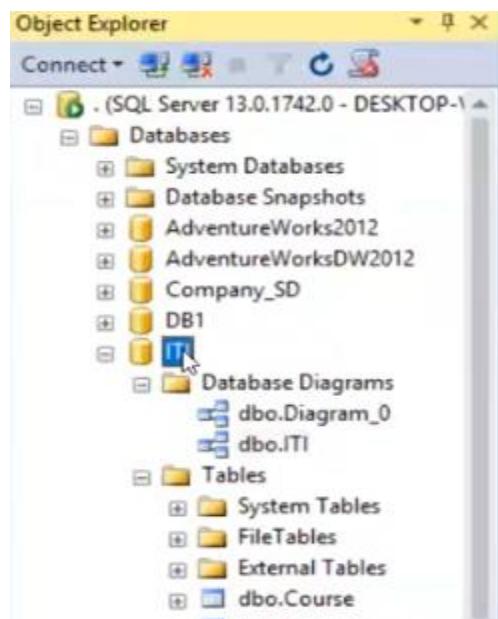


```
create rule
go
sp_bindrule

create table
go
drop table
go
create rule
go
sp_bindrule
```

وطبعاً ده اسمه **Script** مش **Batch**

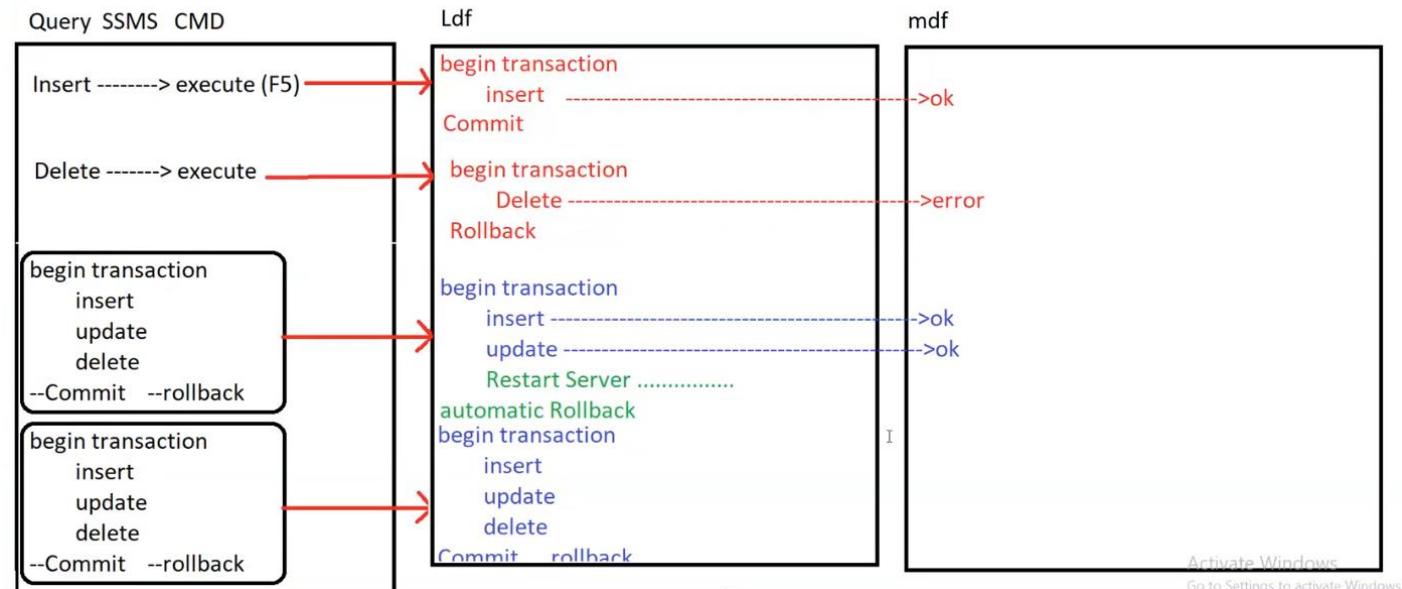
يعني ال **Script** : عبارة عن مجموعة من ال **Batches** مفصولة بينهم ب **go**



اللي فوق ده ال Script بتاعي

طيب ايه الفرق بين ال Backup وال Script
ال queries عباره عن ال Script بس
لكن ال Backup عباره عن ال Data queries

ال queries : عباره عن مجموعة Transaction
ي تنفذ مع بعض ي متتفلدش
ف هي بتتنفذ ك Bulk واحدة



```
begin try
    begin transaction
        insert into child values(1)
        insert into child values(5)
        insert into child values(3)
    commit
end try
begin catch
    rollback
end catch
```

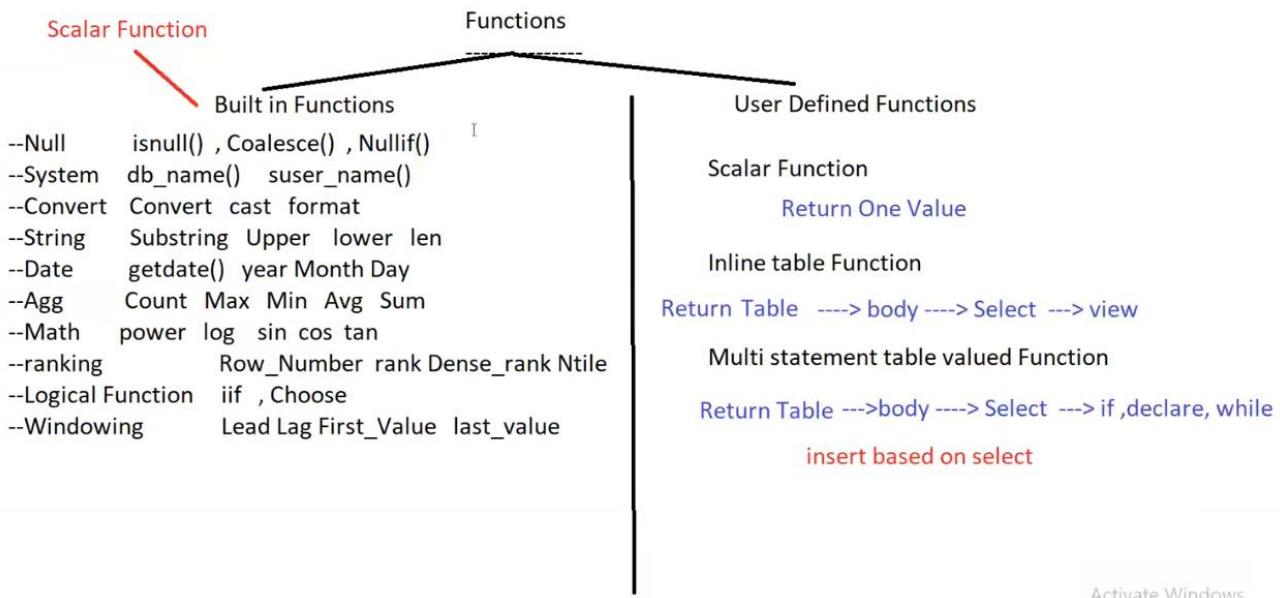
200 % Messages

(1 row(s) affected)

(0 row(s) affected)

ف لو انا هنا ب insert values
وكله تمام هي عمل Commit
لو عندي اي error هيروح لـ Catch وي عمل rollback

نوع ال **return type** على نوع ال **Fun.** بـي depend على نوع ال **return** حاجة ال لازم ت **return** حاجة ال **Fun.** بكتب جواها **Select** بـس ومينفعش اي حاجة تاني ال **Fun.** ممكن تأخذ **Parameter** او لا لكنها لازم ت **return**



Scalar : يرجع قيمة واحدة

table : يرجع table

بس ال **body** بيكون فيه **select** بـس من غير اي حاجة معهاها

Table : يرجع Table

بس ال **body** بيكون فيه ال **select** معهاها حاجات تانية زي
(if,while,...)

--Functions

```
select getdate()

select isnull(st_fname, '')
from student

select upper(st_fname),lower(st_lname)
from student

select len(st_fname),st_fname
from student

select max(st_fname)
from student

select isnull(st_fname, '')
from student

select Coalesce(st_fname,st_lname,st_address,'')
from student
```

```
select top(1) st_fname  
from student  
order by len(st_fname) desc  
I  
select power(salary,2)  
from Instructor  
  
select power(salary,2)  
from Instructor  
  
select convert(varchar(20),getdate(),101)  
I  
select format(getdate(),'dd-MM-yyyy')  
  
select db_name(),suser_name()
```

--Create My Own Functions

Scalar Fun.

```
create function getsname(@id int)
returns varchar(20)
begin
    declare @name varchar(20)
    select @name=st_fname from student where st_id=@id
    return @name
end
```

وهنا عشان اعمل Call لل Scalar Fun.
لازم اكتب اسم ال Schema قبل ال Fun.
عشان لو عملتها من غير اسم ال Schema
ال Engine هيعتبرها Built-in Fun.

The screenshot shows the SSMS interface with the following details:

- The query window contains the following T-SQL code:

```
select dbo.getsname(1)
```
- The results pane shows a single row of data:

(No column name)
1 Ahmed
- The status bar at the bottom indicates "200 %".
- The tabs at the bottom are "Results" and "Messages".

Inline Fun.

```
create function Getist(@did int)
returns table
as
return
(
    select ins_name,salary*12 as totalsal
    from Instructor
    where dept_id=@did
)
```

احنا هنا هن return Table

ف في ال Calling لازم اخلي ال Table في ال From

The screenshot shows the SQL Server Management Studio interface. In the query window, the following command is entered:

```
select * from Getist(10)
```

In the results pane, the output is displayed as a table:

	ins_name	totalsal
1	Ahmed	17280.00
2	Hany	8640.00
3	Reham	3456.00
4	Yasmin	155520.00
5	Amany	103680.00
6	Eman	69120.00
7	Saly	3456.00

```

select ins_name from Getist(10)

```

	ins_name
1	Ahmed
2	Hany
3	Reham
4	Yasmin
5	Amany
6	Eman
7	Saly

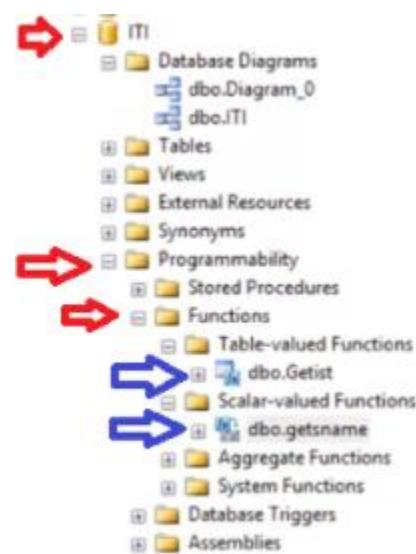

```

select sum(totalsal) from Getist(10)

```

	(No column name)
1	361152.00

وانا بلاقي ال Funs. دي هنا



Fun. Execute Dynamic query جوا ال مقدرش اعمل **Note**
لكن اقدر اعمل كده ف ال Stored Procedures

--Multistatement

```
create function getstuds(@format varchar(20))
returns @t table
(
    id int,
    ename varchar(20)
)
as
begin
    if @format='first'
        insert into @t
        select st_id,st_fname from student
    else if @format='last'
        insert into @t
    else if @format='full'
        insert into @t
        select st_id,st_fname+' '+st_lname from student
    return
end
```

The screenshot shows the SQL Server Management Studio interface. In the results pane, the command `Select * from getstuds('full')` is entered. The results table displays six rows of data:

	id	ename
1	1	Ahmed Hassan
2	2	Amr Magdy
3	3	Mona Saleh
4	4	Ahmed Mohamed
5	5	NULL
6	6	Heba Farouk

طبعاً أنا قولت مينفعش اكتب حاجة غير `Select` ف ال `Fun.`

لكن هنا أنا عملت `insert`

لأن أنا عملت هنا `insert into variable not into Table`

```
--windowing  
--lead lag first_value last_value
```

The screenshot shows a SQL query window and a results grid. The query window contains the following T-SQL code:

```
SELECT sname, grade,  
       LAG(grade) OVER(ORDER BY grade),  
       LEAD(grade) OVER(ORDER BY grade)  
FROM grades
```

The results grid displays 16 rows of data from the 'grades' table, with columns labeled 'sname', 'grade', '(No column name)', and '(No column name)'. The 'sname' column lists student names, and the 'grade' column lists their scores. The third and fourth columns are placeholder headers for window functions.

	sname	grade	(No column name)	(No column name)
1	sally	40	NULL	44
2	sally	44	40	60
3	Mohamed	60	44	71
4	Heba	71	60	77
5	Ali	77	71	78
6	reem	78	77	81
7	Ali	81	78	85
8	reem	85	81	91
9	Mohamed	91	85	99
10	nada	99	91	105
11	Ahmed	105	99	110
12	Mona	110	105	112
13	Heba	112	110	120
14	Amr	120	112	130
15	Ahmed	130	120	155
16	Ali	155	130	160

```
SELECT sname,grade,  
       X= LAG(sname) OVER(ORDER BY grade),  
       Y= LEAD(sname) OVER(ORDER BY grade)  
FROM grades
```

150 %

Results Messages

	sname	grade	X	Y
1	sally	40	NULL	sally
2	sally	44	sally	Mohamed
3	Mohamed	60	sally	Heba
4	Heba	71	Mohamed	Ali
5	Ali	77	Heba	reem
6	reem	78	Ali	Ali
7	Ali	81	reem	reem
8	reem	85	Ali	Mohamed
9	Mohamed	91	reem	nada
10	nada	99	Mohamed	Ahmed
11	Ahmed	105	nada	Mona
12	Mona	110	Ahmed	Heba
13	Heba	112	Mona	Amr
14	Amr	120	Heba	Ahmed
15	Ahmed	130	Amr	Ali
16	Ali	155	Ahmed	alaa

هنا بقى النتيجة مش منطقية

The screenshot shows a SQL query window and a results grid. The query is:

```
SELECT sname, grade, cname,
       Prod_prev=LAG(grade) OVER(ORDER BY grade),
       Prod_Next=LEAD(grade) OVER(ORDER BY grade)
  FROM grades
```

The results grid has columns: sname, grade, cname, Prod_prev, and Prod_Next. The data is as follows:

	sname	grade	cname	Prod_prev	Prod_Next
1	sally	40	OOP	NULL	44
2	sally	44	HTML	40	60
3	Mohamed	60	C Progammimg	44	71
4	Heba	71	HTML	60	77
5	Ali	77	C Progammimg	71	78
6	reem	78	OOP	77	81
7	Ali	81	HTML	78	85
8	reem	85	C Progammimg	81	91
9	Mohamed	91	HTML	85	99
10	nada	99	C Progammimg	91	105
11	Ahmed	105	HTML	99	110
12	Mona	110	C Progammimg	105	112
13	Heba	112	OOP	110	120
14	Amr	120	C Progammimg	112	130
15	Ahmed	130	C Progammimg	120	155
16	Ali	155	OOP	130	160

لأنه جايب اللي قبله واللي بعده بس في مواد مختلفة

ف لو عايز احل الموضوع ده هعمل **Partition by**

```

SELECT sname,grade,cname,
       Prod_prev=LAG(grade) OVER(partition by Cname ORDER BY grade),
       Prod_Next=LEAD(grade) OVER(partition by Cname ORDER BY grade)
FROM grades

```

150 %

Results Messages

	sname	grade	cname	Prod_prev	Prod_Next
1	Mohamed	60	C Progammimg	NULL	77
2	Ali	77	C Progammimg	60	85
3	reem	85	C Progammimg	77	99
4	nada	99	C Progammimg	85	110
5	Mona	110	C Progammimg	99	120
6	Amr	120	C Progammimg	110	130
7	Ahmed	130	C Progammimg	120	NULL
8	sally	44	HTML	NULL	71
9	Heba	71	HTML	44	81
10	Ali	81	HTML	71	91
11	Mohamed	91	HTML	81	105
12	Ahmed	105	HTML	91	190
13	ala	190	HTML	105	NULL
14	sally	40	OOP	NULL	78
15	reem	78	OOP	40	112
16	Heba	112	OOP	78	155

```

SELECT sname,grade,cname,
       Prod_prev=LAG(sname) OVER(partition by Cname ORDER BY grade),
       Prod_Next=LEAD(sname) OVER(partition by Cname ORDER BY grade)
FROM grades

```

150 %

Results Messages

	sname	grade	cname	Prod_prev	Prod_Next
1	Mohamed	60	C Progammimg	NULL	Ali
2	Ali	77	C Progammimg	Mohamed	reem
3	reem	85	C Progammimg	Ali	nada
4	nada	99	C Progammimg	reem	Mona
5	Mona	110	C Progammimg	nada	Amr
6	Amr	120	C Progammimg	Mona	Ahmed
7	Ahmed	130	C Progammimg	Amr	NULL
8	sally	44	HTML	NULL	Heba
9	Heba	71	HTML	sally	Ali
10	Ali	81	HTML	Heba	Mohamed
11	Mohamed	91	HTML	Ali	Ahmed
12	Ahmed	105	HTML	Mohamed	ala
13	ala	190	HTML	Ahmed	NULL
14	sally	40	OOP	NULL	reem
15	reem	78	OOP	sally	Heba
16	Heba	112	OOP	reem	Ali

وهنا

The screenshot shows a SQL query being run in a database environment. The query selects student names and grades, along with calculated first and last values for each grade. The results are displayed in a table.

```
SELECT sname, grade,
       First=FIRST_VALUE(grade) OVER(ORDER BY grade),
       last=LAST_VALUE(grade) OVER(ORDER BY grade)
  FROM grades
```

	sname	grade	First	last
1	sally	40	40	190
2	sally	44	40	190
3	Mohamed	60	40	190
4	Heba	71	40	190
5	Ali	77	40	190
6	reem	78	40	190
7	Ali	81	40	190
8	reem	85	40	190
9	Mohamed	91	40	190
10	nada	99	40	190
11	Ahmed	105	40	190
12	Mona	110	40	190
13	Heba	112	40	190
14	Amr	120	40	190
15	Ahmed	130	40	190
16	Ali	155	40	190

بتجيب اول واخر قيمة ف ال Table اللي طلع

وهنا برضو

```
SELECT sname, grade, cname,
       First=FIRST_VALUE(grade) OVER(ORDER BY grade),
       last=LAST_VALUE(grade) OVER(ORDER BY grade)
  FROM grades
```

150 %

Results Messages

	sname	grade	cname	First	last
1	sally	40	OOP	40	190
2	sally	44	HTML	40	190
3	Mohamed	60	C Progammimg	40	190
4	Heba	71	HTML	40	190
5	Ali	77	C Progammimg	40	190
6	reem	78	OOP	40	190
7	Ali	81	HTML	40	190
8	reem	85	C Progammimg	40	190
9	Mohamed	91	HTML	40	190
10	nada	99	C Progammimg	40	190
11	Ahmed	105	HTML	40	190
12	Mona	110	C Progammimg	40	190
13	Heba	112	OOP	40	190
14	Amr	120	C Progammimg	40	190
15	Ahmed	130	C Progammimg	40	190
16	Ali	155	OOP	40	190

ده مالوش معني اوبي

ف لازم اعمل **Partition by**

```
SELECT sname, grade, Cname,
       FIRST_VALUE(grade) OVER(partition by Cname ORDER BY grade),
       LAST_VALUE(grade) OVER(partition by Cname ORDER BY grade)
  FROM grades
```

150 %

Results Messages

	sname	grade	Cname	(No column name)	(No column name)
1	Mohamed	60	C Progammimg	60	130
2	Ali	77	C Progammimg	60	130
3	reem	85	C Progammimg	60	130
4	nada	99	C Progammimg	60	130
5	Mona	110	C Progammimg	60	130
6	Amr	120	C Progammimg	60	130
7	Ahmed	130	C Progammimg	60	130
8	sally	44	HTML	44	190
9	Heba	71	HTML	44	190
10	Ali	81	HTML	44	190
11	Mohamed	91	HTML	44	190
12	Ahmed	105	HTML	44	190
13	alea	190	HTML	44	190
14	sally	40	OOP	40	160
15	reem	78	OOP	40	160
16	Heba	112	OOP	40	160

```
SELECT sname,grade,Cname,
       FIRST_VALUE(sname) OVER(partition by Cname ORDER BY grade),
       LAST_VALUE(sname) OVER(partition by Cname ORDER BY grade)
FROM grades
```

150 %

Results Messages

	sname	grade	Cname	(No column name)	(No column name)
1	Mohamed	60	C Progammimg	Mohamed	Ahmed
2	Ali	77	C Progammimg	Mohamed	Ahmed
3	reem	85	C Progammimg	Mohamed	Ahmed
4	neda	99	C Progammimg	Mohamed	Ahmed
5	Mona	110	C Progammimg	Mohamed	Ahmed
6	Amr	120	C Progammimg	Mohamed	Ahmed
7	Ahmed	130	C Progammimg	Mohamed	Ahmed
8	sally	44	HTML	sally	ala
9	Heba	71	HTML	sally	ala
10	Ali	81	HTML	sally	ala
11	Mohamed	91	HTML	sally	ala
12	Ahmed	105	HTML	sally	ala
13	ala	190	HTML	sally	ala
14	sally	40	OOP	sally	ala
15	reem	78	OOP	sally	ala
16	Heba	112	OOP	sally	ala

وهنا هنجيب كلها مع بعضه

```
SELECT sname,grade,cname,
       Prod_prev=LAG(grade) OVER(ORDER BY grade),
       Prod_Next=LEAD(grade) OVER(ORDER BY grade),
       First=FIRST_VALUE(grade) OVER(ORDER BY grade),
       last=LAST_VALUE(grade) OVER(ORDER BY grade)
  FROM grades
```

150 %

Results Messages

	sname	grade	cname	Prod_prev	Prod_Next	First	last
1	sally	40	OOP	NULL	44	40	190
2	sally	44	HTML	40	60	40	190
3	Mohamed	60	C Progammimg	44	71	40	190
4	Heba	71	HTML	60	77	40	190
5	Ali	77	C Progammimg	71	78	40	190
6	reem	78	OOP	77	81	40	190
7	Ali	81	HTML	78	85	40	190
8	reem	85	C Progammimg	81	91	40	190
9	Mohamed	91	HTML	85	99	40	190
10	nada	99	C Progammimg	91	105	40	190
11	Ahmed	105	HTML	99	110	40	190
12	Mona	110	C Progammimg	105	112	40	190
13	Heba	112	OOP	110	120	40	190
14	Amr	120	C Progammimg	112	130	40	190
15	Ahmed	130	C Progammimg	120	155	40	190
16	Ali	155	OOP	130	160	40	190

بس برضو من الافضل نعمل Partition by

```
SELECT sname,grade,Cname,
       Prod_prev=LAG(grade) OVER(partition by Cname ORDER BY grade),
       Prod_Next=LEAD(grade) OVER(partition by Cname ORDER BY grade),
       First=FIRST_VALUE(grade) OVER(partition by Cname ORDER BY grade),
       last=LAST_VALUE(grade) OVER(partition by Cname ORDER BY grade)
  FROM grades
```

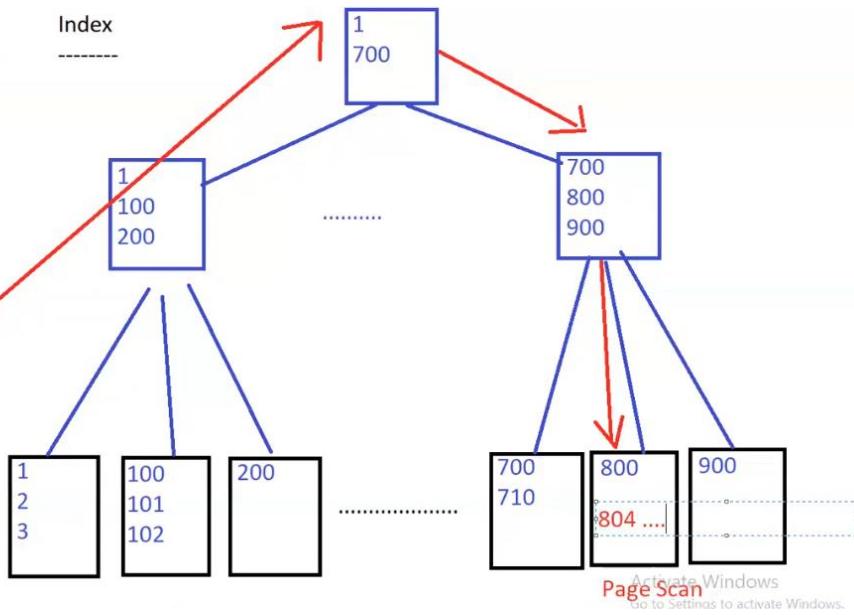
Results Messages

	sname	grade	Cname	Prod_prev	Prod_Next	First	last
1	Mohamed	60	C Progamming	NULL	77	60	130
2	Ali	77	C Progamming	60	85	60	130
3	reem	85	C Progamming	77	99	60	130
4	nada	99	C Progamming	85	110	60	130
5	Mona	110	C Progamming	99	120	60	130
6	Amr	120	C Progamming	110	130	60	130
7	Ahmed	130	C Progamming	120	NULL	60	130
8	sally	44	HTML	NULL	71	44	190
9	Heba	71	HTML	44	81	44	190
10	Ali	81	HTML	71	91	44	190
11	Mohamed	91	HTML	81	105	44	190
12	Ahmed	105	HTML	91	190	44	190
13	alea	190	HTML	105	NULL	44	190
14	sally	40	OOP	NULL	78	40	160
15	reem	78	OOP	40	112	40	160
16	Heba	112	OOP	78	155	40	160

PK
Sorted
Clustered Index

Sid	Sname	age
1	ahmed	21
2	ali	23
4	eman	24
7	omar	25

Select *
from student
where sid = 804

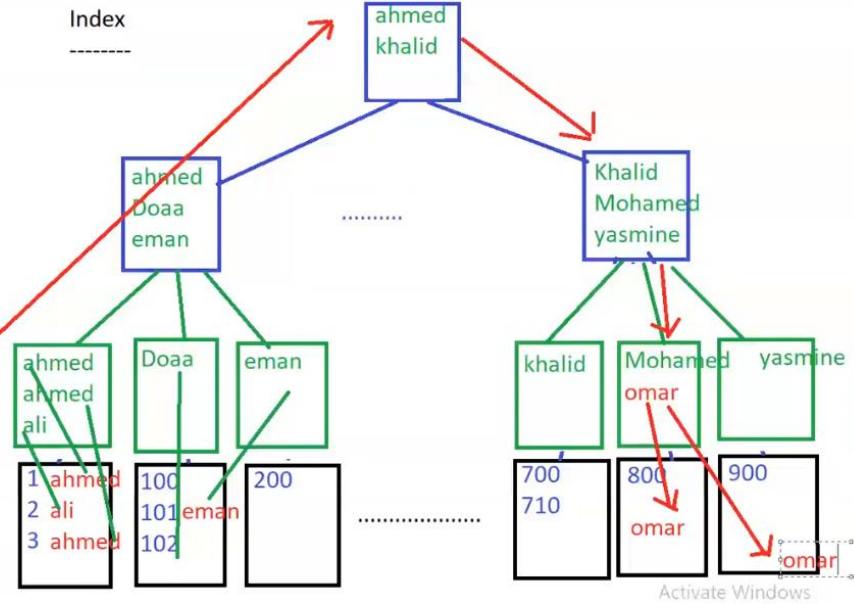


PK
Sorted
Clustered Index

NonClustered Index (Sname)

Sid	Sname	age
1	ahmed	21
2	ali	23
4	eman	24
7	omar	25

Select *
from student
where name='omar'



اى Table بىخلي ال PK ک لوحه Clustering index

اى Table بىكون فيه 1 Clustering index

لكن ممكن يكون عندي اكتر من 1-999 Non-Clustering index

ال Non-Clustering اسرع من ال Clustering

لأن ال Data Pages بيعمل عشان يوصل لل Pointers Non-Clustering الأصلية

از ای اعملهم

```
create clustered index myindex  
on student(st_fname)
```

```
create nonclustered index myindex  
on student(st_fname)
```

```
create nonclustered index myindex2  
on student(st_Lname)
```

--PK --Constraint --> Clustered index
--unique --Constraint --> nonclustered

ال PK : بيعمل (by default) Clustered

ال Unique : بتعمّل (by default) Non-Clustered

```
--unique --Constraint --> nonclustered
create table test22
(
    id int primary key,
    name varchar(20),
    age int unique
)

```

Command(s) completed successfully.

طيب لو انا عايز اعمل Column على Unique index عندي

```
create unique index i4
on student(st_age)
```

بس لازم طبعاً ال st_age هنا يكون Unique لأن ال Unique Constraint يطبق على ال Data القديمة والجديدة لأن هنا دا مش index + Constraint زي اللي فوق

وبرضو انا عملت Table من غير محددة ال Pk ممكن اعمل انا Unique Clustered index واكيد لازم يكون Unique لكن لو انا حددت من الأول ال Pk ف هو هيبقى Clustered (by default)

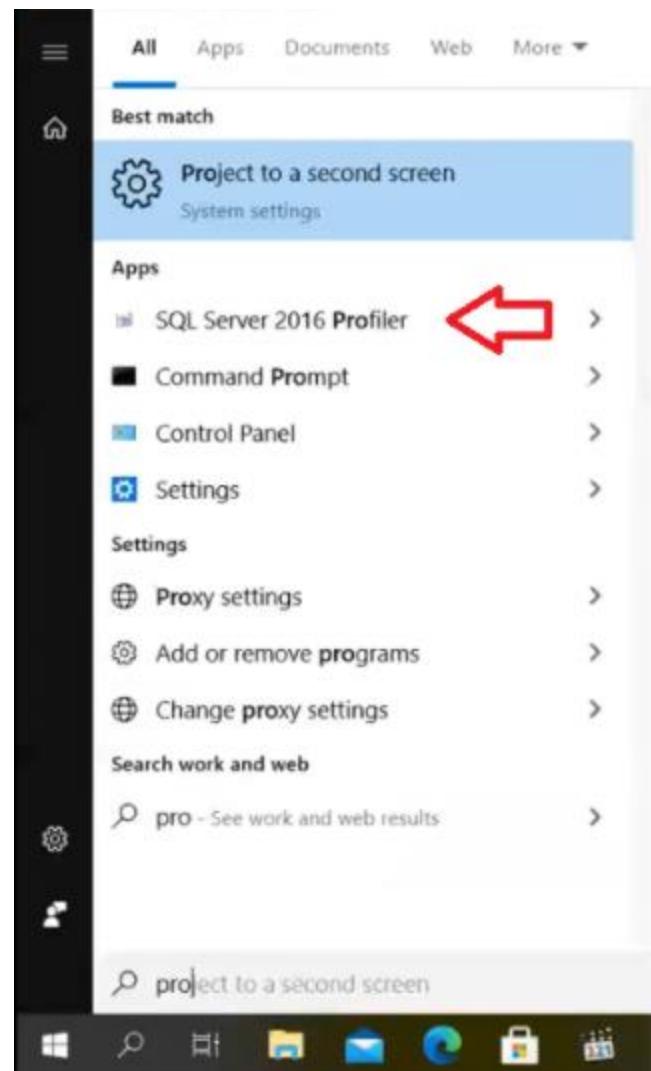
طيب اصلا انا بعمل index ليه ؟

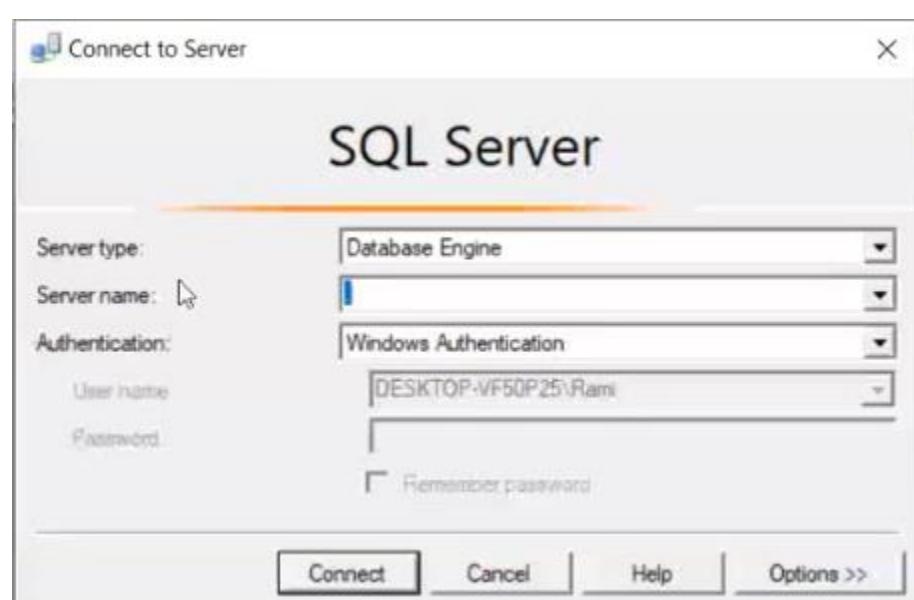
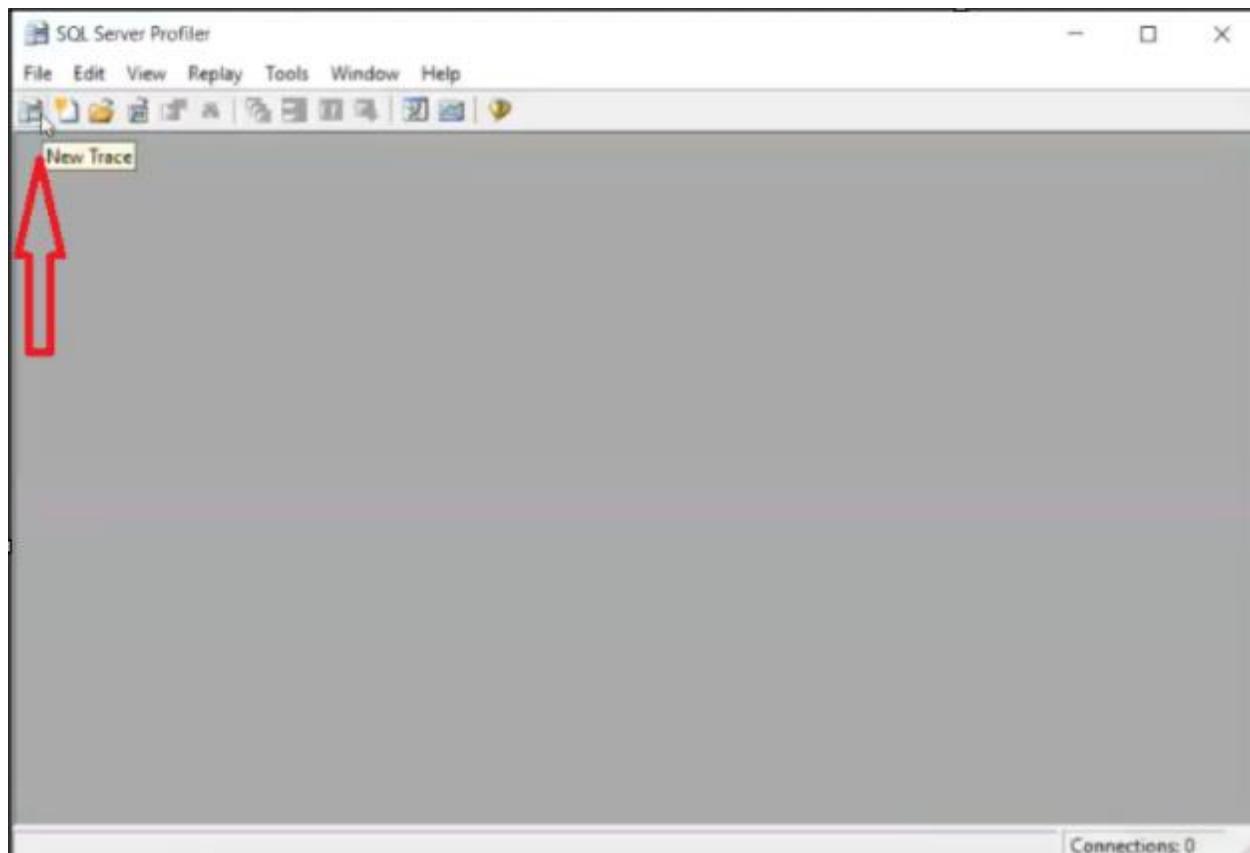
عشان ازود سرعة ال Data retrieve للحاجات اللي بعملها Select كتير
طيب هل في طريقة اقدر اعرف بيها ايه اكتر حاجة بيتعملها Select عشان
اعملها index واخلي ال retrieve بتاعها اسرع ؟

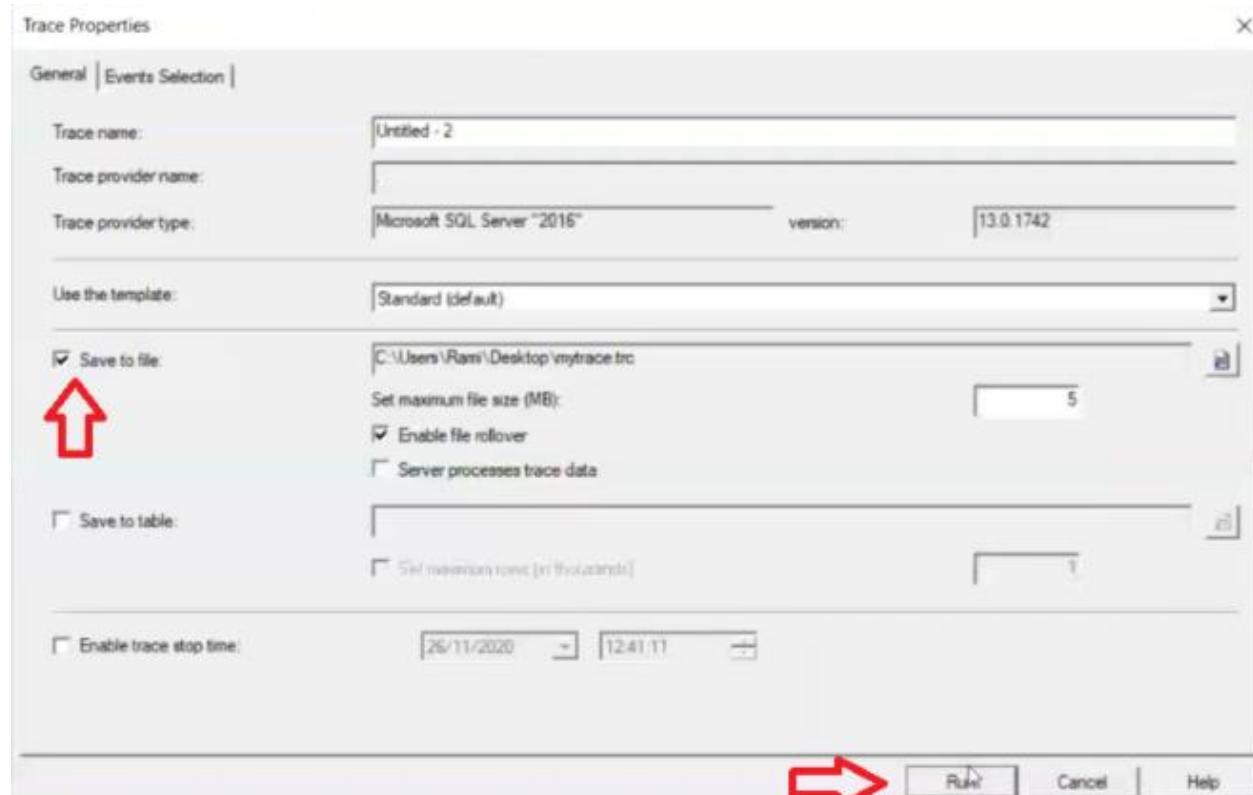
ا

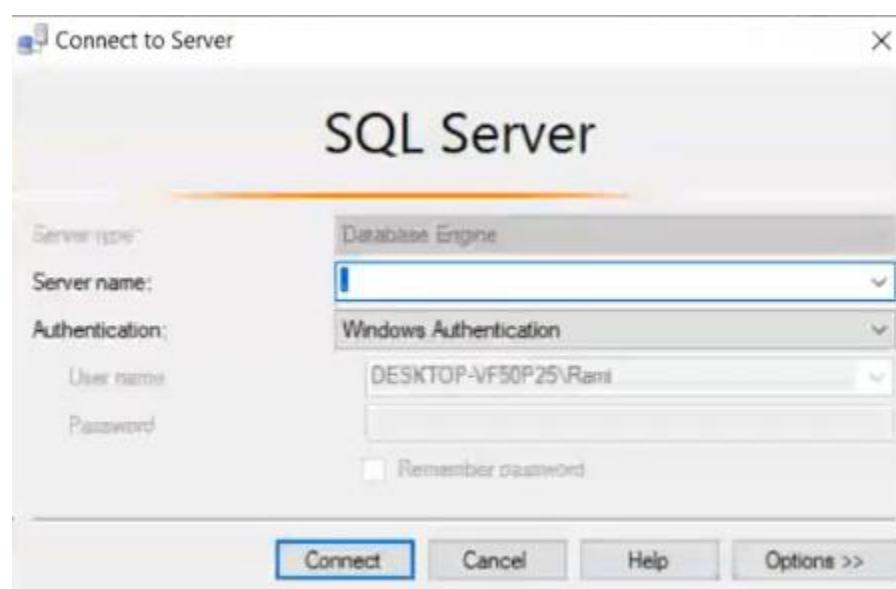
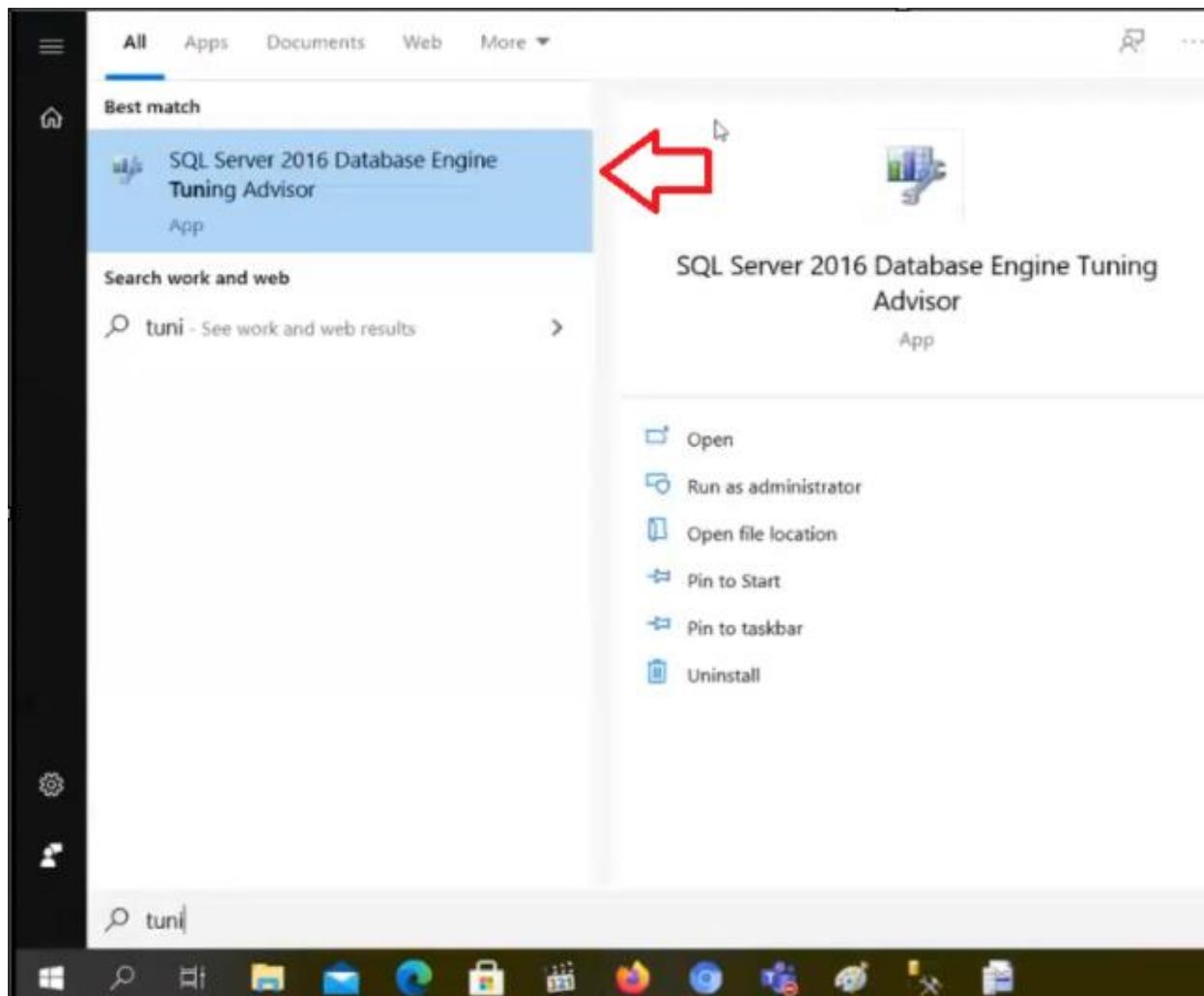
--SQL Server Profiler

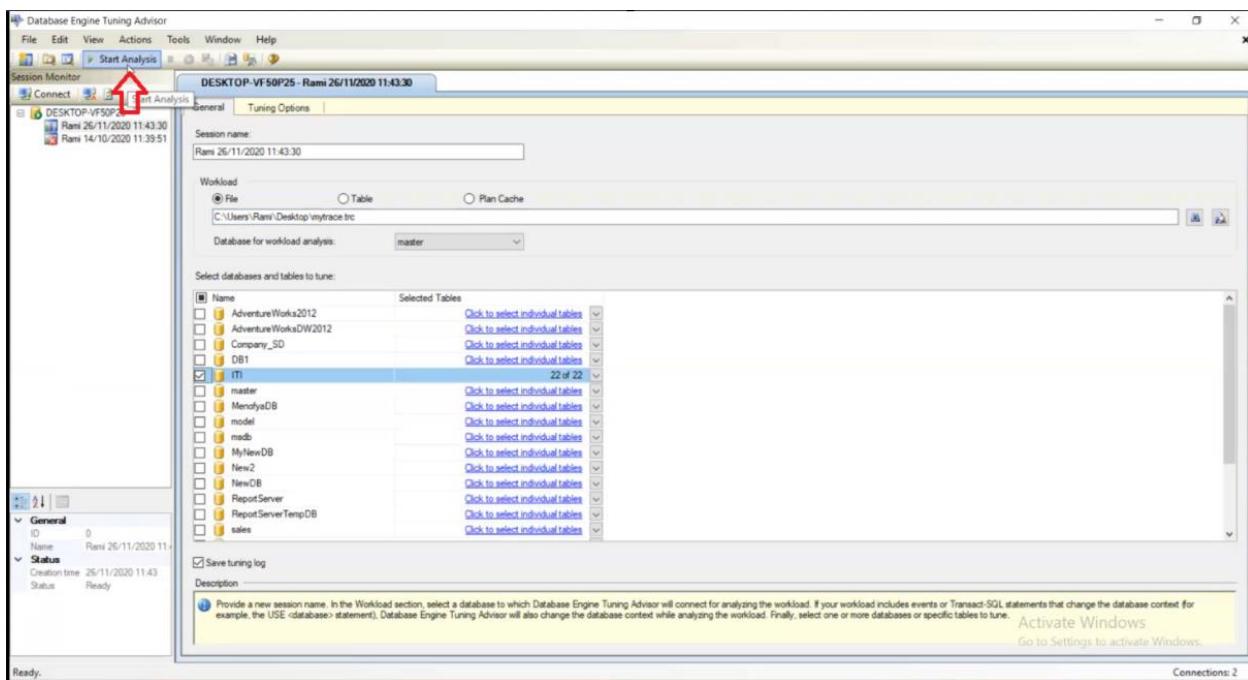
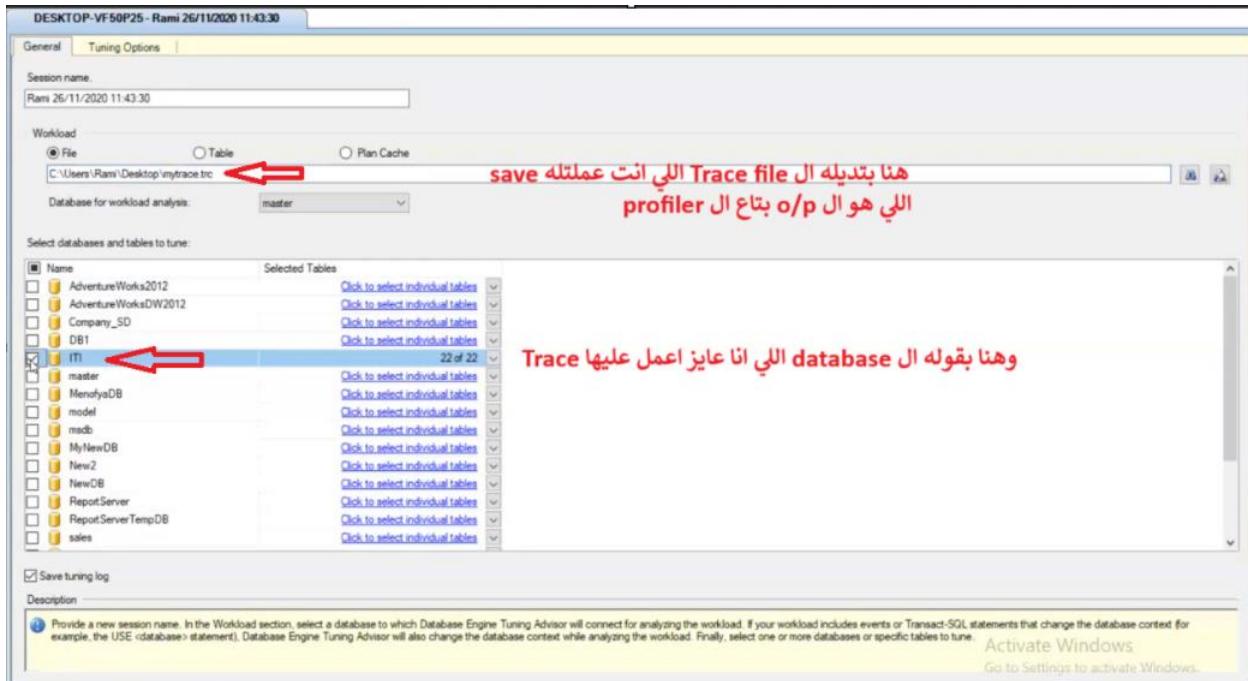
--SQL Server Tuning Advisor



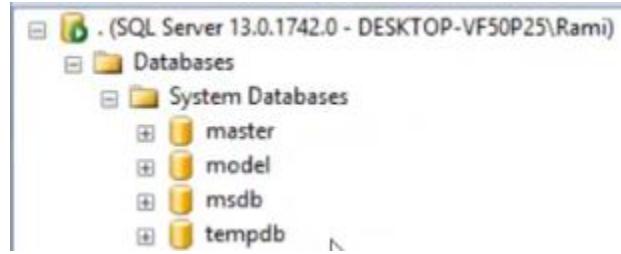








انا عندي 4 Databases موجودين by default في ال Server



فيها كل ال Meta data وال Configuration بتاعة ال Server

يعني اسامي ال users بال permissions بتاعتهم بال Passwords بتاعتهم
كل اسامي ال Databases الموجودة على ال Server واماكنها فين علي ال HD
ومن غيرها مش هقدر أ Run ال Sql-Server اصلا



دي عباره عن ال Template الموجودة على ال Server
اللي اي Database جديدة بعملها Create بتاخذ منها image معلومة : لو انا عايز اضيف حاجة لـ model : هتطبق لو عملت Database جديدة بس وال Database القديمة ملهاش دعوة



بعمل query time ب عن طريق حاجة اسمها job

ممكن اعمل ايه بيها مثل؟

Backup time ب معين مثل

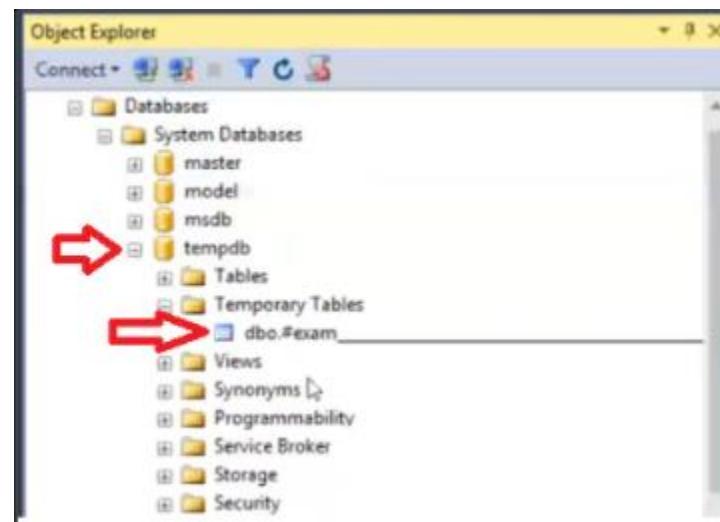


ال Data اللي بت Create عليها بتعد شوية وتتشال زى مثلا انى اعمل inner query ف ناتج ال Sub-query ده بيتتشال ف ال Run time query وبعد كده هيتتشال ف ال temp لحد م اخلص ال Run time

واحنا ك Create ممكن ن حاجة ف ال developers
وتتشال برضو ف ال Run time

```
--Local table --session based tables
Create table #exam
(
    eid int,
    edate date,
    numofQ int
)
```

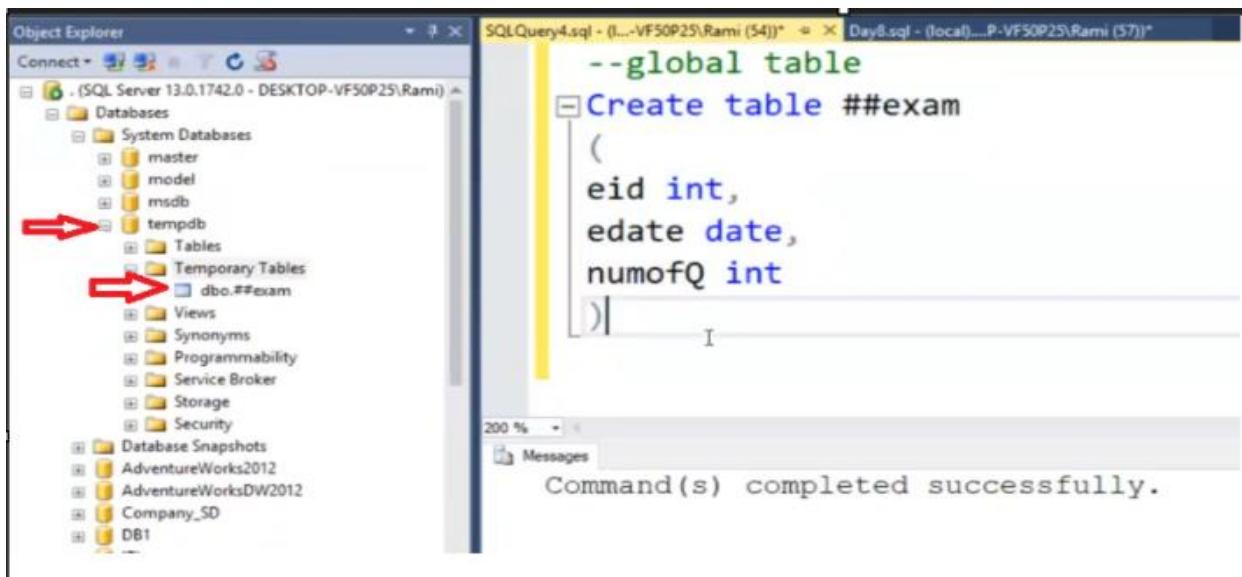
ال Temp ده بيت Create ف ال Table



بس ده user لل limited ده بس ولو عملت New query تانية مش هيشوف ال Table ده ف انا عادي ممكن اعمل كذا Local Table بنفس الأسم ف نفس ال Schema ف نفس ال Table لأنهم مش في نفس ال Query page وبمجرد م بقفل ال query page دي بيتمسح لوحده من ال temp

```
--global table
Create table ##exam
(
    eid int,
    edate date,
    numofQ int
)
```

وال temp global Table



بس ال Shared global Table
ف اي حد يقدر يشوفه عادي مش لازم اللي فاتح ال query page دي بس

بس برضو ليه **limit**

لما كل **query pages** اللي يستخدمه دي تتففل ف هو هيتمسح لوحده من ال
temp

لكن ال **physical Table**

```
--physical tables
]Create table exam
(
    eid int,
    edate date,
    numofQ int
)]
```

ده بيـت **Create** ف ال Database بتاعتي عادي ومش بيتمسح غير لو عملته
Drop

drop table exam

لكن ده

```
--table variable
declare @t table
```

علي مستوى ال **Batch** او ال **Fun.** اللي هو مترعرف جواها

```
--table variable
declare @t table(x int)
insert into @t values(1)
select * from @t
```

يعني انا هنا مقدرش أ Run السطرين اللي تحت دول لوحدهم
لازم ال declaration يكون معاهم

--rollup and cube

لو انا عندي ال Table ده

	ProductID	SalesmanName	quantity
1	1	ahmed	10
2	1	khalid	20
3	1	ali	45
4	2	ahmed	15
5	2	khalid	30
6	2	ali	20
7	3	ahmed	30
8	4	ali	80
9	1	ahmed	25
10	1	khalid	10
11	1	ali	100
12	2	ahmed	55
13	2	khalid	40

هنعمل عليه شوية حاجات

Stay tuned

```
select ProductID as X,sum(quantity) as "Quantities"
from sales
group by ProductID
```

X	Quantities
1	210
2	230
3	90
4	260

لو عايز اعمل row تاني في مجموع المبيعات

```
select ProductID as X,sum(quantity) as "Quantities"
from sales
group by ProductID
union all
select 0,sum(quantity)
from sales
```

Results

X	Quantities
1	210
2	230
3	90
4	260
5	0
	790

طيب هل في طريقة تانية ؟

ا

```
select ProductID as X,sum(quantity) as "Quantities"
from sales
group by rollup(ProductID)
```

Results

X	Quantities
1	210
2	230
3	90
4	260
NULL	790

لأنها بتعمل ال sum (او اي aggregate) ف الاخر علي ناتج ال 4 rows اللي عندي وبتحطه ف row جديد

برضو هنا نفس الفكرة

```
select SalesmanName as Name,sum(quantity) as Qty  
from sales  
group by rollup(SalesmanName)
```

Results

	Name	Qty
1	ahmed	165
2	ali	405
3	khalid	220
4	NULL	790

=

```
select SalesmanName as Name,sum(quantity) as Qty  
from sales  
group by SalesmanName  
union  
select 'Total Values',sum(quantity)  
from sales  
= =  
select SalesmanName as Name,sum(quantity) as Qty  
from sales  
group by rollup(SalesmanName)
```

```

select ProductID, SalesmanName, sum(quantity) as "Quantities"
from sales
group by ProductID, SalesmanName

```

Results

	ProductID	SalesmanName	Quantities
1	1	ahmed	35
2	2	ahmed	70
3	3	ahmed	60
4	1	ali	145
5	2	ali	90
6	4	ali	170
7	1	khalid	30
8	2	khalid	70
9	3	khalid	30
10	4	khalid	90

```

select ProductID, SalesmanName, sum(quantity) as "Quantities"
from sales
group by rollup(ProductID, SalesmanName)

```

Results

	ProductID	SalesmanName	Quantities
1	1	ahmed	35
2	1	ali	145
3	1	khalid	30
4	1	NULL	210
5	2	ahmed	70
6	2	ali	90
7	2	khalid	70
8	2	NULL	230
9	3	ahmed	60
10	3	khalid	30
11	3	NULL	90
12	4	ali	170
13	4	khalid	90
14	4	NULL	260
15	NULL	NULL	790

طیب لیه ده جاب 15 rows

لأنه بيجيب ال sum لكل product-ID + ال الكلي ف الاخر

ف هو كأنه قسمها كده

The screenshot shows a SQL query in the top pane:

```
select ProductID, SalesmanName, sum(quantity) as "Quantities"
from sales
group by rollup(ProductID, SalesmanName)
```

The results pane below shows the output. Red arrows and curly braces indicate the grouping process:

	ProductID	SalesmanName	Quantities
1	1	ahmed	35
2	1	ali	145
3	1	khalid	30
4	1	NULL	210
5	2	ahmed	70
6	2	ali	90
7	2	khalid	70
8	2	NULL	230
9	3	ahmed	60
10	3	khalid	30
11	3	NULL	90
12	4	ali	170
13	4	khalid	90
14	4	NULL	260
15	NULL	NULL	790

بس هنا هو اشتغل علي ال Product-ID لأنه اول حاجة لقاها ف ال rollup وال rollup بتشتغل علي اول حاجة تلاقيها بس

```
select ProductID, SalesmanName, sum(quantity) as "Quantities"
from sales
group by rollup(ProductID, SalesmanName)
=
select ProductID, SalesmanName, sum(quantity) as "Quantities"
from sales
group by ProductID, SalesmanName
union
select sum(quantity), productid
from sales
group by productid
union
select sum(quantity) from sales
```

ف لو خلينا ال SalesmanName هو الأول هيبقى كده

```
select SalesmanName, ProductID, sum(quantity) as "Quantities"
from sales
group by rollup(SalesmanName, ProductID)
```

Results Messages

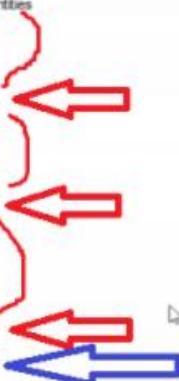
SalesmanName	ProductID	Quantities
ahmed	1	35
ahmed	2	70
ahmed	3	60
ahmed	NULL	165
ali	1	145
ali	2	90
ali	4	170
ali	NULL	405
khalid	1	30
khalid	2	70
khalid	3	30
khalid	4	90
khalid	NULL	220
NULL	NULL	790

وهو قسمها كده

```
select SalesmanName, ProductID, sum(quantity) as "Quantities"
from sales
group by rollup(SalesmanName, ProductID)
```

Results Messages

SalesmanName	ProductID	Quantities
ahmed	1	35
ahmed	2	70
ahmed	3	60
ahmed	NULL	165
ali	1	145
ali	2	90
ali	4	170
ali	NULL	405
khalid	1	30
khalid	2	70
khalid	3	30
khalid	4	90
khalid	NULL	220
NULL	NULL	790



وده يعتبر 3 queries في بعض وعمولهم Union

- ١- ال Product quantity بتات كل موظف مع كل Product
- ٢- ال Total quantities بتات كل موظف
- ٣- ال Total quantities عموما

طيب لو انا عايز اعمل rollup على الاثنين

(salesmanName – Product-ID)

اعمل Cube

```
select SalesmanName,ProductID,sum(quantity) as "Quantities"
from sales
group by cube(SalesmanName,ProductID)
```

	SalesmanName	ProductID	Quantities
1	ahmed	1	35
2	ali	1	145
3	khalid	1	30
4	NULL	1	210
5	ahmed	2	70
6	ali	2	90
7	khalid	2	70
8	NULL	2	230
9	ahmed	3	60
10	khalid	3	30
11	NULL	3	90
12	ali	4	170
13	khalid	4	90
14	NULL	4	260
15	NULL	NULL	790
16	ahmed	NULL	165
17	ali	NULL	405
18	khalid	NULL	220

وده يعتبر 4 queries في بعض وعمولهم Union

- ١- ال Product quantity بتات كل موظف مع كل Product
- ٢- ال Total quantities بتات كل موظف
- ٣- ال Total quantities بتات كل Product
- ٤- ال Total quantities عموما

```

select SalesmanName, ProductID, sum(quantity) as "Quantities"
from sales
group by cube(SalesmanName, ProductID)

```

Results

SalesmanName	ProductID	Quantities
ahmed	1	35
ali	1	145
khald	1	30
NULL	1	210
ahmed	2	70
ali	2	90
khald	2	70
NULL	2	230
ahmed	3	60
khald	3	30
NULL	3	90
ali	4	170
khald	4	90
NULL	4	260
NULL	NULL	790
ahmed	NULL	165
ali	NULL	405
khald	NULL	220

ف كده انا هستخدم Column group by rollup لو هعمل واحد
 لكن هستخدم Cube group by لو هعمل لأكتر من

--grouping sets

```
select ProductID,SalesmanName,sum(quantity) as "Quantities"
from sales
group by grouping sets(ProductID,SalesmanName)
```

130 %

Results Messages

	ProductID	SalesmanName	Quantities
1	NULL	ahmed	165
2	NULL	ali	405
3	NULL	khalid	220
4	1	NULL	210
5	2	NULL	230
6	3	NULL	90
7	4	NULL	260

دي كأنها 2 queries

بتعمل query على كل Column لوحده وملبس دعوة بال Column الثاني

يعني كأنها كده

```
select ProductID,sum(quantity) as "Quantities"
from sales
group by ProductID
Union
select SalesmanName,sum(quantity) as "Quantities"
from sales
group by SalesmanName)
```

----Pivot and Unpivot OLAP

```
select ProductID,SalesmanName,sum(quantity) as "Quantities"
from sales
group by SalesmanName,ProductID
```

Results

ProductID	SalesmanName	Quantities
1	ahmed	35
2	ali	145
3	khalid	30
4	ahmed	70
5	ali	90
6	khalid	70
7	ahmed	60
8	khalid	30
9	ali	170
10	khalid	90

group by 2 Columns + Rotation : Pivot

ف انا لو عملت query للي فوق دى

```
select ProductID,SalesmanName,sum(quantity) as "Quantities"
from sales
group by SalesmanName,ProductID
=
```

```
SELECT *
FROM sales
PIVOT (sum(Quantity) FOR SalesmanName IN ([ahmed],[ali],[khalid])) as Pvt
```

Results

ProductID	SalesmanName	Quantities
1	ahmed	35
2	ali	145
3	khalid	30
4	ahmed	70
5	ali	90
6	khalid	70
7	ahmed	60
8	khalid	30
9	ali	170
10	khalid	90

ProductID	ahmed	ali	khalid
1	35	145	30
2	70	90	70
3	60	NULL	30
4	NULL	170	90

هتبقي هي هي بس بطريقة عرض مختلفة وخليل ال aggregate هي التقاطع

```

SELECT *
FROM sales
PIVOT (sum(Quantity) FOR SalesmanName IN ([ahmed],[ali],[khalid])) as Pvt

```

المفروض هنا كنت اختار 3 Columns بس
 لأن ال Pivot مش بيقبل اكتر من 3 (x,y,z)
 بس عشان ال Sales هنا فيه 3 Columns ف مغيرتش حاجة

ف هي كأنها كده

```

SELECT x,y,z
FROM sales
PIVOT (sum(z) FOR x IN ([ahmed],[ali],[khalid])) as Pvt

```

وهنا

```

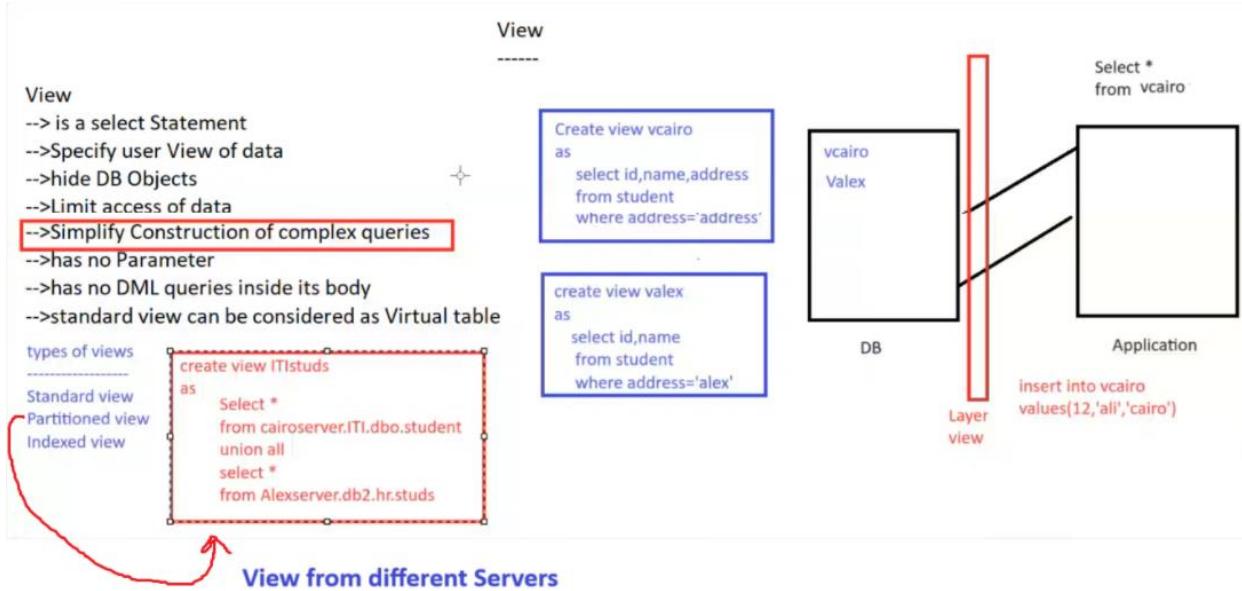
SELECT *
FROM sales
PIVOT (sum(Quantity) FOR productid IN ([1],[2],[3],[4])) as PVT

```

	SalesmanName	1	2	3	4
1	ahmed	35	70	60	NULL
2	ali	145	90	NULL	170
3	khalid	30	70	30	90

هو هو بس قلبت ال Table

مقدرش اكتب ف ال **Select** غير **Views** بس وانا بعمل **Create** لكن بعد م اعمل **Create** ممكن اعمل **insert or update or delete** عادي بس ده طبعا بيأثر على ال **Tables** اللي معندها ال **View** لأن ال **View is not a Table**



طيب اعمل ال View ازاي ؟

```
| create view vcairo  
as  
    select st_id,st_fname,st_address  
    from Student  
    where St_Address='cairo'
```

	st_id	st_fname	st_address
1	1	Ahmed	Cairo
2	2	Amr	Cairo
3	3	Mona	Cairo
4	7	Ali	Cairo
5	11	Marwa	Cairo
6	12	sayed	Cairo

وقدر برضو أعمل View لـ Assign ده ل Schema

```
alter schema hr transfer vcairo
```

Calling

```
select * from hr.vcairo
```

وقدر اعمل Drop لـ View

```
drop view vcairo
```

وقدر برضو وانا بعمله Create Schema ل Assign اعمله

```
create view hr.vcairo  
as  
    select st_id,st_fname,st_address  
    from Student  
    where St_Address='cairo'
```

وبتعامل مع ال View كأنه Table عادي

The screenshot shows a SQL query window with the following details:

- Query: `select st_fname from vcairo`
- Results pane:

st_fname
Ahmed
Amr
Mona
Ali
Marwa
sayed

وممكن برضو ادي alias names لل Columns اللي جوا ال View

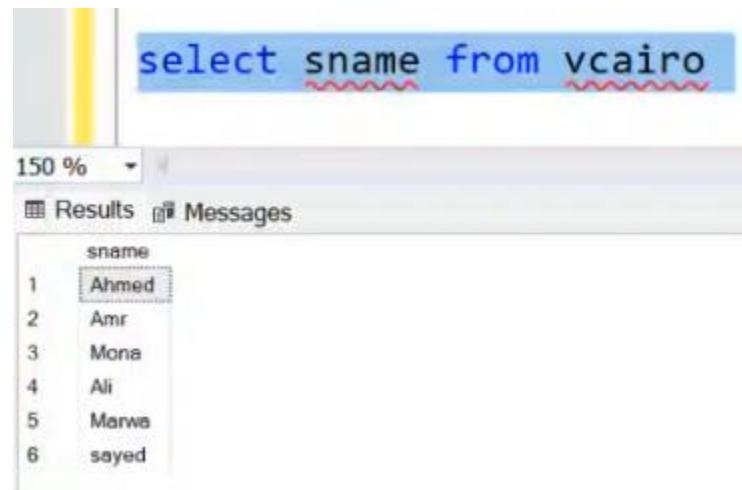
```
alter view vcairo(sid,sname,sadd)  
as  
    select st_id,st_fname,st_address  
    from Student  
    where St_Address='cairo'
```

ف لما اعمله Call بالاسم الأساسي مش هيرضي

```
select st_fname from vcairo
```

لاني عملت alias name

لكن لو عملت Call بال alias name



A screenshot of the Oracle SQL Developer interface. At the top, a blue bar displays the SQL query: "select sname from vcairo". Below the bar, the zoom level is set to "150 %". Underneath the query, there are two tabs: "Results" and "Messages", with "Results" being the active tab. The results area shows a table with one column labeled "sname" and six rows, each containing a name: 1 Ahmed, 2 Amr, 3 Mona, 4 Ali, 5 Marwa, and 6 sayed.

	sname
1	Ahmed
2	Amr
3	Mona
4	Ali
5	Marwa
6	sayed

هيشتعل زي الفل

ده انا كمان لو عندي View تاني

```
create view valex
as
    select st_id,st_fname,st_address
    from Student
    where St_Address='alex'
```

اقدر اعمل اعملا join or Union بين ال Views اللي عندي

```
create view vcairo_alex
as
    select * from vcairo
    union all
    select * from valex
```

The screenshot shows a SQL query editor interface with a results grid. The query entered is:

```
select * from vcairo_alex
```

The results grid displays the following data:

	sid	sname	sadd
1	1	Ahmed	Cairo
2	2	Amr	Cairo
3	3	Mona	Cairo
4	7	Ali	Cairo
5	11	Manwa	Cairo
6	12	sayed	Cairo
7	4	nada	Alex
8	5	reem	Alex
9	8	Mohamed	Alex

--complex

```
--complex
create view vjoin(sid,sname,did,dname)
as
    select st_id,st_fname ,d.dept_id ,d.dept_name
    from Student S inner join Department d
    on d.Dept_Id = S.Dept_Id
```

The screenshot shows a SQL query execution interface. At the top, a command is being typed: "select * from vjoin". Below the command, there are tabs for "Results" and "Messages". The "Results" tab is selected and displays a table with 11 rows of data. The columns are labeled: sid, sname, did, and dname. The data is as follows:

	sid	sname	did	dname
1	1	Ahmed	10	SD
2	2	Amr	10	SD
3	3	Mona	10	SD
4	4	nada	10	SD
5	5	reem	10	SD
6	6	Heba	10	SD
7	7	Ali	20	EL
8	8	Mohamed	20	EL
9	9	sally	20	EL
10	10	ala	20	EL
11	11	Marwa	30	Java

وبرضو هنا ممكن اعمل Call ل Columns معينة

```
select sname, dname from vjoin
```

	sname	dname
1	Ahmed	SD
2	Amr	SD
3	Mona	SD
4	nada	SD
5	reem	SD
6	Heba	SD
7	Ali	EL
8	Mohemed	EL
9	sally	EL
10	alea	EL
11	Marwa	Java

وهنا انا كنت مدبلهم alias names

طيب هل ممكن اعمل join بين (View & Table)

ا

```
create view vgrades  
as  
select sname, dname, grade  
from vjoin v inner join Stud_Course sc  
on v.sid = sc.St_Id
```

```
select * from vgrades
```

	sname	dname	grade
1	Ahmed	SD	105
2	Heba	SD	71
3	Ali	EL	81
4	Mohemed	EL	91
5	sally	EL	44
6	alea	EL	190
7	Ahmed	SD	130
8	Amr	SD	120
9	Mona	SD	110

sp_helpText

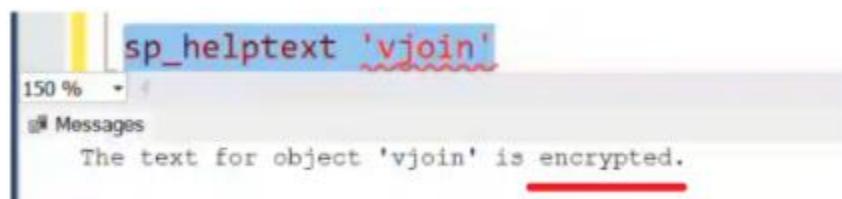
دي زري كده بتجيلني الكود اللي معنده الحاجة Built in Stored Procedure

The screenshot shows the SQL Server Management Studio interface with the query window titled 'sp_helpText 'vjoin''. The results pane displays the T-SQL code for the view 'vjoin'. The code is as follows:

```
1 create view vjoin(sid,sname,did,dname)
2 as
3 select st_id,st_fname ,d.dept_id ,d.dept_name
4 from Student S inner join Department d
5 on d.Dept_Id = S.Dept_Id
```

وده طبعا مش بيخلني فيه اي Security
طيب ايه حل الموضوع ؟

```
alter view vjoin(sid,sname,did,dname)
with encryption ←
as
    select st_id,st_fname ,d.dept_id ,d.dept_name
    from Student S inner join Department d
    on d.Dept_Id = S.Dept_Id
```

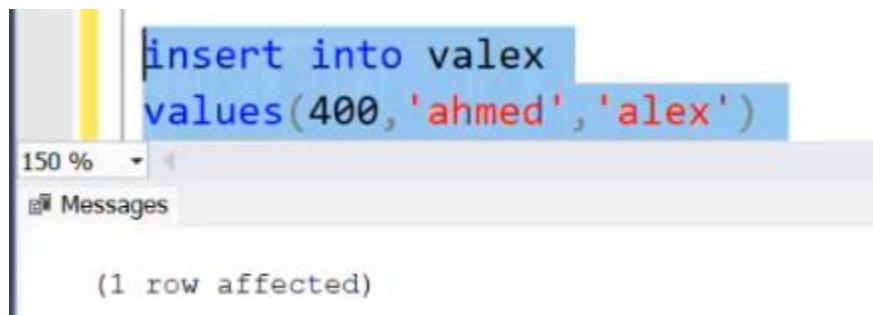


ف كده انا عملت لـ **code encryption**
بس معنديش لـ **data encryption** اكيد

--DML + view
---->view one table

--->view multi tables

---->view one table
create view valex
as
select st_id, st_fname, st_address
from Student
where St_Address='alex'



A screenshot of a SQL query window. The code shown is:

```
insert into valex
values(400, 'ahmed', 'alex')
```

The window includes a zoom level indicator (150%) and a messages pane.

وتأثير ال **Update** ده هيسمع ف ال **Table** الأصلي
لأن ال **View is not a Table**

بس انا مش هقدر اعمل اعمل **insert or update**
غير لـ **Columns** اللي معايا ف ال **View** بس
اللي هما دول

st_id, st_fname, st_address

```

--->view      multi tables
create view vjoin(sid,sname,did,dname)
as
    select st_id,st_fname ,d.dept_id ,d.dept_name
    from Student S inner join Department d
    on d.Dept_Id = S.Dept_Id

```

هنا طبعا مش هقدر اعمل Delete

--delete XXXXX

لأنني مقدرش امسح حاجة من Tables 2 في نفس الوقت

طيب بالنسبة لـ insert & update

أقدر عادي استخدمهم مع العلم إن التأثير يكون في Table واحد بس
ف طبعا

```

--insert      update
insert into vjoin
values(100, 'ahmed', 9000, 'HR')

update vjoin
set sname='ali',dname='cloud'
where sid=1

```

150 %

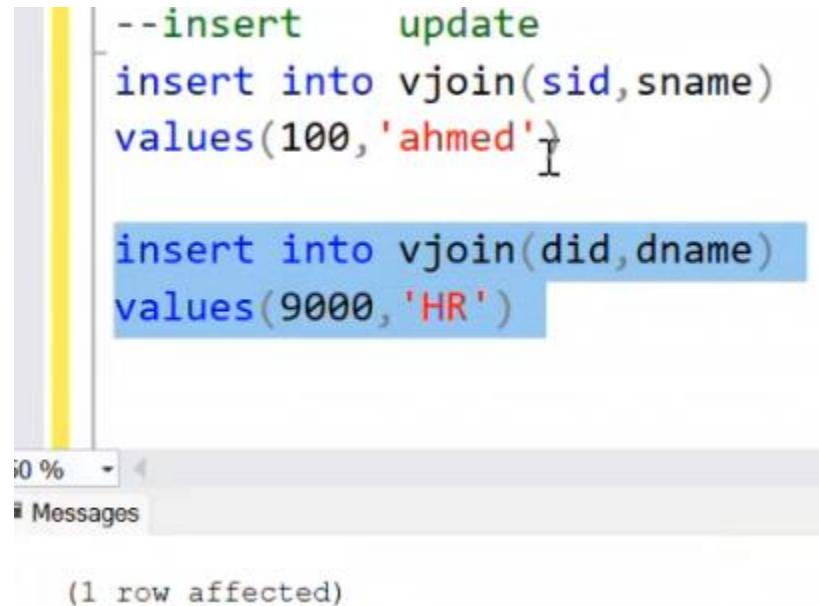
Messages

Msg 4405, Level 16, State 1, Line 95
View or function 'vjoin' is not updatable because the modification affects multiple base tables.

ال 2 دول غلط ومش هيستغلوا

لأنهم بيأثروا في 2 Tables

بس انا ممكن احل الموضوع ده
عن طريق اني اقسم ال query



```
--insert      update
insert into vjoin(sid,sname)
values(100, 'ahmed')

insert into vjoin(did,dname)
values(9000, 'HR')
```

Messages

(1 row affected)

ف هتشتغل عادي

نفس الحوار برضو بالنسبة لـ Update

```
update vjoin
    set sname='ali'
  where sid=1
```

طيب نو عاييز اعمل Check Condition عشان اضمن ان اي قيمة جديدة تكون من ضمن القيم اللي انا محدده
عملها كده

```
alter view valex
as
    select st_id, st_fname, st_address
    from Student
    where St_Address='alex'
with check option
```

ف كده مش هيقبل اي قيمة جديدة ف ال St_Address غير (alex)

```
insert into valex
values(408, 'ahmed', 'alex')

insert into valex
values(4089, 'ahmed', 'mansoura')
```



--indexed view

```
--indexed view
create view vdata
with schemabinding
as
    select ins_name, salary
    from dbo.Instructor
    where dept_id=10
```

هنا هو بياخد Copy من ال Data

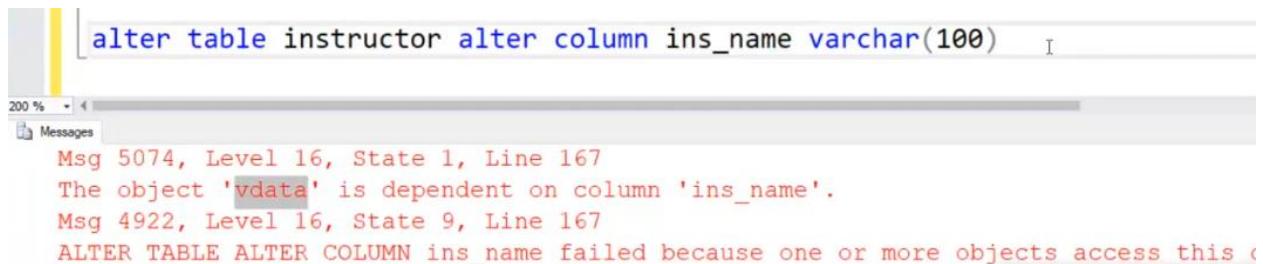
وهنا لازم اكتب اسم ال Schema

ف لو عملت ال query دي

```
alter table instructor alter column ins_degree varchar(50)
```

هتشتغل عادي

لكن لو عملت دي



The screenshot shows a SQL query being run in a query editor. The query is:

```
alter table instructor alter column ins_name varchar(100)
```

In the 'Messages' pane below, there are two error messages:

```
Msg 5074, Level 16, State 1, Line 167
The object 'vdata' is dependent on column 'ins_name'.
Msg 4922, Level 16, State 9, Line 167
ALTER TABLE ALTER COLUMN ins_name failed because one or more objects access this <
```

هيتعرض لأنه كان واحد Copy من ال ins_name Column ف مينفعش اعدل ف ال Column معين ف ال Table الأصلي وانا عامل ف Copy قبل كده

2 Tables : طريقة للمقارنة بين Merge Statement

Lasttransaction

Lid	Lname	Myvalue
1	ahmed	5000
2	omar	6000
3	khalid	7000
4	eman	8000

I

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

Lasttransaction

Lid	Lname	Myvalue
1	ahmed	5000 9000
2	omar	6000 200
3	khalid	7000
4	eman	8000
7	nada	100000

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

```
Merge Into Lasttransaction as T
```

```
Using Dailytransaction as S
```

```
On T.Lid = S.did
```

```
When Matched Then
```

```
    Update  
        Set T.myvalue = S.dval
```

```
When Not Matched Then
```

```
    Insert  
        values(S.did , S.dname , S.dval)
```

```
//1,2
```

```
//7
```

```
;
```

Lasttransaction

Target table

Lid	Lname	Myvalue
1	ahmed	5000
2	omar	6000
3	khalid	7000
4	eman	8000
7	nada	100000

Dailytransaction

Source table

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

: Merge استخدموه
في المقارنة بين Table و query سواء (join , Union , Sub-query ,)

```
Merge Into Lasttransaction as T
```

```
    Using (Dailytransaction) as S
```

```
On T.Lid = S.did
```

```
When Matched Then
```

```
    Update  
        Set T.myvalue = S.dval
```

```
When Not Matched Then
```

```
    Insert  
        values(S.did , S.dname , S.dval)
```

```
//1,2
```

```
//7
```

بس اللي جمب كلمة **Merge into** لازم يكون Table

```

Merge Into Lasttransaction as T
  subquery
Using (Dailytransaction) as S
On T.Lid = S.did

When Matched and S.dval > T.myvalue Then      //1
    Update
        Set T.myvalue = S.dval
When Not Matched Then                          //7
    Insert
        values(S.did , S.dname , S.dval)
;
```

Lasttransaction

Lid	Lname	Myvalue
1	ahmed	5000
2	omar	4000
3	khalid	7000
4	eman	8000
7	nada	100000

Target table

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

Source table

Not Matched = Not Matched by Target : Note

ف کده دی

When Not Matched Then

او دی

When Not Matched by Target Then

معناهم

ال rows اللي موجودة في ال Target match مع ال Source ومش بت match مع ال rows اللي هو كان ال row ده

7	nada	10000
---	------	-------

ف کده

```

Merge Into Lasttransaction as T
    subquery
Using  (Dailytransaction)   as S
On T.Lid = S.did

When Matched  and S.dval > T.myvalue Then      //1
    Update
        Set T.myvalue = S.dval
When Not Matched Then                          //7
    Insert
        values(S.did , S.dname , S.dval)
;
```

Lasttransaction

Lid	Lname	Myvalue
1	ahmed	5000 9000
2	omar	4000
3	khalid	7000
4	eman	8000
7	nada	100000

Target table

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

Source table

=

```

Merge Into Lasttransaction as T
    subquery
Using  (Dailytransaction)   as S
On T.Lid = S.did

When Matched  and S.dval > T.myvalue Then      //1
    Update
        Set T.myvalue = S.dval
When Not Matched by Target Then                //7
    Insert
        values(S.did , S.dname , S.dval)
;
```

Lasttransaction

Lid	Lname	Myvalue
1	ahmed	5000 9000
2	omar	4000
3	khalid	7000
4	eman	8000
7	nada	100000

Target table

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

Source table

لكن ده معناه

when not Matched by Source Then

ال rows الموجودة ف ال Source مش بت match مع ال Target

ال اللي هما دول

3	khalid	7000
4	eman	8000

Merge Into Lasttransaction as T

Using (Dailytransaction) as S

On T.Lid = S.did

When Matched and S.dval > T.myvalue Then //1

Update
Set T.myvalue = S.dval

When Not Matched by Target Then //7

Insert
values(S.did , S.dname , S.dval)

when not Matched by Source Then //3,4

Delete

Lasttransaction

Lid	Lname	Myvalue	
1	ahmed	5000	9000
2	omar	4000	
7	nada	100000	

Target table

Dailytransaction

did	dname	dval
1	ahmed	9000
2	omar	200
7	nada	10000

Source table

دایما ال Target Table اللي جمب ال Merge : بيكون ال Note

وال Source Table اللي جمب ال Using : بيكون ال

ولما بنعمل Table update or insert or delete مش بنكتب اسم ال

ميزة ال Fun. ان انا ممكن اعمل Call ليها في اي مكان (Select , From ,)
(Where

وممكن كمان اعملها Call ف DDL or DML query

لكن لما بعما Call لل Stored بعمل Call باسمها بس مش اكتر

اقدر اعمل View & View join بين

لكن مقدرش اعمل join بين Stored & Stored

بس اقدر اعمل Call لل Fun. & View جوا ال

ف كده بالنسبة ال Stored ممكن اكتب جواه اي حاجة

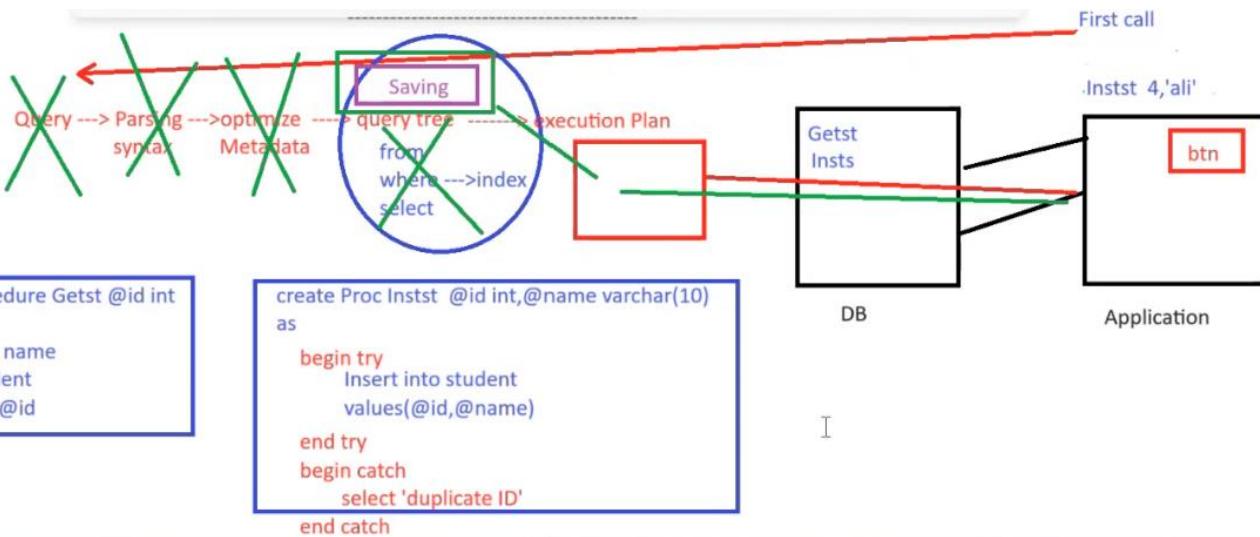
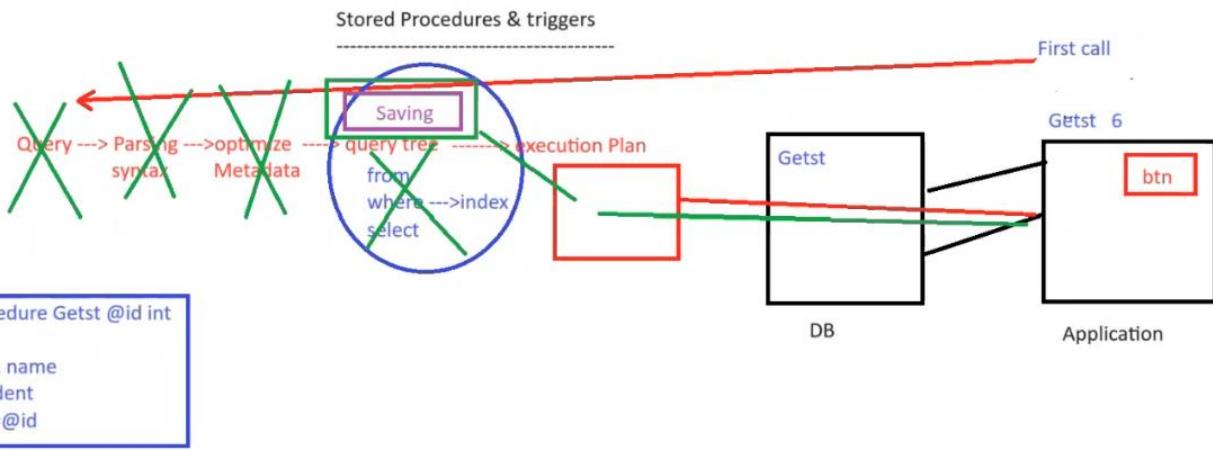
زياني اعمل Call لل Fun. & View

أو اكتب insert or update or delete

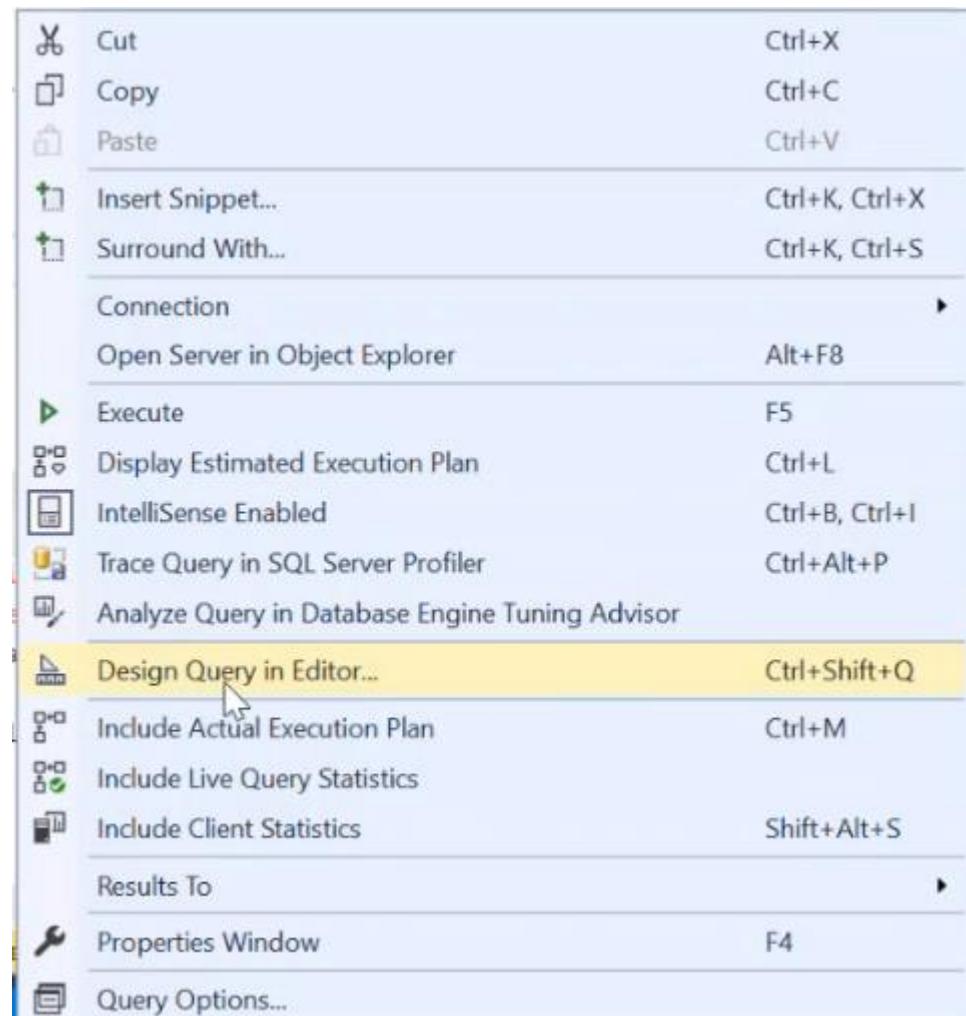
ده انا كمان ممكن اعمل Call ل Stored جوا تانية

كمان اقدر اعمل جواها

Custom constraint
hide business Logic
dynamic query [execute]
Prevent SQL injection



Wizard query بال ممکن اکتب : Note



The screenshot shows the Object Explorer on the left and a query window on the right. In the Object Explorer, under the 'Programmability' node, there is a 'Stored Procedures' node which contains a 'dbo.getstud' item. Three red arrows point from the text to these three specific items: 'Programmability', 'Stored Procedures', and 'dbo.getstud'. The query window contains the following SQL code:

```
create proc getstud
as
    select * from Student
```

The status bar at the bottom of the query window shows 'Commands completed successfully.'

The screenshot shows the results of executing the stored procedure. The results pane displays the following data:

St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	ali	Hassan	Cairo	22	10	NULL
2	Amr	Magdy	Cairo	24	10	1
3	Mona	Saleh	Cairo	24	10	1
4	nada	Mohamed	Alex	27	10	1
5	reem	Mohamed	Alex	27	10	1
6	Heba	Farouk	Mansoura	27	10	NULL
7	Ali	Hussien	Cairo	30	20	6
8	Mohamed	Fars	Alex	30	20	6
9	sally	NULL	Mansoura	30	20	6
10	ala	NULL	Alex	30	20	6

ممكن برضو اعمل Call بطرفيتين تانين

execute getstud

150 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	1	eli	Hassan	Cairo	22	10	NULL
2	2	Amr	Megdy	Cairo	24	10	1
3	3	Mona	Saleh	Cairo	24	10	1
4	4	nada	Mohamed	Alex	27	10	1
5	5	reem	Mohamed	Alex	27	10	1
6	6	Heba	Farouk	Mansoura	27	10	NULL
7	7	Ali	Hussien	Cairo	30	20	6
8	8	Mohamed	Fars	Alex	30	20	6
9	9	sally	NULL	Mansoura	30	20	6
10	10	elaa	NULL	Alex	30	20	6
11	11	Marwa	Ahmed	Cairo	31	30	NULL
12	12	seyed	NULL	Cairo	31	30	11

exec getstud

150 %

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	1	eli	Hassan	Cairo	22	10	NULL
2	2	Amr	Megdy	Cairo	24	10	1
3	3	Mona	Saleh	Cairo	24	10	1
4	4	nada	Mohamed	Alex	27	10	1
5	5	reem	Mohamed	Alex	27	10	1
6	6	Heba	Farouk	Mansoura	27	10	NULL
7	7	Ali	Hussien	Cairo	30	20	6
8	8	Mohamed	Fars	Alex	30	20	6
9	9	sally	NULL	Mansoura	30	20	6
10	10	elaa	NULL	Alex	30	20	6
11	11	Marwa	Ahmed	Cairo	31	30	NULL
12	12	seyed	NULL	Cairo	31	30	11

يبقى كده التلاتة دول ينفعوا

getstud

execute getstud

exec getstud

```
|create Proc getstubyadd @add varchar(20)
as
|   select st_id,st_fname
      from Student
     where St_Address=@add
```

getstubyadd 'cairo'

	st_id	st_fname
1	1	ali
2	2	Amr
3	3	Mona
4	7	Ali
5	11	Marwa
6	12	seyed

getstubyadd 'alex'

	st_id	st_fname
1	4	neda
2	5	reem
3	8	Mohamed
4	10	alaa
5	13	R
6	14	Hassan
7	400	ahmed
8	401	ahmed
9	408	ahmed

وبرضو عشان ال object Stored في الاخر

ف ممكن احطه ف Schema عادي

alter schema hr transfer getstubyadd

وممكن برضو احطه ف Create Schema وانا بعمله

```
create Proc hr.getstubyadd @add varchar(20)
as
|   select st_id,st_fname
|   from Student
|   where St_Address=@add
```

وممكن اعمله Encryption

```
create Proc hr.getstubyadd @add varchar(20)
with encryption
as
|   select st_id,st_fname
|   from Student
|   where St_Address=@add
```

واقدر برضو اعمل Drop لـ Stored

drop proc getstubyadd

طبعاً أنا لو عملت Run لـ query ده

delete from topic where top_id=1

Messages
0, Line 140
flicted with the REFERENCE constraint "FK_Course_Topic". The conflict occurred in database "ITI", table "dbo".
terminated.

هيطبع Child ليه Parent لأن Error

بس المشكلة إن ال Error بيكشف بيانات كتير عن ال Table زي ما واضح كده
ف من الأفضل احظر ال query جوا Stored query
واحظر جواها أو Try & Catch مثلاً

```
create Proc Deltopic  
as  
delete from topic where top_id=1
```

ويمكن أخلي الموضوع Dynamic شوية واعمل كده

```
create Proc Deltopic @tid int  
as  
delete from topic where top_id=@tid
```

وبرضو ده هيطبع نفس ال Error

Deltopic 2

I

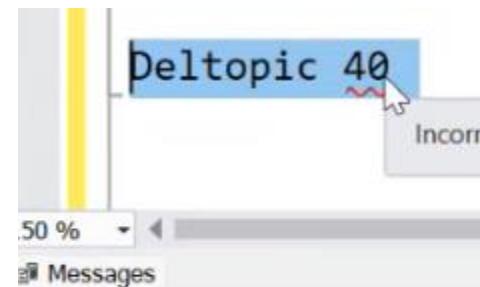
Messages
Msg 547, Level 16, State 0, Procedure Deltopic, Line 3 [Batch Start Line 143]
The DELETE statement conflicted with the REFERENCE constraint "FK_Course_Topic". The conflict occurred in da
The statement has been terminated.

ف انا ممكن اعمل Try & Catch او Not Exist مثلًا

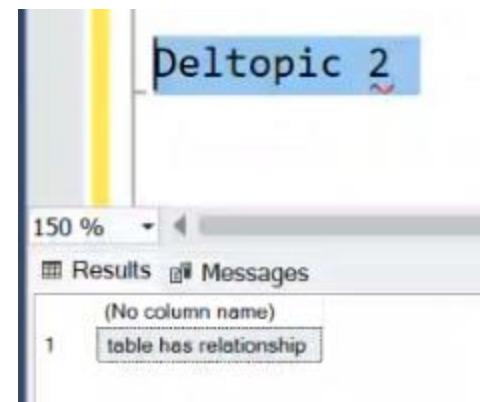
```
alter| Proc Deltopic @tid int
as
    if not exists(select top_id from course where top_id=@tid)
        delete from topic where top_id=@tid
    else
        select 'table has relationship' I
```

ف انا هشوف ال Table اللي ليه Relation معاه لو ملقيتش فيه ال ID ده
امسح عادي

ولو لقيته اكتبلي (table has relationship)



(1 row affected)



وبالتالي مفيش error ظهرني وكده انا حلية المشكلة

-----Parameters _return values

```
create Proc sumdata @x int,@y int  
as  
    select @x+@y
```

sumdata 2,9 ----->passing Parameters by position

Results	
(No column name)	
1	11

sumdata @y=6,@x=4 ---> Pasing Parameters by name

Results	
(No column name)	
1	10

لكن اكيد مقدرش أ Call 0 parameters أو Call 1 parameter

sumdata 7

sumdata

لا لو انا عاملهم Default Values

```
alter Proc sumdata @x int=200,@y int=100  
as  
    select @x+@y
```

sumdata 7

Results Messages	
(No column name)	
1	107

sumdata

Results Messages	
(No column name)	
1	300

Fun. Note : ممكن اعمل برضو Default Value ف ال

او اي حاجة بتاخد Parameter عموما

بالمناسبة

sumdata @y=6,@x=4 ---> Pasing Parameters by name

Results Messages	
(No column name)	
1	10

انا مقدرش اعمل كده ف ال Fun.

لأن ال Parameters بتو عها لازم يكونوا مترتبين

--return

لما عملنا ال ده Stored

```
create Proc getstubyadd @add varchar(20)
as
    select st_id,st_fname
    from Student
    where St_Address=@add
```

و عملنا Call

The screenshot shows the SQL Server Management Studio interface. A query window is open with the following command:

```
getstubyadd 'cairo'
```

The results pane displays the output of the stored procedure:

st_id	st_fname
1	ali
2	Amr
3	Mona
4	Ali
5	Morwa
6	sayed

ف طلعي ال Result set دي ولكنها ف ال Memory

واخترت مع نهاية ال query

طيب لو عايز احتفظ بالنتائج اللي رجلي ده عشان هشتغل عليه

ف هنا لازم ا Catch القيم اللي رجعت من ال Stored

واحطها مثلا في Variable واشتغل عليه

طيب انا الناتج هنا رجعي اصلا على شكل Table
لأن ال Select جوا ال Stored بترجم الناتج على شكل Table
ف انا هـ Save الناتج برضو ف

ف هنا

```
declare @t table(x int,y varchar(20))
| insert into @t
| execute getstubyadd 'cairo'
```

انا عملت Variable على شكل Table
جواه 2 بنفس ال Data type بتاع نفس الحاجة اللي راجعه

```
declare @t table(x int,y varchar(20))
```

و عملت insert based on Execute

```
insert into @t
execute getstubyadd 'cairo'
```

ودي كأنها insert based on select بس ال موجودة ف Stored Select

وهذا

```
declare @t table(x int,y varchar(20))
| insert into @t
| execute getstubyadd 'cairo'
```

انا مضطر اكتب كلمة Execute لأنها جزء من Batch

بعد كده ممكن اشتغل على Variable اللي انا عملته عادي جدا

The screenshot shows two separate SQL queries and their results in a grid format.

Top Query:

```
select * from @t
```

Results:

x	y
1	ali
2	Amr
3	Mona
4	Ali
5	Marwa
6	sayed

Bottom Query:

```
select count(*) from @t
```

Results:

(No column name)
1
8

اقدر برضو اخذ نتيجة ال Stored Table واحدطها ف (tab5)

```
insert into tab5  
execute getstubyadd 'cairo'
```

--return One value  scalar fun شبه

```
create Proc getdata @id int
as
    declare @age int
    select @age=st_age from Student
    where st_id=@id
    return @age
```

(optional) return : هنا ال Note

لأن لو انا هكتب جوا ال Data (DML) Stored ف دول اصلا مش بيرجعوا

المهم

هنا برضو هعمل Variable استقبل فيه الناتج بتاعي

عشان لو عايز استخدمه بعد كده

```
--calling
declare @x int
execute @x=getdata
select @x
```

150 %

Results Messages

(No column name)

1	22
---	----

```
--calling
declare @x int
execute @x=getdata 5
select @x
```

150 %

Results Messages

(No column name)

1	27
---	----

طيب افرض انا كنت عايز أ return ال Name مش ال Age
ف لا مينفعش
لأن ال return بتاعة ال Stored بترجع ارقام بس
ومينفعش اي Data type تاني

طيب افرض انا كنت عايز أ return ال ID و ال Age

ف اهو كده الآتنين int ومفيش مشكلة

ف برضو لا : لأن ال return بتاعة ال Stored بترجع int واحد بس

ف كده ال Stored return مختلف عن ال Fun. Return

ال : Stored return

- (ممكن اكتبها أو مكتبهاش) Optional return
- مبترجعش غير int بس
- مينفعش ترجع غير int واحد
- مينفعش ترجع Table

ال : Fun. Return

- لازم اكتب ال return
- ممكن ترجع اي Data type
- ممكن ترجع Table

ف انا اقدر افهم من كده إن ال Stored return مش معمولة عشان ترجع قيمة جايه من ال Stored

لكن معمولة عشان ترجع رقم يعبر عن ال behavior بتاع ال

ف اللي بيعمل ال **Stored** دي هو ال **Database developer**
واللي بيستخدمها هو ال **Application programmer**
والمفروض الاتنين بيتفقوا مع بعض علي شوية ارقام
يعني مثلا (return 1) معناها إن ال **Stored** عملت **Run** صح
و (2) معناها إن في مشكلة ف ال **Run**
وهكذا

ف ده تأكيد إن ال **Stored return**
معموله عشان ترجع رقم يعبر عن ال **behavior** بتاع ال **Stored**

يعني

```
create Proc getdata @id int
as
    declare @age int
        select @age=st_age from Student
        where st_id=@id
    return @age

--calling
declare @x int
execute @x=getdata 5
select @x
```

الكود اللي احنا كاتببته هنا
هو ك **Syntax** صح
لكن ك **Logic** غلط

لکن ازای فعلا اقدر اعمل **return** قیمة من **Stored**

Parameters عندها نوعین من ال **Stored Note**

Input parameter - ۱

Output parameter - ۲

زی ال **Call by Value** و ال **(address) Call by reference**

Parameter by value : يعني لما بتبعث لحاجة Call by value

ده معناه انه بياخذ **Copy** منها

ف لو ال **Copy** اتغيرت

انا مبحسش بالتغيير ده

Parameter by reference : يعني لما بتبعث لحاجة Call by reference

هما اصلا بيشاوروا على نفس ال **memory**

ف لو واحد منهم اتعدل الثاني بيتعدل

ف ال **Call by Value : كأنها input Parameter**

وال **Call by reference : كأنها Output Parameter**

يعني هنا

```
alter Proc getdata @id int,@age int output  
as  
    select @age=st_age from Student  
    where st_id=@id  
  
--calling  
declare @x int  
execute getdata 5,@x output  
select @x
```

انا عندي هنا ال input parameter هو @id

@id int

ف انت بتقوله انا هبعملك input ID

ف لو ال ID ده اتغير انا مليش علاقة

لأنه Copy انا باخذ منه input

ف هنا

execute getdata 5

انا خدت Copy من ال (5) جوا ال Stored واشتغل عليها

انما

`@age int output`

`@x output`

ف دول Output Parameters

ف كان الاثنين بيشاوروا على نفس ال **memory** ف لو واحد منهم متغير الثاني برضو هيتغير

يعني لو ال `@age int output` متغير

هلاقي ال `@x output` برضو متغير

ويمكن اعمل اكتر من **Output Parameter** عادي

ف لو عملت كده

```
alter Proc getdata @id int,@age int output,@name varchar(20) output  
as  
    select @age=st_age,@name=st_fname from Student  
    where st_id=@id
```

ف كده انا عملت **Stored** بتاخد **3 Parameters** (1 input & 2 Outputs)

```
--calling  
declare @x int,@y varchar(20)  
execute getdata 5,@x output,@y output  
select @x,@y
```

(No column name)	(No column name)
1	27

reem

ف كده انا عندي ف ال **Run time**

دول

@age int output, @name varchar(20) output

شاييفين دول

@x output, @y output

وده ID مختلف

The screenshot shows a SQL Server Management Studio (SSMS) interface. In the top pane, there is a code editor with the following T-SQL script:

```
--calling
declare @x int,@y varchar(20)
execute getdata 1 @x output,@y output
select @x,@y
```

The word "output" is highlighted with a blue selection bar. In the bottom pane, the "Results" tab is selected, displaying the following table:

	(No column name)	(No column name)
1	22	ali

اصلًا يعني ايه output هنا ؟

يعني انا هبعتهم ك Parameters 2 فاضيين

بس ال Stored Parameters 2 دول لو اتغيروا جوا ال

ف انا هحس بالتغيير ده

يعني هنا

```
alter Proc Getdata @id int,@age int output,@name varchar(20) output  
as  
Select @age=st_age ,@name=st_fname  
from Student  
where st_id=@id  
  
declare @x int,@y varchar(20)  
execute Getdata 6,@x output,@y output  
select @x,@y
```

انا عندي ال 2 دوال فاضيين

@age int output,@name varchar(20) output

ولما بقي جواهم قيمة

@age=st_age ,@name=st_fname

ف المفروض ال 2 دوال هيسوا بالتغيير ده

@x output,@y output

لكن انا لو شيلت كلمت output

وحببيت اعرض ال @x & @y

ف هلاقا لهم ب Null لأنهم محسوش بالتغيير اللي حصل هنا

@age=st_age ,@name=st_fname

من الاخر انا بعمل كده ليه اصلا ؟

ليه باخد ال output ده واحطه ف Variable ؟

عشان ممكن استخدمه بعد كده براحتي

ف بدل منا عملت Select هنا

```
select @x,@y
```

كان ممكن استخدمهم ك input ل Stored Function اسمها (insertValues) تانية مثلًا

```
execute InsetValues @x,@y
```

او استخدمهم ك input ل Fun.

او اني اخذ القيم دي واعملها insert في Table تاني

او اي استخدام

طيب ايه المختلف بين دول (إعادة شرح)

```
select @x

alter Proc getdata @id int,@age int output,@name varchar(20) output
as
    select @age=st_age,@name=st_fname from Student
    where st_id=@id

declare @x int,@y varchar(20)
execute getdata 1,@x output,@y output
select @x,@y

-----
alter Proc getdata @z int output,@name varchar(20) output
as
    select @z=st_age,@name=st_fname from Student
    where st_id=@z

declare @x int=1,@y varchar(20)
execute getdata @x output,@y output
select @x,@y
```

الأولى انا استخدمت ال **@id** ك **input Parameter**
لكن الثانية انا استخدمت **@z** ك **input & Output Parameter**

نقول تاني ايه الفرق بين الآتنين دول

```
| alter Proc| Getdata @id int,@age int output,@name varchar(20) output  
as  
|   Select @age=st_age,@name=st_fname  
   from Student  
   where st_id=@id  
  
declare @x int,@y varchar(20)  
execute Getdata 6,@x output,@y output  
select @x,@y  
  
-----  
|create Proc Getmydata @age int output,@name varchar(20) output  
as  
|   Select @age=st_age,@name=st_fname  
   from Student  
   where st_id=@age  
  
declare @x int=6,@y varchar(20)  
execute Getmydata @x output,@y output  
select @x,@y
```

الأولى انا استخدمت ال **@id** ك **input Parameter**
لكن الثانية انا استخدمت **@age** ك **input & Output Parameter**

وهو في ال Execution كأنه عمل كده

```
create Proc Getmydata @age int output,@name varchar(20) output
as
    Select @age=st_age,@name=st_fname
    from Student
    where st_id=@age

declare @x int=6,@y varchar(20)
execute Getmydata @x output,@y output
select @x,@y
```

```
create Proc Getmydata @age int output,@name varchar(20) output
as
    3 Select @age=30,@name=st_fname → Output Parameter
    →1 from Student
    2 where st_id=6 → Input Parameter

declare @x int=6,@y varchar(20)
execute Getmydata @x output,@y output
select @x,@y
```

--dynamic queries

```
--dynamic queries
create Proc getvalues @col varchar(20),@t varchar(20)
as
    execute('select '+@col+' from '+@t)

getvalues '*', 'student'
```

150 %

Results Messages

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	1	ali	Hassan	Cairo	22	10	NULL
2	2	Amr	Magy	Cairo	24	10	1
3	3	Mona	Saleh	Cairo	24	10	1
4	4	nada	Mohamed	Alex	27	10	1

--dynamic queries

```
--dynamic queries
create Proc getvalues @col varchar(20),@t varchar(20)
as
    execute('select '+@col+' from '+@t)

getvalues '*' 'instructor'
```

150 %

Results Messages

	Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	1	Ahmed	Master	7488.00	10
2	2	Hany	Master	8928.00	10
3	3	Reham	Master	6048.00	10
4	4	Yasmin	PHD	528.00	10

```
--dynamic queries
create Proc getvalues @col varchar(20),@t varchar(20)
as
    execute('select '+@col+' from '+@t)
```

```
getvalues 'salary', 'instructor'
```

Incorrect syntax near "salary". Expecting ID, or QUOTED_ID.

150 %

Results Messages

	salary
1	7488.00
2	8928.00
3	6048.00
4	528.00

```
--types of SP  
-----builtin SP  
  
-----user defined SP  
  
-----trigger
```

```
-----builtin SP  
sp_bindrule sp_unbinddefault sp_HELPTEXT sp_ADDTYPE sp_HELPCONSTRAINT sp_who
```

```
-----user defined SP  
getsuds getstubyadd sumdata ....
```

```
-----trigger  
--special type of SP  
--can't call  
--can't send parameter  
--automatic firing  
--listen events ---->code fire  
--triggers table [insert update delete] [truncate select]xxxx
```

کل Note Object على level Database بيت Create عندی ف ال معین

طیب ایه هي ال levels اصلا ؟

- ١ - ال Server
- ٢ - ال Database
- ٣ - ال Schema
- ٤ - ال Object

ال Views بیتعملها Create على مستوى ایه ؟

Schema -

ال Table بیتعمله Create على مستوى ایه ؟

Schema -

ال Stored & Fun. بیتعملهم Create على مستوى ایه ؟

Schema -

معظم ال Objects بیتعملها Create على مستوى ال Schema

ال **logins** بيتعملها **Create** على مستوى ايه ؟

Server -

ال **Users** بيتعملها **Create** على مستوى ايه ؟

Database -

ال **Schema** بيتعملها **Create** على مستوى ايه ؟

Database -

ال **Constraints & indexes** بيتعملها **Create** على مستوى ايه ؟

Table (object) -

ال **Triggers** بيتعملها **Create** على مستوى ايه ؟

Servers -

Database -

Table (object) -

بس احنا هنا هنركز اكتر في ال **Triggers** اللي على مستوى ال **Table**

```

create trigger tr_1
on student
after insert
as
    select 'welcome to ITI'

```

هنا هو هي Fire بس لو عملت insert

طبعا مقدرش أ Call ال Trigger

```

Msg 2809, Level 16, State 1, Line 236
The request for procedure 'tr_1' failed because 'tr_1' is a trigger object.

```

لكن هنا

(No column name)
1 welcome to ITI

ال Trigger Firing + insert كتبلي (Welcome to iti) نفذ ال عمل

```

]create trigger tr_2
on student
for update
as
    select getdate(),suser_name(),db_name(),host_name()

```

For = after : Note

The screenshot shows an open query window with the following content:

```

update Student
set st_age+=1

```

Below the query, the results pane shows a single row of data:

	(No column name)	(No column name)	(No column name)	(No column name)
1	2024-06-08 13:21:25.813	Ramili	ITI	RAMI

انا اصلا عندي نوعين من ال : Triggers

نوع بيتفذ بعد ال query (زي الاتنين اللي فوق دول) After Trigger -١

نوع بيتفذ بدل ال query (زي اللي تحت دي) Instead of Trigger -٢

```

create trigger tr_3
on student
instead of delete
as
    select 'not allowed'

```

The screenshot shows an open query window with the following content:

```

delete from Student where st_id=400

```

Below the query, the results pane shows a single row of data:

	(No column name)
	not allowed

Note : ممکن اعمل اکتر من Trigger علی نفس ال Table

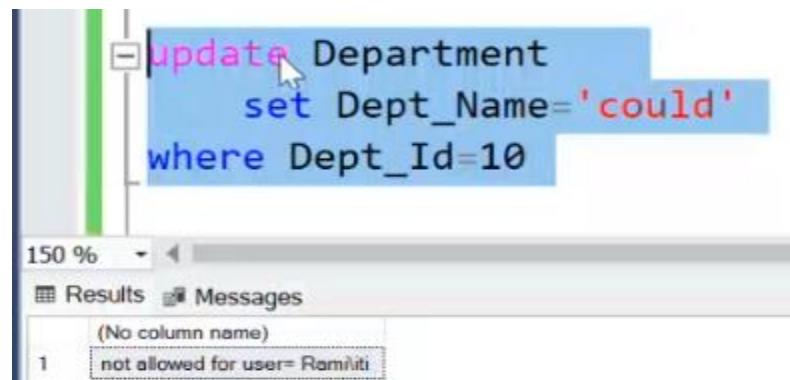
طیب لو عندي Table ومش عایز حد يعمل عليه

insert or update or delete

ف بدل م اعمل Permission لكل user والفرهدة دي

نعمل instead of Trigger ونجز

```
create trigger tr_5
on department
instead of insert , update ,delete
as
    select 'not allowed for user= '+suser_name()
```



ولو عملت برضو insert or delete هیطلعی نفس ال message

Note : مینفعش اكتب اکتر من Table جمب (on

لكن ممکن اعمل اکتر من Action جمب (instead of

بما إن ال Special type of Stored Procedure : Trigger
ف أكيد أقدر اكتب جوا ال Stored Triggers اي حاجة أنا عايزها زي ال

لكن الاختلاف بينها وبين ال Stored

- بيحصلها Automatic Call
- مبتاخدش Parameter
- تعتبر جزء من ال query (بص تحت هتفهم)

لو أنا هعمل Trigger زي ده

```
create trigger tr_7
on course
after update
as
    select 'welcome to ITI'
```

و عملت Record ل Update اصلا مش موجود

The screenshot shows a SQL query editor interface. At the top, there is a code editor window containing the following SQL script:

```
create trigger tr_7
on course
after update
as
    select 'welcome to ITI'
```

Below the code editor is a results pane. It has tabs for "Results" and "Messages". The "Results" tab is selected and displays the output of the trigger execution:

(No column name)
1 welcome to ITI

ف برضو Welcome to iti هتطبع
ف معني كده إن ال query هو جزء من ال Trigger

ف هو ملوش علاقة إن ال query هيأثير ف ال rows ولا لا
 ف طالما ال Syntax صح ال Trigger هيء عادي جدا
 لكن لو في مشكلة ف ال Syntax مش هيء Trigger ف ال

سؤال : ليه دائمآ update لونها مختلف عن insert & delete

update

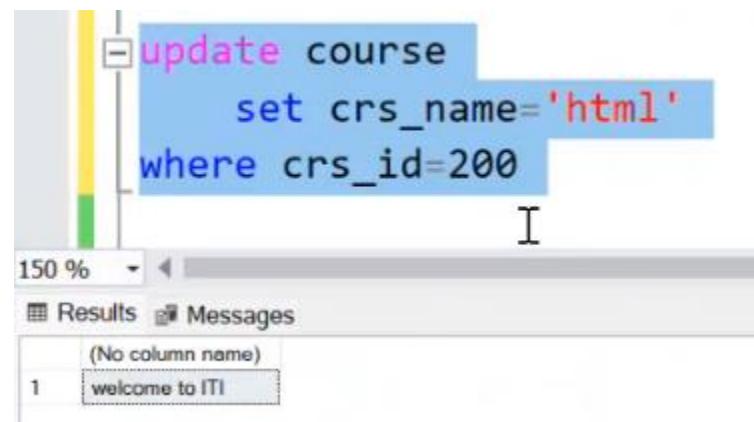
لأن أنا ممكن استخدمها ك Fun. جوا ال Trigger

```
alter trigger tr_7
on course
after update
as
if update(crs_name)
    select 'welcome to ITI'
```

هنا ال Update العادي اللي نعرفها

لكن دي Fun.

هنا هو مش هيطلع Welcome to iti غير لو عملت Update لل Crs_name

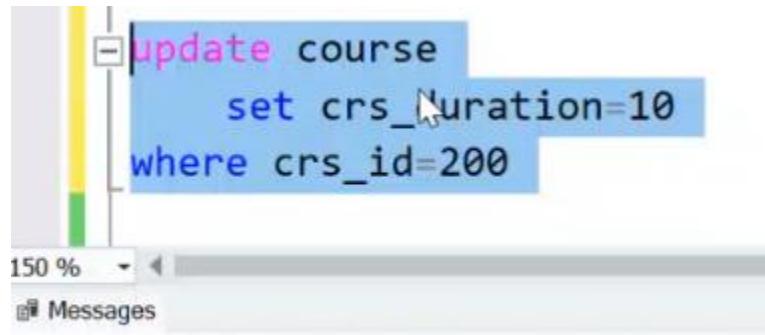


The screenshot shows the Oracle SQL Developer interface. At the top, there is a code editor window containing the following SQL code:

```
update course
set crs_name='html'
where crs_id=200
```

Below the code editor is a results grid. The first row has a column header '(No column name)' and a single value 'welcome to ITI' under it. There is also a message bar at the bottom of the results grid.

لكن غير كده



A screenshot of the SQL Server Management Studio interface. A T-SQL update statement is being typed into the query window:

```
update course  
set crs_nDuration=10  
where crs_id=200
```

The statement is highlighted in blue. Below the query window, a status bar shows "150 %". At the bottom of the screen, a message bar displays "(1 row affected)".

هينفذ ال query عادي

وال Trigger برضو اتعمله Fire ولكن مطلعش
لأن أنا قولتلها ميكتبهاش غير لما اعمل Update لـ Crs_name بس

ال Table يورث ال Schema بـ inheritance (Automatic)

يعني أنا ف الطبيعي ال Schema بـ inheritance ف كده بما إن ال Table بـ inheritance Schema ف ال Table هيعمل inherit لـ اسم ال Schema

طيب نو ال ال Table اللي هعمل عليه ال Trigger
كان جوا Schema اسمها hr مثلا

ف لما اعمل ال Trigger هكتب اسم ال Table كده

```
|create trigger tr_7
|on hr.course
|after update
|as
|  if update(crs_name)
|    select 'welcome to ITI'
```

وبالتالي اسم ال Trigger هيكون كده

hr. tr_7

وانا طبعا مش مضطر اكتب الأسم كده وانا بعمل Create لـ Trigger
لكن لو عملته Alter مثلا عشان اعدل عليه اي حاجة لازم استخدم الأسم الجديد

ولو ال Table اتنقل ل Schema تانية
ف برضو ال Trigger هياخد نفس ال Schema

علي عكس ال Funs. & Views & Storeds
لأن ممكن ال Schema بتاعتهم ممكن تكون مختلفة
عن ال Tables المستخدمة جواهم

اقدر اعمل Trigger لـ Disable & Enable

يعني هنا بعد م عملت ال Trigger
ومنعت اي حد انه يـ insert or update or delete

```
create trigger tr_5
on department
instead of insert , update ,delete
as
    select 'not allowed for user= '+user_name()
```

ف ممكن الغي الكلام ده واعمل Disable

```
alter table department disable trigger tr_5
```

ف كده نقدر نعمل عادي
insert or update or delete
وبيبقى شكله كده بعد ال Disable

```
create trigger tr_5
on department
instead of insert , update ,delete
as
    select 'not allowed for user= '+user_name()

update Department
    set Dept_Name='could'
where Dept_Id=10

alter table department disable trigger tr_5
```

Commands completed successfully.

Completion time: 2024-06-08T13:33:01.5466925+03:00

وقدر تاني ارجع اعمله **Enable**

```
alter table department enable trigger tr_5
```

ف بال التالي منع اي حد انه پے insert or update or delete

Fun. Or View Or Stored لل **Enable & Disable** : مقدرش اعمل **Note**

ای **Database** **Tables** 2 جواہا مہمین

Inserted Table - ۱

Deleted Table - ۲

```

create trigger tr_9
on course
after update
as
    select * from inserted
    select * from deleted

```

The screenshot shows a SQL query window with the following content:

```

update course
set crs_name='nodejs' ,crs_duration=25,top_id=5
where crs_id=300

```

Below the query window, there are two result sets:

	Crs_Id	Crs_Name	Crs_Duration	Top_Id
1	300	nodejs	25	5

	Crs_Id	Crs_Name	Crs_Duration	Top_Id
1	300	OOP	80	1

ده معناه إن

`select * from inserted`

جابتلي القييم الجديدة اللي نسه عاملها `update`

وده معناه إن

`select * from deleted`

جابتلي القييم القديمة اللي اتعملها `Override`

مثال تاني

The screenshot shows a SQL query window with the following content:

```
update course
    set crs_name='oop' , crs_duration=100 , top_id=1
  where crs_id=500
```

Below the query window, there are two result sets:

	Crs_Id	Crs_Name	Crs_Duration	Top_Id
1	500	oop	100	1

	Crs_Id	Crs_Name	Crs_Duration	Top_Id
1	500	SQL Server	60	2

ف انا اقدر استنتاج إن
مع كل Fire لل Trigger
ببيت Create 2 Tables ف ال Run time
وببيتشالوا ف ال Run time
ال 2 Tables دوال اسمهم (inserted & deleted)
وهما ببيورثوا نفس اسامي ال Columns ونفس ال Data type
بتاعت ال Table اللي استخدمناه ف ال Trigger

طیب ایہ ال Data موجودہ جواہم ؟

ده بي Trigger على ال Action اللي استخدمناه في ال Depend

لواں Action بتاعی insert

insert فيه ال rows اللي بعملها : **Inserted Table** -

هیکون فاضی : Deleted Table -

لوال Action بتابعی delete

هیکون فاضی : Inserted Table -

Deleted Table - هيكون فيه ال rows اللي بعملها : delete

لواں Action بتاعی Update

الجديدة : Inserted Table - هيكون فيه ال Data

Deleted Table : هيكون فيه ال Data القديمة

وده ملوش علاقه بنوع ال Trigger

(After) or (instead of) كان

يعني هنا لو انا عايز اعمل Trigger
يمنع الناس انها ت Delete من Course Table
بس يعرضلي اسم الكورس اللي هما حاولوا يعملو له Delete

```
create trigger tr_10
on course
instead of delete
as
    select 'not allowed to delete course name = '+ (select crs_name from deleted)
```

The screenshot shows a SQL query window with the following content:

```
delete from course where crs_id=1000
```

Below the query, the results pane shows:

	(No column name)
1	not allowed to delete course name = ASP.Net

The screenshot shows a SQL query window with the following content:

```
delete from course where crs_id=100
```

Below the query, the results pane shows:

	(No column name)
1	not allowed to delete course name = Win_XP

طيب لو عايزين نعمل Trigger يمنع الناس إنها ت insert في Student Table يوم الجمعة

```
create trigger tr_11
on student
instead of insert
as
if(format(getdate(), 'dddd')='friday')
    select 'not allowed'
else
    insert into student
    select * from inserted
```

I

أو كده

```
create trigger tr_11
on student
after insert
as
if(format(getdate(), 'dddd')='friday')
begin
select 'not allowed'
delete from Student where st_id=(select st_id from inserted)
end
```

بس مشكلة ال inserted & deleted Tables

انهم بيبقوا في Run time بس

ولما بعملهم Run مش بشوف غير اخر تعديل بس

طيب م انا ممكن اعمل Physical Table واخزن فيه الكلام ده

لأي حد هيعمل insert or update or delete

ف انا ممكن اعمل كده

```
create table history_audit
(
    _user  varchar(100),
    _date  date,
    _oldid int,
    _newid int,
    _action varchar(100)
)
```

ف كده انا عملت ال Physical Table بتاعي اللي هخزن فيه ال Data

وبعد كده هعمل ال Trigger بتاعي

```
create trigger tr_100
on topic
instead of update
as
if update(top_id)
begin
    declare @old int,@new int
    select @old=top_id from deleted
    select @new=top_id from inserted
    insert into history_audit
    values(suser_name(),getdate(),@old,@new,' update topic table')
end
```

ف هنا انا هـ كل ال Data insert لـ (top_id) لو حصل

ف لو حاولت اعدل ف ال (top_id)

RAMI.iti - dbo.history_audit	
Top_Id	Top_Na...
1	Program...
2	DB
3	Web
4	Operatin...
5	Design
30	NULL
61	NULL
▶ 60	NULL
70	NULL
100	NULL
* NULL	NULL

هيرفض يعمل Update : لأن انا عامل نوعه Trigger
لـ Update Action

وهيجبلي كل ال Data اللي حدتها في ال history_audit Table

RAMI.iti - dbo.history_audit		RAMI.iti - dbo.Topic			Day8.sql - (local).ITI (Rami\iti (53))*
	_user	_date	_oldid	_newid	_action
▶	Rami\iti	2024-06-08	50	61	update topic table
*	NULL	NULL	NULL	NULL	NULL

لو حاولت اعمل Update تاني لـ (top_id)
هيعمل نفس الحوار

RAMI.iti - dbo.history_audit		RAMI.iti - dbo.Topic			Day8.sql - (local).ITI (Rami\iti (53))*
	_user	_date	_oldid	_newid	_action
▶	Rami\iti	2024-06-08	50	61	update topic table
	Rami\iti	2024-06-08	70	44	update topic table
*	NULL	NULL	NULL	NULL	NULL

ف كده كأني عملت لـ history

بدل ما كان ف ال Run time بس

وبيجيب اخر قيمة بس

وممكن برضو اعمل نفس الموضوع واعمل لـ history

```
create trigger tr_100
on instructor
instead of delete
as
    insert into history_audit
    values(suser_name(),getdate(),(select ins_id from deleted),NULL,'delete instructor')
```

واستخدمت هنا نفس ال اللي اسمه history Table

RAMI.ITI - dbo.Instructor		RAMI.ITI - dbo.history_audit			Day8.sql - (local).ITI (Rami\iti (53))*	
		_user	_date	_oldid	_newid	_action
▶	Rami\iti	Rami\iti	2024-06-08	50	61	update topic table
	Rami\iti	Rami\iti	2024-06-08	70	44	update topic table
*	Rami\iti	Rami\iti	2024-06-08	66	NULL	delete instructor
*	NULL	NULL	NULL	NULL	NULL	NULL

اقدر برضو استخدم ال **inserted & deleted Tables** مع حاجة اسمها (**Output**)

--output

دي بتعمل حاجة اسمها : Run time Trigger يعني وقت تنفيذ ال query بس ف هو Trigger على مستوى ال query اللي بعملها بس

The screenshot shows the SQL Server Management Studio interface. At the top, there is a code editor window containing the following T-SQL script:

```
--output
delete from student
output getdate(),deleted.st_fname
where st_id=44
```

Below the code editor is a results grid titled "Results". It has two columns: "(No column name)" and "st_fname". There is one row with the value "2020-11-29 13:24:04.280" in the first column and "ali" in the second column.

ف هنا كأني عملت Trigger بيعرض التاريخ والأسم اللي انا عملته delete

ممكن استخدمها مع ال update & insert برضو

هنا هستخدموها مع ال Update

The screenshot shows an SQL query window with the following code:

```
update Student
set st_fname='ali'
output suser_name(), inserted.st_age
where st_id=1
```

Below the code, there are two tabs: "Results" and "Messages". The "Results" tab displays a table with one row:

(No column name)	st_age
DESKTOP-VF50P25\Ram	26

وهنا ممكن اجيبي ال inserted or deleted Tables من st_age مش هتفرق
لأن أنا مغيرتش ف ال st_age أصلا

وقدر برضو احط ال Data اللي أنا طلعتها دي ف اي Table تاني
زي ال history table اللي أنا كنت عامله فوق

```
update Student
set st_fname='ali'
output suser_name(), inserted.st_age into history
where st_id=1
```

بس طبعاً لازم ال Structure يكون متواافق

وهنا هستخدمنا مع ال insert

The screenshot shows a SQL query editor interface. The main pane displays the following SQL code:

```
insert into student(st_id,st_fname)
output 'welcome to iti'
values(444,'ali')
```

The code uses the `output` clause to return the value of the inserted row. The results pane below shows the output:

(No column name)
1 welcome to iti

ايه اهمية ال XML بالنسبة لـ Database
إن أنا أقدر أعمل Migration أو integration
واحول ال Data من Format to another Format

ف أنا هنا محتاج اعرف أزاي احول ال Database queries
والعكس برضو لو عندي XML أزاي أقدر احوله ل Tables (Data)

```
XML
] ----->query ----->XML
--->For XML      [raw    auto    explicit    path]

-----XML ----->data tables
-->open XML
```

ف انا لو عندي query زي ده

A screenshot of SQL Server Management Studio. The query window contains the following SQL code:

```
select * from student
```

The results window shows a table with 12 rows of student data:

	St_Id	St_Fname	St_Lname	St_Address	St_Age	Dept_Id	St_super
1	1	ali	Hassan	alex	23	10	NULL
2	2	Amr	Magydy	alex	25	10	1
3	3	Mona	Saleh	alex	25	10	1
4	4	nada	Mohamed	Alex	28	10	1
5	5	reem	Mohamed	Alex	28	10	1
6	6	Heba	Farouk	Mansoura	28	10	NULL
7	7	Ali	Hussien	alex	31	20	6
8	8	Mohamed	Fars	Alex	31	20	6
9	9	sally	NULL	Mansoura	31	20	6
10	10	ala	NULL	Alex	31	20	6
11	11	Marwa	Ahmed	alex	32	30	NULL
12	12	seyed	NULL	alex	32	30	11

وعايز احوله ل XML

ف عندي 4 طرق

--->For XML [raw auto explicit path]

raw

A screenshot of SQL Server Management Studio. The query window contains the following SQL code:

```
select * from student  
for xml raw
```

The results window shows the output in XML format:

```
XML_F52E2B61-18A1-11d1-B105-00805F49916B  
1 <row St_Id="1" St_Fname="ali" St_Lname="Hass...>
```

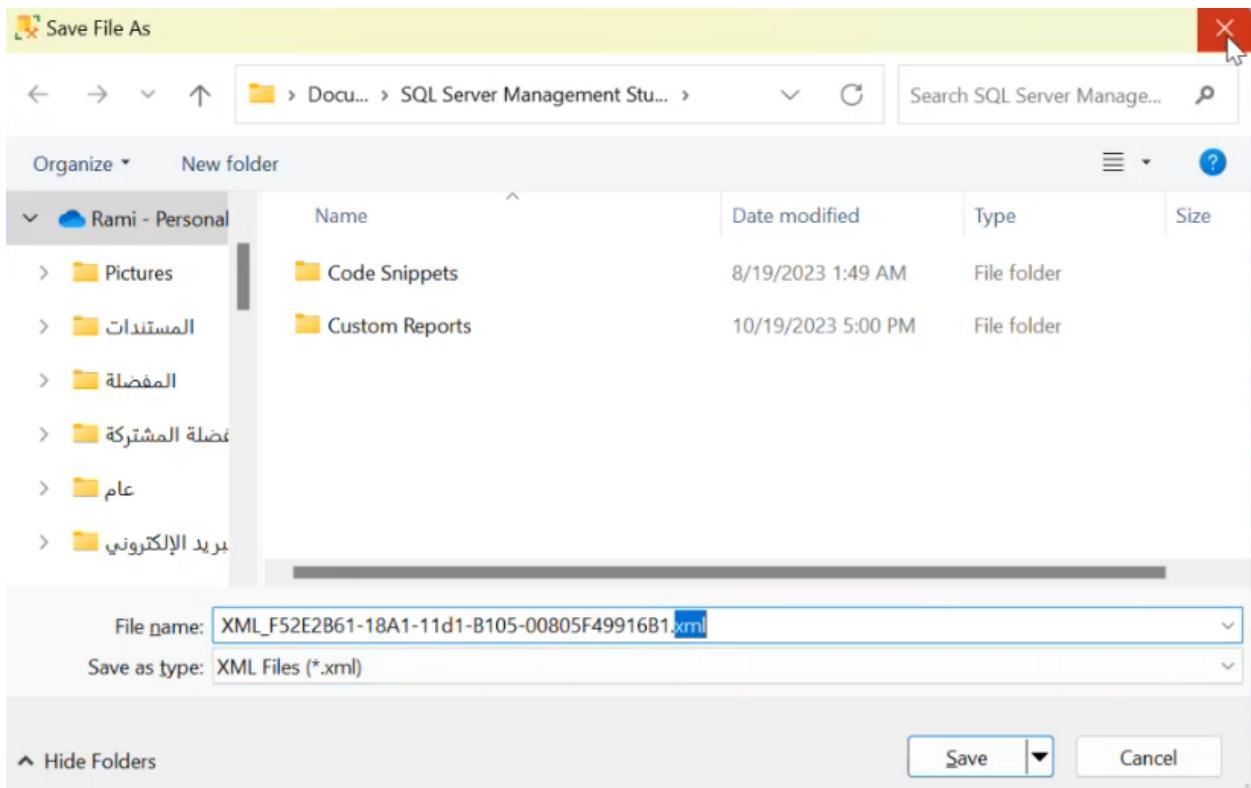
XML_F52E2B61-18A1-11d1-B105-00805F49916B1.xml

```

<row St_Id="1" St_Fname="ali" St_Lname="Hassan" " St_Address="alex" St_Age="23" Dept_I
<row St_Id="2" St_Fname="Amr" St_Lname="Magdy" " St_Address="alex" St_Age="25" Dept_I
<row St_Id="3" St_Fname="Mona" St_Lname="Saleh" " St_Address="alex" St_Age="25" Dept_
<row St_Id="4" St_Fname="nada" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" Dept_
<row St_Id="5" St_Fname="reem" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" Dept_
<row St_Id="6" St_Fname="Heba" St_Lname="Farouk" " St_Address="Mansoura" St_Age="28" D
<row St_Id="7" St_Fname="Ali" St_Lname="Hussien" " St_Address="alex" St_Age="31" Dept_I
<row St_Id="8" St_Fname="Mohamed" St_Lname="Fars" " St_Address="Alex" St_Age="31" De
<row St_Id="9" St_Fname="sally" St_Address="Mansoura" St_Age="31" Dept_Id="20" St_super=
<row St_Id="10" St_Fname="alaa" St_Address="Alex" St_Age="31" Dept_Id="20" St_super="6"
<row St_Id="11" St_Fname="Marwa" St_Lname="Ahmed" " St_Address="alex" St_Age="32" Dep
<row St_Id="12" St_Fname="sayed" St_Address="alex" St_Age="32" Dept_Id="30" St_super="11
<row St_Id="13" St_Fname="R" St_Address="alex" St_Age="33" Dept_Id="30" St_super="11" />
<row St_Id="14" St_Fname="Hassan" St_Lname="Saleh" " St_Address="alex" St_Age="33" De
<row St_Id="44" St_Fname="ahmed" />
<row St_Id="61" St_Fname="ahmed" />
<row St_Id="100" St_Fname="ahmed" />
<row St_Id="400" St_Fname="ahmed" St_Address="alex" />
<row St_Id="401" St_Fname="ahmed" St_Address="alex" />

```

وادر برضو ا Save الكلم ده ب XML Format عادي جدا



مکن ازود واعمل Tag

```
select * from student  
for xml raw('student')
```

```
XML_F52E2861-18...0805F4991682.xml  day9.sql - (local).ITI (Ram\Iti (56)) XMLsql - (local).master (Ram\Iti (53))

<student St_Id="1" St_Fname="ali" St_Lname="Hassan" " St_Address="alex" St_Age="23" Dept_Id="1"
<student St_Id="2" St_Fname="Amr" St_Lname="Magdy" " St_Address="alex" St_Age="25" Dept_Id="1"
<student St_Id="3" St_Fname="Mona" St_Lname="Saleh" " St_Address="alex" St_Age="25" Dept_Id="1"
<student St_Id="4" St_Fname="nada" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" Dept_Id="1"
<student St_Id="5" St_Fname="reem" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" Dept_Id="1"
<student St_Id="6" St_Fname="Heba" St_Lname="Farouk" " St_Address="Mansoura" St_Age="22" Dept_Id="1"
<student St_Id="7" St_Fname="Ali" St_Lname="Hussien" " St_Address="alex" St_Age="31" Dept_Id="1"
<student St_Id="8" St_Fname="Mohamed" St_Lname="Fars" " St_Address="Alex" St_Age="31" Dept_Id="1"
<student St_Id="9" St_Fname="sally" St_Address="Mansoura" St_Age="31" Dept_Id="20" St_super="1"
<student St_Id="10" St_Fname="alaa" St_Address="Alex" St_Age="31" Dept_Id="20" St_super="1"
<student St_Id="11" St_Fname="Marwa" St_Lname="Ahmed" " St_Address="alex" St_Age="32" Dept_Id="20"
<student St_Id="12" St_Fname="sayed" St_Address="alex" St_Age="32" Dept_Id="30" St_super="1"
<student St_Id="13" St_Fname="R" St_Address="alex" St_Age="33" Dept_Id="30" St_super="11"
<student St_Id="14" St_Fname="Hassan" St_Lname="Saleh" " St_Address="alex" St_Age="33" Dept_Id="30"
<student St_Id="44" St_Fname="ahmed" />
<student St_Id="61" St_Fname="ahmed" />
<student St_Id="100" St_Fname="ahmed" />
<student St_Id="400" St_Fname="ahmed" St_Address="alex" />
<student St_Id="401" St_Fname="ahmed" St_Address="alex" />
```

ويمكن اقسامهم جوال Elements

ف كل Tag طبع منفصل Attribute

The screenshot shows a SQL query window with the following code:

```
select * from student
for xml raw('student'),elements
```

The results pane shows one row of data:

1	<student><St_Id>1</St_Id><St_Fname>ali</St_Fname>
---	---

The screenshot shows the XML structure of the results in a tree view:

- <student>
 - <St_Id>1</St_Id>
 - <St_Fname>ali</St_Fname>
 - <St_Lname>Hassan </St_Lname>
 - <St_Address>alex</St_Address>
 - <St_Age>23</St_Age>
 - <Dept_Id>10</Dept_Id>
- </student>
- <student>
 - <St_Id>2</St_Id>
 - <St_Fname>Amr</St_Fname>
 - <St_Lname>Magdy </St_Lname>
 - <St_Address>alex</St_Address>
 - <St_Age>25</St_Age>
 - <Dept_Id>10</Dept_Id>
 - <St_super>1</St_super>
- </student>
- <student>
 - <St_Id>3</St_Id>

ويمكن اعمل root

A screenshot of SQL Server Management Studio (SSMS) showing an XML query result. The query is:

```
select * from student  
for xml raw('student'),elements,root
```

The results pane shows one row with the XML output:

```
<root><student><St_Id>1</St_Id><St_Fname>ali</St_Fname>
```

An arrow points to the XML node.

A screenshot of SSMS showing the XML structure tree. The XML document is:

```
<root>  
  <student>  
    <St_Id>1</St_Id>  
    <St_Fname>ali</St_Fname>  
    <St_Lname>Hassan</St_Lname>  
    <St_Address>alex</St_Address>  
    <St_Age>23</St_Age>  
    <Dept_Id>10</Dept_Id>  
  </student>  
  <student>  
    <St_Id>2</St_Id>  
    <St_Fname>Amr</St_Fname>  
    <St_Lname>Magdy</St_Lname>  
    <St_Address>alex</St_Address>  
    <St_Age>25</St_Age>  
    <Dept_Id>10</Dept_Id>  
    <St_super>1</St_super>  
  </student>  
  <student>
```

وھنا عشان لو عندي Null

The screenshot shows a SQL query window and its corresponding XML output. The query is:

```
--how to show null values in xml  
select * from Student  
for xml raw('Student'),ELEMENTS xsinil,ROOT('STUDENTS')
```

The XML output is:

```
<STUDENTS xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">  
  <Student>  
    <St_Id>1</St_Id>  
    <St_Fname>ali</St_Fname>  
    <St_Lname>Hassan</St_Lname>  
    <St_Address>alex</St_Address>  
    <St_Age>23</St_Age>  
    <Dept_Id>10</Dept_Id>  
    <St_super xsi:nil="true" />  
  </Student>  
  <Student>  
    <St_Id>2</St_Id>  
    <St_Fname>Amr</St_Fname>  
    <St_Lname>Magdy</St_Lname>  
    <St_Address>alex</St_Address>  
    <St_Age>25</St_Age>  
    <Dept_Id>10</Dept_Id>  
    <St_super>1</St_super>  
  </Student>  
</STUDENTS>
```

ف ھو هنا بیستبدل ال Null ب Expression

ولو عندى

```
select St_Address,COUNT(st_id) from Student  
group by St_Address
```

Results

St_Address	(No column name)
NULL	3
alex	15
Mansoura	3

ممكن اعمل كده

```
select St_Address,COUNT(st_id) from Student  
group by St_Address  
for xml raw('Student'),ELEMENTS,ROOT('STUDENTS')
```

Results

```
XML_F52E2B61-18A1-11d1-B105-00805F49916B  
<STUDENTS><Student>3</Student><Student><St_Adre...
```

XML_F52E2B61-18...0805F49916B7.xml

<STUDENTS>
 <Student>3</Student>
 <Student>
 <St_Address>alex</St_Address>15</Student>
 <Student>
 <St_Address>Mansoura</St_Address>3</Student>
</STUDENTS>

ف نقدر نقول إن ال query ده مفيد لـ
group by & order by & Simple queries

لکن فیہ عین مهمین جدا

إن اسامي ال Columns يـ إما بـتطلع لـ Tag

يـِ إـِمـَـا بـِتـُـطـُـعـِ Element

پعنی ہنا

```
select * from student  
for xml raw('student')
```

Attributes اسامی ال Columns کلها ک

```
XML_F52E2B61-18...0805F49916B2.xml  ↗  day9.sql - (local).ITI (Rami\Iti (56))  XMLsql - (local).master (Rami\Iti (53))
[student St_Id="1" St_Fname="ali" St_Lname="Hassan" " St_Address="alex" St_Age="23" De
<student St_Id="2" St_Fname="Amr" St_Lname="Magdy" " St_Address="alex" St_Age="25" De
<student St_Id="3" St_Fname="Mona" St_Lname="Saleh" " St_Address="alex" St_Age="25" D
<student St_Id="4" St_Fname="nada" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" D
<student St_Id="5" St_Fname="reem" St_Lname="Mohamed" " St_Address="Alex" St_Age="28" D
<student St_Id="6" St_Fname="Heba" St_Lname="Farouk" " St_Address="Mansoura" St_Age="2
<student St_Id="7" St_Fname="Ali" St_Lname="Hussien" " St_Address="alex" St_Age="31" De
<student St_Id="8" St_Fname="Mohamed" St_Lname="Fars" " St_Address="Alex" St_Age="31
<student St_Id="9" St_Fname="sally" St_Address="Mansoura" St_Age="31" Dept_Id="20" St_su
<student St_Id="10" St_Fname="alaa" St_Address="Alex" St_Age="31" Dept_Id="20" St_sup
<student St_Id="11" St_Fname="Marwa" St_Lname="Ahmed" " St_Address="alex" St_Age="32"
<student St_Id="12" St_Fname="sayed" St_Address="alex" St_Age="32" Dept_Id="30" St_sup
<student St_Id="13" St_Fname="R" St_Address="alex" St_Age="33" Dept_Id="30" St_sup="11
<student St_Id="14" St_Fname="Hassan" St_Lname="Saleh" " St_Address="alex" St_Age="33
<student St_Id="44" St_Fname="ahmed" />
<student St_Id="61" St_Fname="ahmed" />
<student St_Id="100" St_Fname="ahmed" />
<student St_Id="400" St_Fname="ahmed" St_Address="alex" />
<student St_Id="401" St_Fname="ahmed" St_Address="alex" />
```

وهنا

The screenshot shows a SQL query window with the following code:

```
select * from Student  
for xml raw('Student'),ELEMENTS
```

The results pane displays the XML output for the first student:

```
<Student><St_Id>1</St_Id><St_Fname>ali</St_Fname>
```

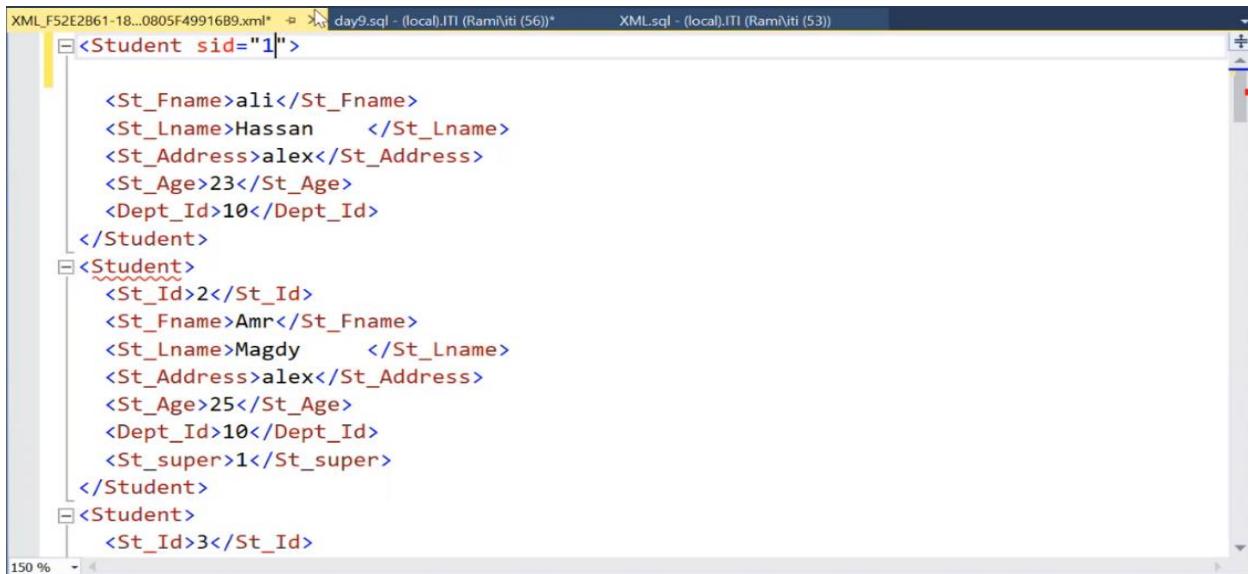
A mouse cursor is hovering over the XML node.

هیطلع اسامی ال Columns کلها ک

The screenshot shows an expanded XML tree for three students. The XML structure is as follows:

```
<Student>  
  <St_Id>1</St_Id>  
  <St_Fname>ali</St_Fname>  
  <St_Lname>Hassan</St_Lname>  
  <St_Address>alex</St_Address>  
  <St_Age>23</St_Age>  
  <Dept_Id>10</Dept_Id>  
</Student>  
<Student>  
  <St_Id>2</St_Id>  
  <St_Fname>Amr</St_Fname>  
  <St_Lname>Magdy</St_Lname>  
  <St_Address>alex</St_Address>  
  <St_Age>25</St_Age>  
  <Dept_Id>10</Dept_Id>  
  <St_super>1</St_super>  
</Student>  
<Student>  
  <St_Id>3</St_Id>
```

طيب هل ممكن اعمل كده



The screenshot shows the SQL Server Management Studio interface. In the top bar, there are tabs for 'XML_F52E2B61-18...0805F4991689.xml*', 'day9.sql - (local).ITI (Rami\iti (56))', and 'XMLsql - (local).ITI (Rami\iti (53))'. The main area displays an XML document structure under the 'Object Explorer' node. The XML code is as follows:

```
<Student sid="1">
  <St_Fname>ali</St_Fname>
  <St_Lname>Hassan</St_Lname>
  <St_Address>alex</St_Address>
  <St_Age>23</St_Age>
  <Dept_Id>10</Dept_Id>
</Student>
<Student>
  <St_Id>2</St_Id>
  <St_Fname>Amr</St_Fname>
  <St_Lname>Magdy</St_Lname>
  <St_Address>alex</St_Address>
  <St_Age>25</St_Age>
  <Dept_Id>10</Dept_Id>
  <St_super>1</St_super>
</Student>
<Student>
  <St_Id>3</St_Id>
```

حيث أخلي جزء من ال Attribute ك Data
وجزء من ال Tag ك Data

ف للأسف

for xml raw

متقدرش تعمل كده
لأنها بتطلع ال Columns كلها ك Attribute
او بتطلع ال Columns كلها ك Tag

مشكلة تانية برضو لـ

for xml raw

إنها مبتفهمش ال joins

ف لو حاولت اعمل ال join ده

--JOIN problem

```
select t.Top_Id, Top_Name, Crs_Id, Crs_Name
from Topic t, Course c
where t.Top_Id=c.Top_Id
order by t.top_id
```

Results

	Top_Id	Top_Name	Crs_Id	Crs_Name
1	1	Programming	4	db
2	1	Programming	200	html
3	1	Programming	800	Java
4	1	Programming	500	oop
5	1	Programming	600	C#
6	2	DB	900	Oracle
7	3	Web	1000	ASP.Net
8	3	Web	100	js
9	3	Web	700	Web Service
10	4	Operating System	400	Unix
11	4	Operating System	1100	Win_XP
12	5	Design	1200	Photoshop

for XML

```

-- JOIN problem
select t.Top_Id, Top_Name, Crs_Id, Crs_Name
from Topic t, Course c
where t.Top_Id=c.Top_Id
order by t.top_id
for xml raw ('topic'), ELEMENTS

```

150 %

Results Messages

XML_F52E2B61-18A1-11d1-B105-00805F49916B

1 <topic><Top_Id>1</Top_Id><Top_Name>Programming</Top_Name>

ف هو هياخذ كل row ف ال Table ويطلعه ك Tag

XML_F52E2B61-18A1-11d1-B105-00805F49916B.xml -> day9.sql - (local).ITI (Rami\iti (56)) XML.sql - (local).ITI (Rami\iti (53))

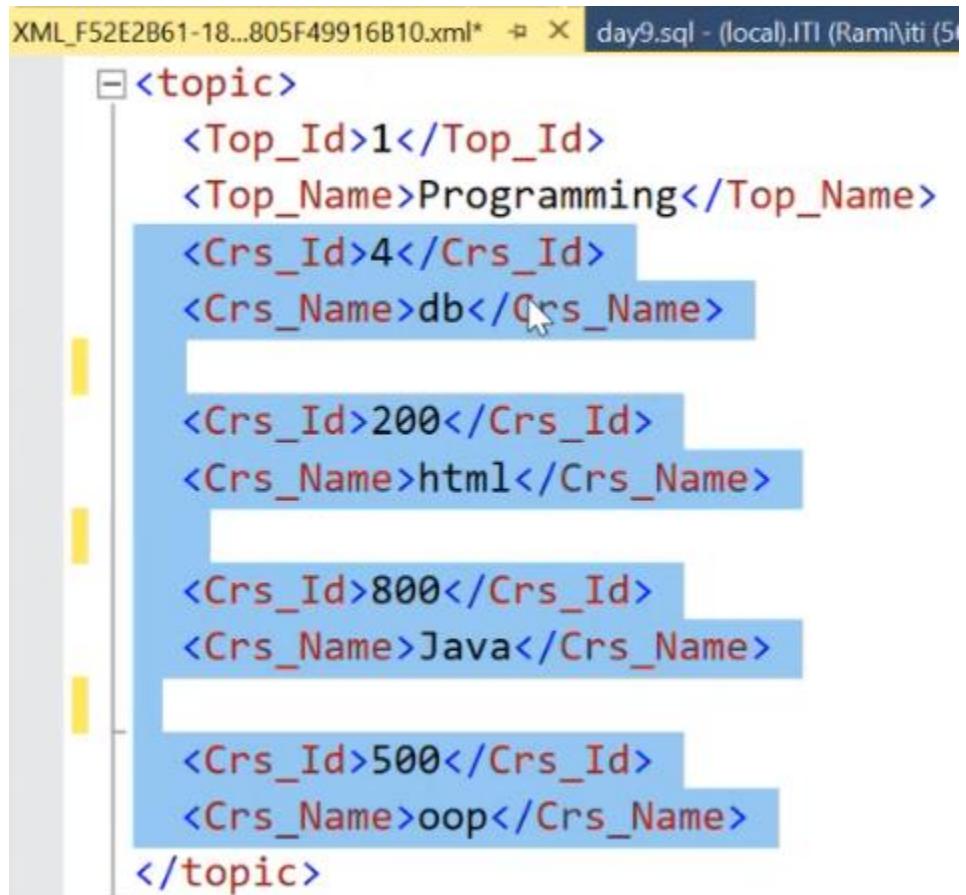
```

<topic>
  <Top_Id>1</Top_Id>
  <Top_Name>Programming</Top_Name>
  <Crs_Id>4</Crs_Id>
  <Crs_Name>db</Crs_Name>
</topic>
<topic>
  <Top_Id>1</Top_Id>
  <Top_Name>Programming</Top_Name>
  <Crs_Id>200</Crs_Id>
  <Crs_Name>html</Crs_Name>
</topic>
<topic>
  <Top_Id>1</Top_Id>
  <Top_Name>Programming</Top_Name>
  <Crs_Id>800</Crs_Id>
  <Crs_Name>Java</Crs_Name>
</topic>
<topic>

```

150 %

لكن احنا كنا مستعينين النتيجة دي



The screenshot shows an XML document structure in a database viewer. The XML code is:

```
<topic>
    <Top_Id>1</Top_Id>
    <Top_Name>Programming</Top_Name>
    <Crs_Id>4</Crs_Id>
    <Crs_Name>db</Crs_Name>
    <Crs_Id>200</Crs_Id>
    <Crs_Name>html</Crs_Name>
    <Crs_Id>800</Crs_Id>
    <Crs_Name>Java</Crs_Name>
    <Crs_Id>500</Crs_Id>
    <Crs_Name>oop</Crs_Name>
</topic>
```

The XML structure represents a topic with its ID and name, followed by four course entries, each with its ID and name. The courses are grouped under the topic node.

بحيث انه يجمع معلومات كل Course لوحدها

طيب ايه حل ال join ده

إن أنا استخدم

for xml auto

ف هنا

--JOIN problem

```
select t.Top_Id, Top_Name, Crs_Id, Crs_Name
from Topic t, Course c
where t.Top_Id=c.Top_Id
order by t.top_id
for xml auto,elements
```

Results Messages

	XML_F52E2B61-18A1-11d1-B105-00805F49916B
1	<t><Top_Id>1</Top_Id><Top_Name>Programming</Top_Name>

هو بيعمل Child وال Parent لـ Auto Detection

```
XML_F52E2B61-18A1-11d1-B105-00805F49916B11.xml  X day9.sql - (local).ITI (Rami\iti (56))*
XMLsql - (local).ITI (Rami\iti (53))*
```

```
kt>
<Top_Id>1</Top_Id>
<Top_Name>Programming</Top_Name>
<c>
  <Crs_Id>4</Crs_Id>
  <Crs_Name>db</Crs_Name>
</c>
<c>
  <Crs_Id>200</Crs_Id>
  <Crs_Name>html</Crs_Name>
</c>
<c>
  <Crs_Id>800</Crs_Id>
  <Crs_Name>Java</Crs_Name>
</c>
<c>
  <Crs_Id>500</Crs_Id>
  <Crs_Name>oop</Crs_Name>
</c>
```

بس برضو الاثنين

عندهم نفس المشكلة for xml auto for xml raw

إني أخلي جزء من ال Data ك Tag وجزء ثاني ك Attributes

ف انا ممکن احل الموضوع ده ب

path explicit
أو

explicit مش مستخدمة كثير
بس ال

path ف هدخل ع ال

---4) PATH

--Provides a simpler way to mix elements and attributes, and to
--introduce additional nesting for representing complex properties.
--Easier than Explicit mode

path ف ال

ميزيتها الكبيرة :

إنها بتفهم كل أنواع ال queries

وتقدر تخلی جزء من ال Data وجزء ثاني ک Tags

هنا ايه معنى @sid

```
select st_id "@SID",
       St_Fname "StudentName/FirstName",
       St_Lname "StudentName/LastName",
       St_Address "Address"
  from Student
```

Results

	@SID	StudentName/FirstName	StudentName/LastName	Address
1	1	ali	Hassan	alex
2	2	Amr	Magy	alex
3	3	Mona	Saleh	alex
4	4	nada	Mohamed	Alex
5	5	reem	Mohamed	Alex
6	6	Heba	Farouk	Mansoura
7	7	Ali	Hussien	alex
8	8	Mohamed	Fars	Alex
9	9	sally	NULL	Mansoura
10	10	ala	NULL	Alex
11	11	Marwa	Ahmed	alex

Alias name دا

ف لاما اعمل كده

The screenshot shows the SQL Server Management Studio interface. At the top, there is a code editor window containing the following T-SQL query:

```
select st_id "@SID",
       St_Fname "StudentName/FirstName",
       St_Lname "StudentName/LastName",
       St_Address "Address"
  from Student
 for xml path('student')
```

The results pane below shows the output of the query:

XML
1 <student SID="1"><StudentName><FirstName>ali</FirstNa...

Below the results pane is a large tree view of the XML document structure. The XML document contains three student nodes, each with attributes SID and nested elements StudentName (containing FirstName and LastName) and Address.

```
<student SID="1">
  <StudentName>
    <FirstName>ali</FirstName>
    <LastName>Hassan</LastName>
  </StudentName>
  <Address>alex</Address>
</student>
<student SID="2">
  <StudentName>
    <FirstName>Amr</FirstName>
    <LastName>Magdy</LastName>
  </StudentName>
  <Address>alex</Address>
</student>
<student SID="3">
  <StudentName>
    <FirstName>Mona</FirstName>
    <LastName>Saleh</LastName>
  </StudentName>
```

ف ال Attribute ک طبع

```
<student SID="1">
```

وال Tag ک طبع ک Address

```
<Address>alex</Address>
```

وده طبع ک Nested Tag

```
] <StudentName>
    <FirstName>ali</FirstName>
    <LastName>Hassan      </LastName>
</StudentName>           ]
```

ودي

The screenshot shows an XQuery script in the query editor:

```
select st_id "@SID",
       St_Fname "StudentName/@FirstName",
       St_Lname "StudentName/LastName",
       St_Address "Address"
  from Student
 for xml path('Student'),root('Students')
```

The results pane shows the output of the query:

1	<Students><Student SID="1"><StudentName FirstName...

يعتبر هي هي بس ال بقت First name جوا Attribute

The screenshot shows the XML structure generated by the XQuery execution:

```
<Students>
  <Student SID="1">
    <StudentName FirstName="ali">
      <LastName>Hassan</LastName>
    </StudentName>
    <Address>alex</Address>
  </Student>
  <Student SID="2">
    <StudentName FirstName="Amr">
      <LastName>Magdy</LastName>
    </StudentName>
    <Address>alex</Address>
  </Student>
  <Student SID="3">
    <StudentName FirstName="Mona">
      <LastName>Saleh</LastName>
    </StudentName>
    <Address>alex</Address>
  </Student>
```

احنا كل ده كنا بنحول ال XML query

طیب نو عایز اعمل العکس

واحول ال XML ل query (Table)

ف ده بیتک علی 5 خطوات

١ - بعمل XML Code نوعه Pass ليه ال XML Variable بتاعي

```
declare @docs xml =
    '<Students>
        <Student SID="1">
            <Fullname>
                <First>AHMED</First>
                <Last>ALI</Last>
            </Fullname>
            <Address>CAIRO</Address>
        </Student>
        <Student SID="2">
            <Fullname>
                <First>OMAR</First>
                <Last>SAAD</Last>
            </Fullname>
            <Address>ALEX</Address>
        </Student>
    </Students>'
```

٢ - بعمل Variable نوعی int تانی مثلا

```
--2)declare document handle  
declare @handler int
```

٣ - أ ال int وال XML Pass ل Built-in Stored Procedure

sp_xml_preparedocument اسمها

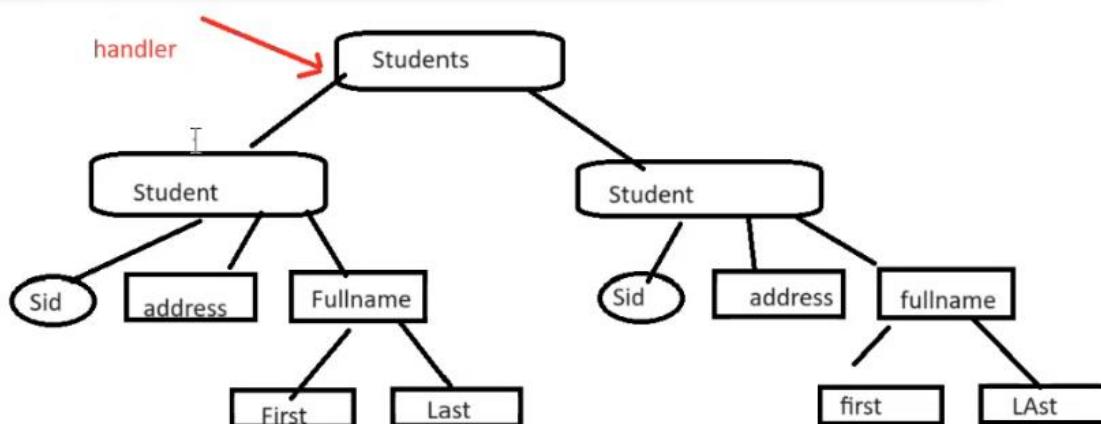
```
--3)create memory tree
```

```
Exec sp_xml_preparedocument @handler output, @docs
```

ف لو كان ال XML بتعدي سليم

ف ال Tree ترسمه قدر تقدر Built-in Stored Procedure

ويعملها Parsing



٤ - هـ read Tree من ال Memory
واطلع ال result بالشكل اللي انا عايزه

```
--4)process document 'read tree from memory'  
--OPENXML Creates Result set from XML Document  
  
SELECT *  
FROM OPENXML (@handler, '//Student') --levels XPATH Code  
WITH (StudentID int '@SID',  
      Address varchar(10) 'Address',  
      StudentFirst varchar(10) 'Fullname/First',  
      StudentSECOND varchar(10) 'Fullname/Last'
```

بعد كده ب Run كل اللي فوق ده مع بعض
وممكن برضو اكتب كل ده جوا Stored

ف بعد م اعمل Run

هلاقينه حولي ال XML Data ل 2 rows



The screenshot shows the SQL Server Management Studio (SSMS) interface with the 'Results' tab selected. The results grid displays two rows of data from the executed query:

	StudentID	Address	StudentFirst	StudentSECOND
1	1	CAIRO	AHMED	ALI
2	2	ALEX	OMAR	SAAD

وطبعا كل ده ف ال memory

ويمكن برضو كنت خدت الناتج وحطته ف Table جديد

```
--4)process document 'read tree from memory'  
--OPENXML Creates Result set from XML Document
```

```
SELECT * into tabXML  
FROM OPENXML (@handler, '//Student') --levels XPATH Code  
WITH (StudentID int '@SID',  
      Address varchar(10) 'Address',  
      StudentFirst varchar(10) 'Fullname/First',  
      StudentSECOND varchar(10) 'Fullname/Last'  
    ) I
```

وقدر برضو اعمل insert based on select عندي

هنا عملت insert في Student Table

```
--4)process document 'read tree from memory'  
--OPENXML Creates Result set from XML Document
```

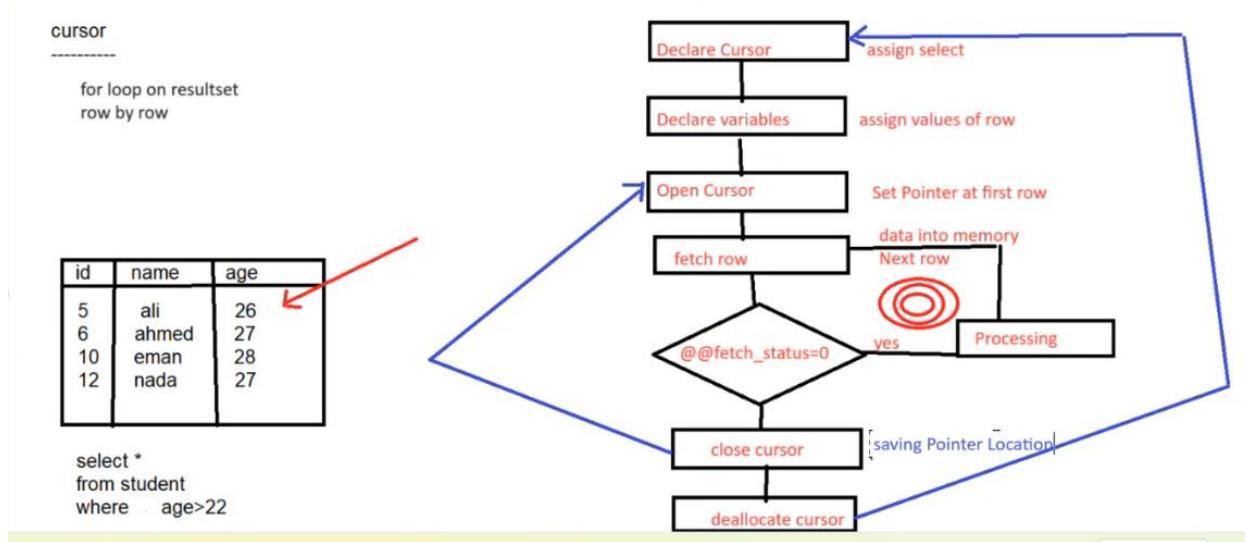
```
insert into student(st_id,st_address,st_fname,st_lname)  
SELECT *  
FROM OPENXML (@handler, '//Student') --levels XPATH Code  
WITH (StudentID int '@SID',  
      Address varchar(10) 'Address',  
      StudentFirst varchar(10) 'Fullname/First',  
      StudentSECOND varchar(10) 'Fullname/Last'  
    )
```

ف لما run هيقولي

(2 rows affected)

٥- بعمل Tree لـ Remove بعد م اخلص

```
--5)remove memory tree  
Exec sp_xml_removedocument @handler|
```



لو انا عندي ال query ده

```

select st_id,st_fname from Student
where St_Address='Mansoura'
  
```

150 %

Results Messages

st_id	st_fname
1	6 Heba
2	9 sally
3	409 ahmed

وعايز اعرضه row by row

```
declare c1 cursor
for select st_id,st_fname from Student
    where St_Address='Mansoura'
for read only

declare @id int,@name varchar(20)
open c1
fetch c1 into @id,@name      ----->counter=0
while @@FETCH_STATUS=0
begin
    select @id,@name
    fetch c1 into @id,@name --->counter++
end
close c1
deallocate c1
```

	(No column name)	(No column name)
1	6	Heba
1	9	sally
1	409	ahmed

`for read only --update`

دي حاجة بتحدد ال **behavior** بتاع ال **Cursor**

هي **for update by default**

ومضطرش اكتي السطر ده اصلا

يعني اقدر اعمل اي **modification** انا عايزه

زي (**insert , update , delete , merge ,**)

لكن انا ممكن اخليها **for read only** عادي بحيث محدث يقدر يعدل حاجة

بعد كده بعرف **Variables**

علي الاقل يكون عددهم قد عدد ال **Columns** اللي راجعة من ال **Select**

وتكون برضو من نفس نوع ال **Data type** اللي راجعة من ال **Select**

وأقدر برضو اعمل اعملاً أكثر من **Variable**

طيب نو نفترك كان عندي حاجة بتعمل العكس

بتحول ال **String** ل **Array**

عن طريق **(String_Split)**

syntaxsql

```
STRING_SPLIT ( string , separator [ , enable_ordinal ] )
```

SQL

```
SELECT value FROM STRING_SPLIT('Lorem ipsum dolor sit amet.', '');
```

In a practice run, the preceding `SELECT` returned following result table:

Expand table

value
Lorem
ipsum
dolor
sit
amet.

SQL

 Copy



```
SELECT * FROM STRING_SPLIT('Lorem ipsum dolor sit amet.', ' ', 1);
```

This statement then returns the following result table:

 Expand table

value	ordinal
Lorem	1
ipsum	2
dolor	3
sit	4
amet.	5

طيب نو عاييز اعمل العكس واحول ال String Array ل

The screenshot shows a MySQL query editor interface. At the top, a query is written in SQL:

```
select distinct st_fname from Student  
where st_fname is not null
```

The results tab is selected, displaying the following data:

	st_fname
1	ahmed
2	ala
3	ali
4	Amr
5	Hassan
6	Heba

لو عاييز اطلع ال Output ده ف Cell 1 واخليهم

ف هو كده عاييز يحول ال String Array ل

اعملها ازاي ؟

```

| --one string (cell)      [ahmed,alaa,ali,amr.....]

declare c1 cursor
for select distinct st_fname from Student
    where st_fname is not null
for read only
declare @name varchar(15),@all_names varchar(300)=''
open c1
fetch c1 into @name      ----->counter=0
while @@FETCH_STATUS=0
begin      |
    set @all_names=CONCAT(@all_names,',',@name)
    fetch c1 into @name   --->counter++
end
close c1
deallocate c1

```

	(No column name)
1	,ahmed,alaa,ali,Amr,Hassen,Heba,Marwa,Mohamed,Mona,nada,R,reem,sally,seyed

طيب ف المثالين اللي فوق دول انا كنت بعرض Data بس
لكن لو عايز اعمل Modify كمان

```

declare c1 cursor
for select salary from Instructor
for update
declare @sal int
open c1
fetch c1 into @sal    ----->counter=0
while @@FETCH_STATUS=0
begin
    if @sal>=3000
        update Instructor
            set salary=@sal*1.20
            where current of c1   I
    else if @sal<3000
        update Instructor
            set Salary=@sal*1.10
            where current of c1
    else
        delete from Instructor
        where current of c1
fetch c1 into @sal    --->counter++
end
close c1
deallocate c1

```

instead of
(Where)

To not affect on
whole Table

150 % ▼

Messages

(1 row affected)

ف انا لو مكتبتش ال Statement دي

where current of c1

كان هيأثر على ال Table كله

```
150 % Messages  
(19 rows affected)  
(19 rows affected)  
(19 rows affected)  
(19 rows affected)  
(19 rows affected)
```

طبعا في بسائل كتير لـ Cursor

زي

(Ranking Funs. , Window Funs. , While , IF , Fetch & Offset , SQL CLR)

ف لو البسائل دي ينفع اشتغل بيها ف تمام استخدماها

واخلي خيار ال Cursor اخر اختيار

لأن ال Cursor بيأخذ Memory من ال Space وانا شغال

نفس فكرة ال Sub-query كده

طيب حاجة تاني

لو انا عندي Pattern زي ده

	Ins_Id	Ins_Name	Ins_Degr...	Salary	Dept_Id
1	Ahmed	Master	287100.0...	10	
2	Hany	Master	287100.0...	10	
3	Reham	Master	287100.0...	10	
4	Yasmin	PHD	287100.0...	10	
5	Amany	PHD	287100.0...	10	
6	Eman	Master	287100.0...	10	
7	ahmed	NULL	287100.0...	10	
8	Hany	NULL	287100.0...	20	
9	Hussien	NULL	287100.0...	20	
10	Khalid	NULL	287100.0...	20	
13	Ahmed	NULL	287100.0...	30	
14	Ahmed	NULL	287100.0...	30	
15	Hany	NULL	287100.0...	30	
79	NULL	NULL	287100.0...	NULL	
100	NULL	NULL	287100.0...	NULL	
300	Hany	NULL	287100.0...	NULL	
667	NULL	NULL	287100.0...	NULL	
6000	NULL	NULL	287100.0...	NULL	
9000	ahmed	NULL	287100.0...	NULL	
*	NULL	NULL	NULL	NULL	NULL

وعايز طريقة اعرف فيها ال Pattern ده بيترر كام مرة

انا ممكن اعملها بعدها طريقة

مثلاً ممكن استخدم Flag & Counter واعمل كده

```
declare c1 cursor
for select ins_name from Instructor
for update
declare @name1 varchar(20),@count int=0,@flag int=0
open c1
fetch c1 into @name1
while @@FETCH_STATUS=0
begin
    if @name1='ahmed'
        begin
            set @flag=1
        end
    if @name1='hany' and @flag=1
        begin
            set @count+=1
            set @flag=0
        end
    fetch c1 into @name1
end
select @count
close c1
deallocate c1
```

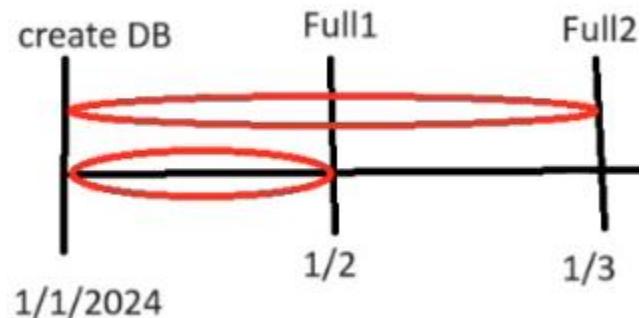
types of backups

Full backup

Differential backup

Transaction Log backup

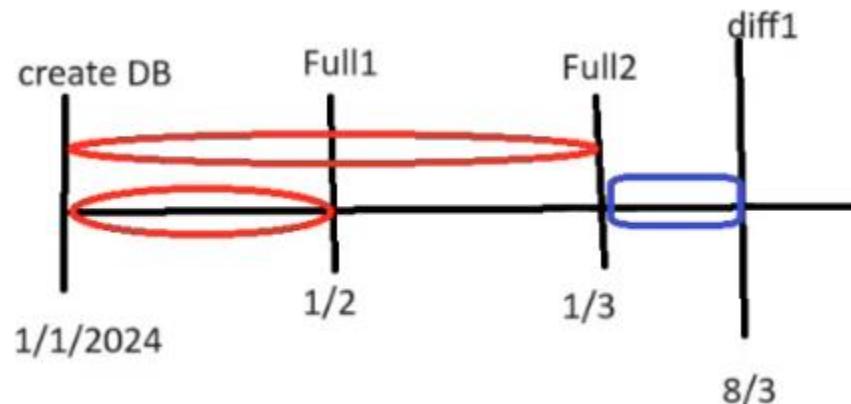
لما بعمل **Full Backup** لازم ال **Users** كلهم يكونوا Disconnected
وال **Full Backup** بتاخذ وقت كبير
وهنا



لما عمل **Full2** بدء يعمل **Backup** من أول ال **Full1** مخدش **Full1 & Full2** واللي بين **Full1 & Full2** ف لو انا عايز اخذ ال **2 Backups Difference Between** ممكن استخدم

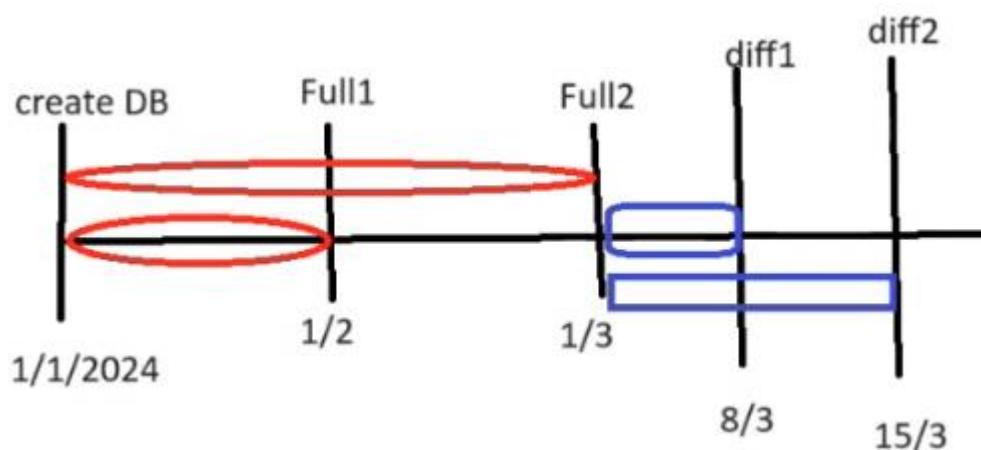
Differential backup

وده لازم بیجی بعد Full Backup طبعا
وبیبداً یاخد من اخر Full Backup موجود
ف ده کده



هیاخد $\text{Full2} + [\text{Difference between Full2 \& diff1}]$

لو هاخد زی ده
Differential backup تانی



ف هیاخد برضو $\text{Full2} + [\text{Difference between Full2 \& diff2}]$

والنوعين دول

Full backup

Differential backup

بيعملوا Backup من ال .mdf

يعني ال (Data + Meta data) .mdf

لكن النوع الثالث من ال Backup

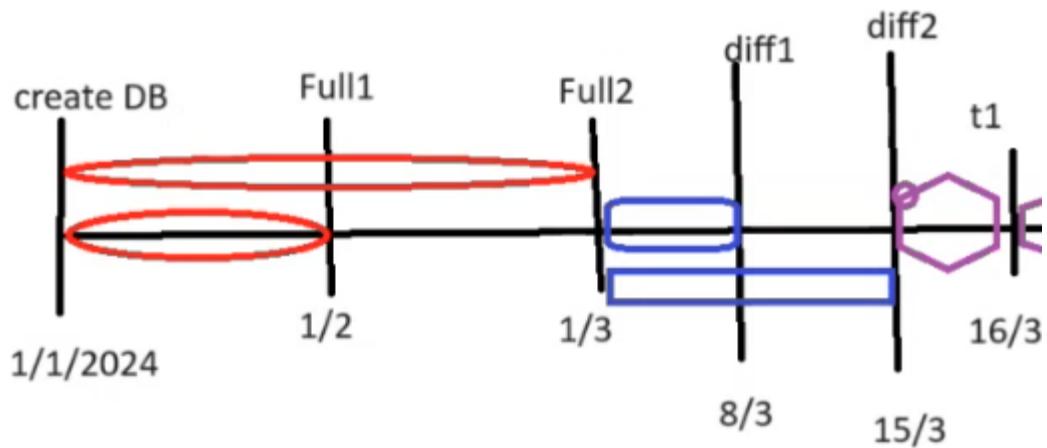
Transaction Log backup

بيعمل Backup من ال log file

.Ldf

يعني بي عمل Backup لـ queries اللي تمت على ال Database اي Transaction (insert , update , delete , ...) يعني سواء

والنوع ده بيتأخذ على فترات زمنية قليلة مقارنة بالنوعين الثانيين
ممكن كل يوم مثلا

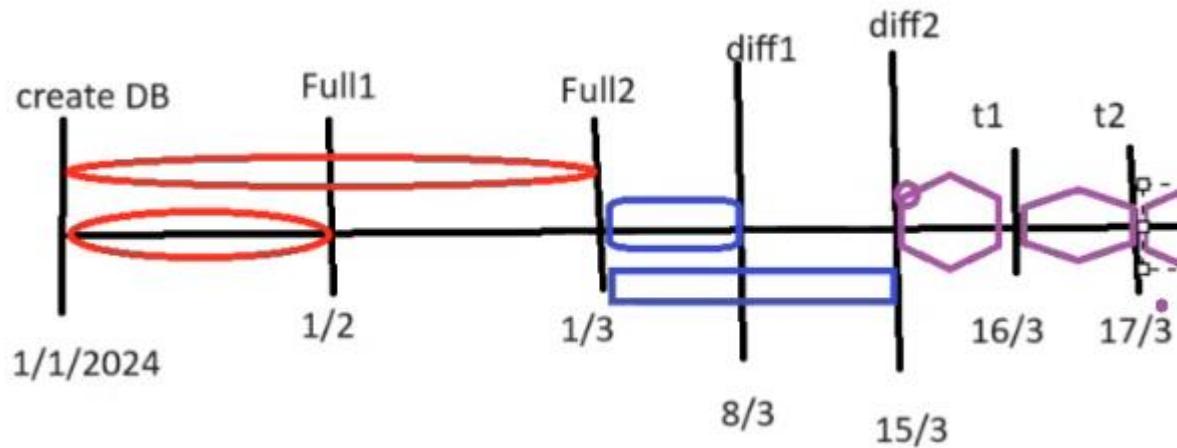


ف هياخد برضو [Difference between Full2 & diff2]
من ال mdf

+

[Difference between diff2 & t1]
من ال log file

والنوع ده بيأخذ Backup بداية من اخر Backup موجود عندي
بغض النظر عن نوعه



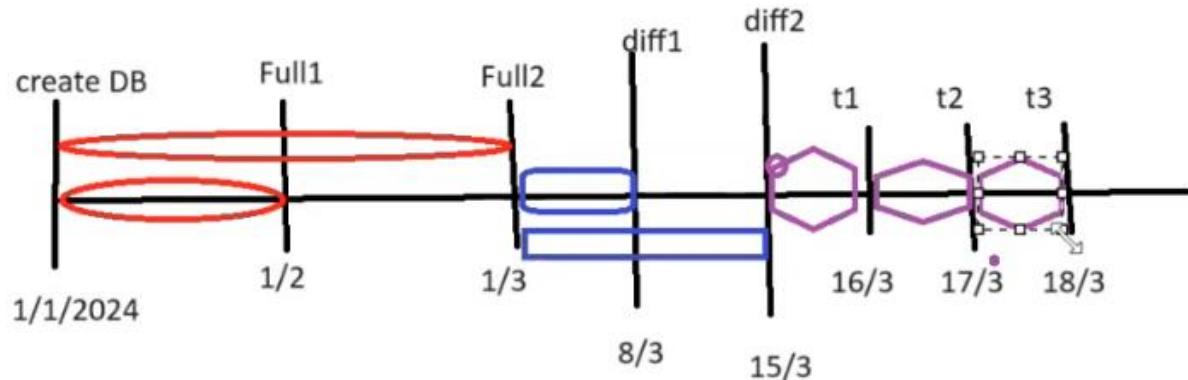
ف هیاخد برضو [Difference between Full2 & diff2]
من ال mdf

+

[Difference between diff2 & t1]
من ال log file

+

[Difference between t1 & t2]
من ال log file



ف هیاخد برضو [Difference between Full2 & diff2]

من ال mdf

+

[Difference between diff2 & t1]

من ال log file

+

[Difference between t1 & t2]

من ال log file

+

[Difference between t2 & t3]

من ال log file

queries هما عبارة عن 3 Files T_1 & t_2 & t_3
انا ف كل ال Backup اللي فاتت كنت باخد الساعة 12 AM
ف بالنسبة لأي Backup هحتاج فيه

Full backup

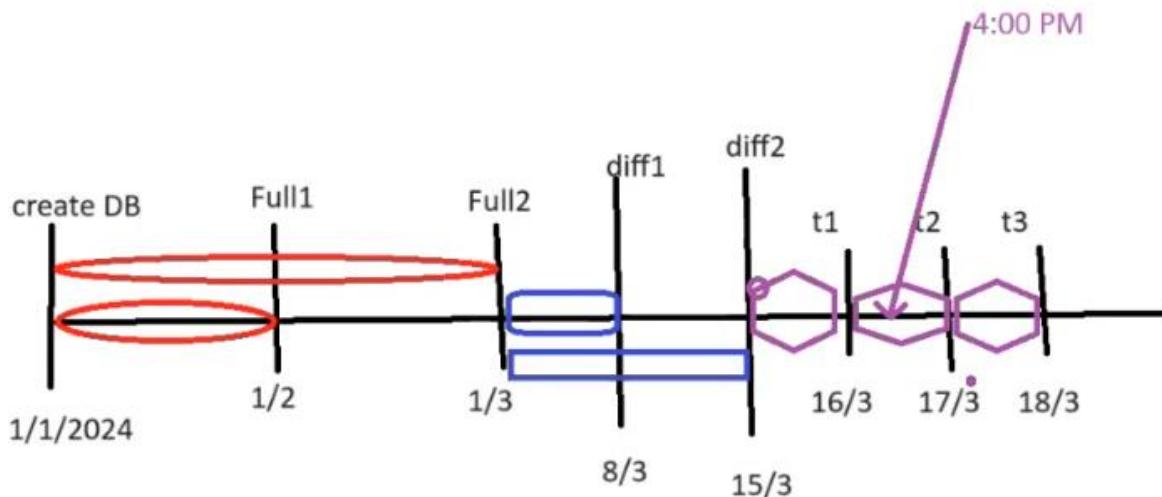
Differential backup

ف ده مقدرش اخد جزء من ال Backup
ف انا مضطر اخد ال Backup كامل
لكن مع النوع الثالث

Transaction Log backup

اقدر اخد جزء من ال Backup عادي

يعني مثلا لو انا عايز اخذ Backup لحد هنا الساعة 4 PM



ف هنا هيأخذ [Difference between Full2 & diff2]

من ال mdf

+

[Difference between diff2 & t1]

من ال log file

+

[Difference between t1 & t2]

من ال log file

بس لحد الساعة 4 PM

ف مش هاخذ t2 كامل

لأن أنا جوا ال Time t2 File queries بتابع كل ال

ف ال Transaction Log backup

فيها ميزة ال Time بس هل ده يخليني اعمل كل ال Backups

اكيد لا

لأن أنا لو بعمل Transaction log backup كل يوم

ف أنا لوحتاج Restore ل Backups كلها السنة

ف أنا محتاج اكتب كل queries اللي ف ال 365 يوم تاني

وده اكيد مش منطقي

ف الأحسن اعمل mix بين ال 3 انواع

يعني مثلا كل شهر اعمل Full Backup

ومثلا كل أسبوع ف الشهر ده اعمل Differential Backup

ومثلا كل يوم ف الأسبوع ده اعمل Transaction log backup

ميزة ال mix دهاني اقدر اعمل Restore لل Data بسهولة

لأن أنا لو عايز أ Restore Full Backup شهر كامل هعمل

ولو عايز أ Restore (Full + Differential) شهر وأسبوع هعمل

ولو عايز أ Restore (Full + Transaction) شهر ويومين هعمل

ولو عايز أ Restore شهر وأسبوع ويوم

عمل (Full + Differential + Transaction)

وهي دي الطريقة اللي بنشتغل بيها
ف انا بعمل jobs بكل اللي انا عايزه

مثلا

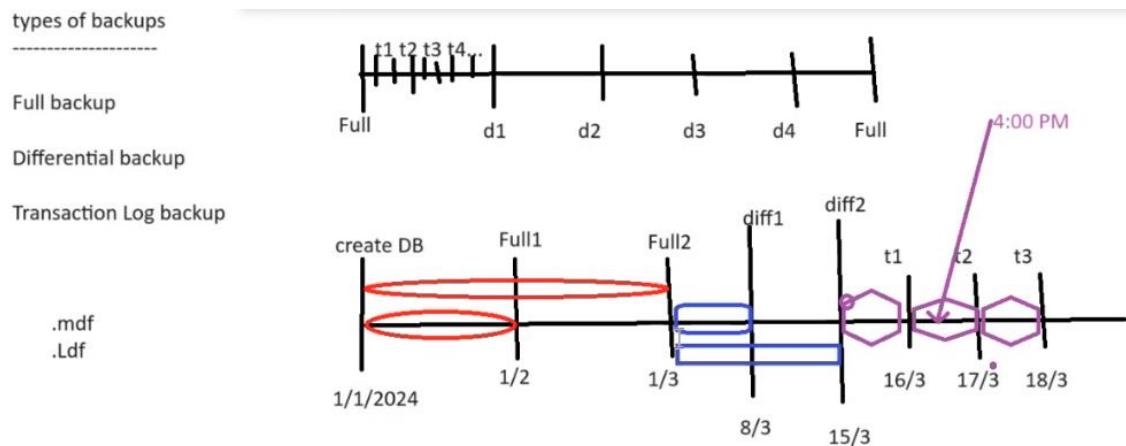
تعمل Full Backup كل شهر Job

تعمل Differential Backup كل اسبوع Job

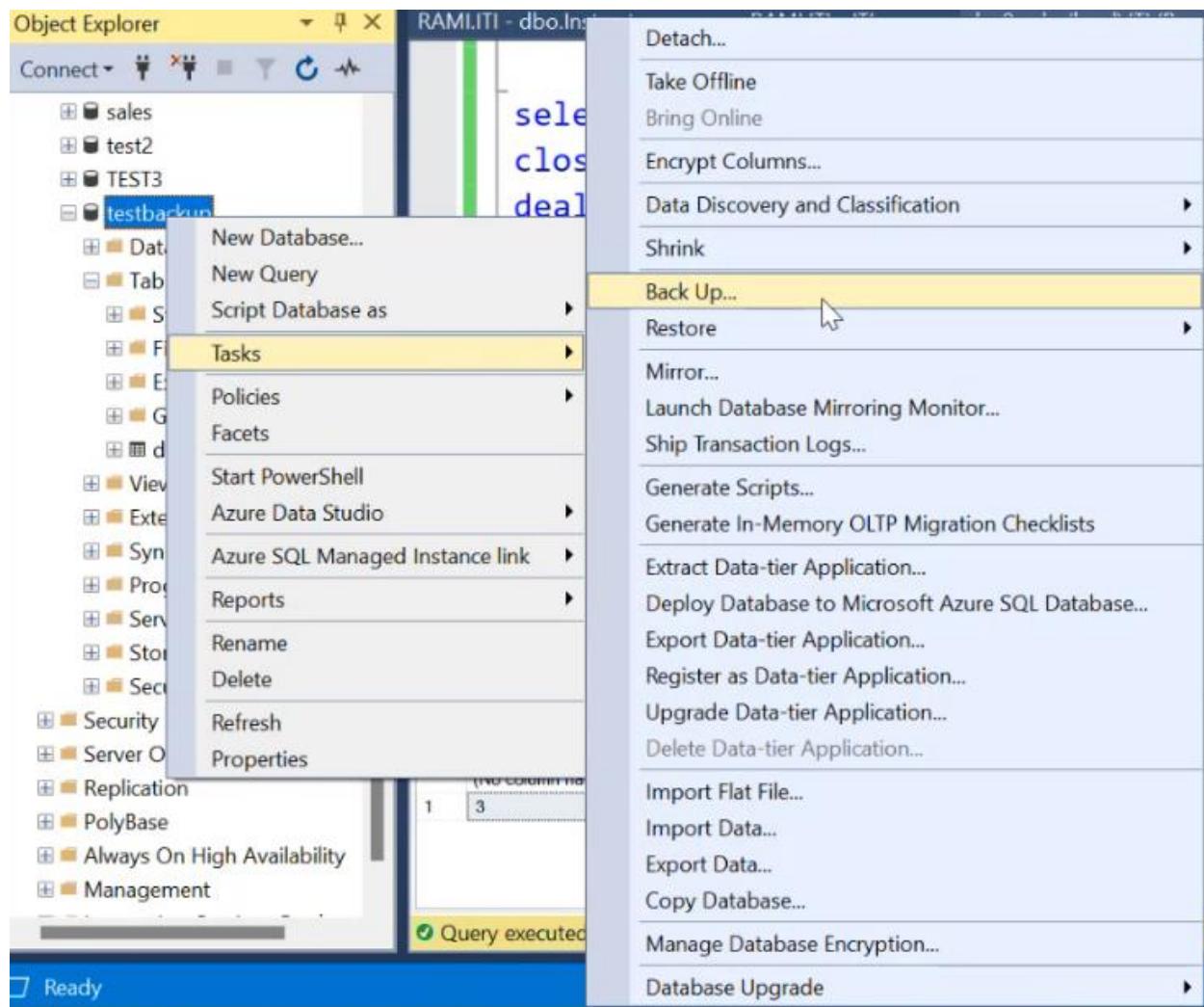
تعمل Transaction Backup كل يوم Job

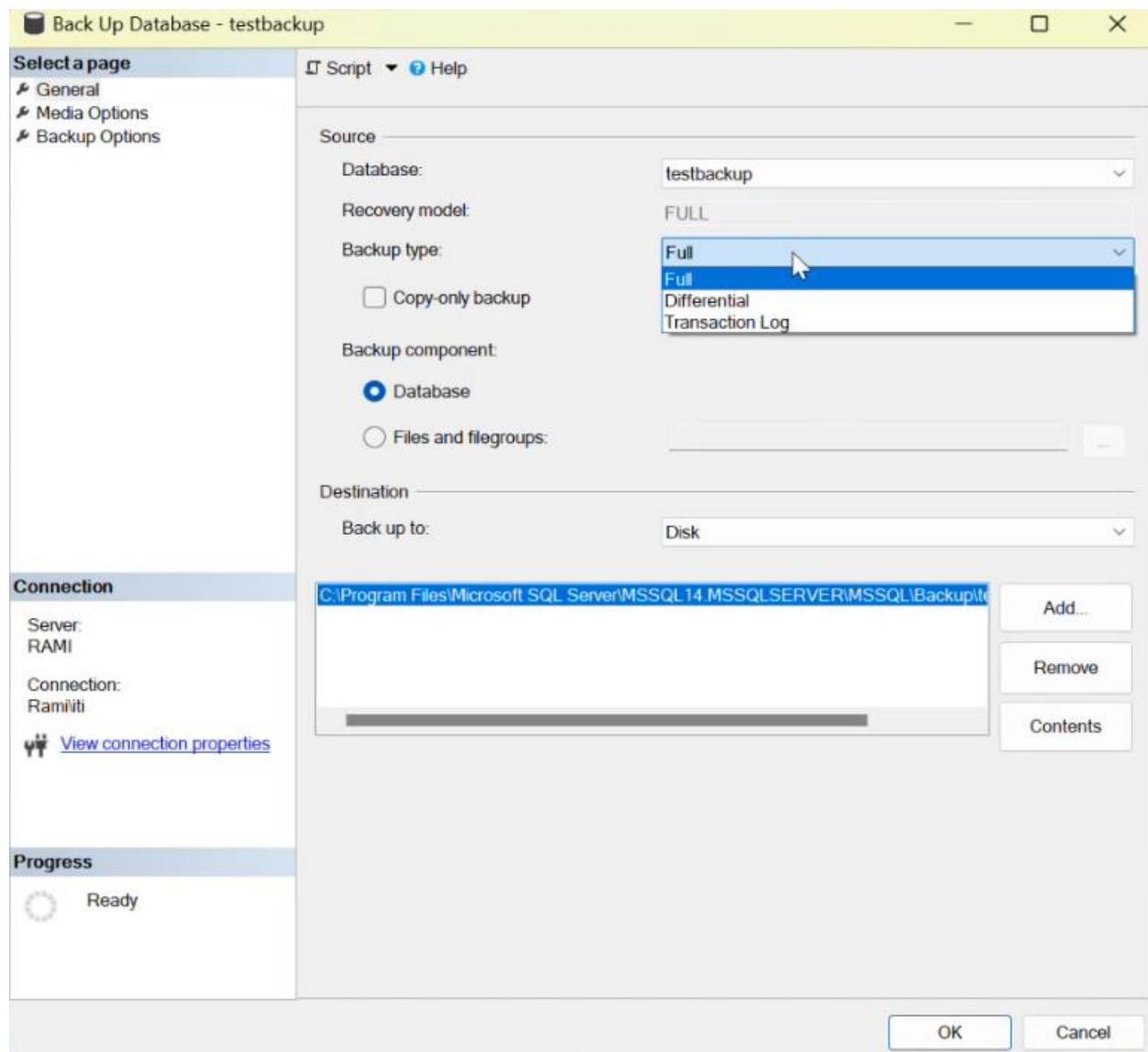
ويباقي معايا كل ال Files دي

ولما ابقي عايز اعمل Restore اتعامل

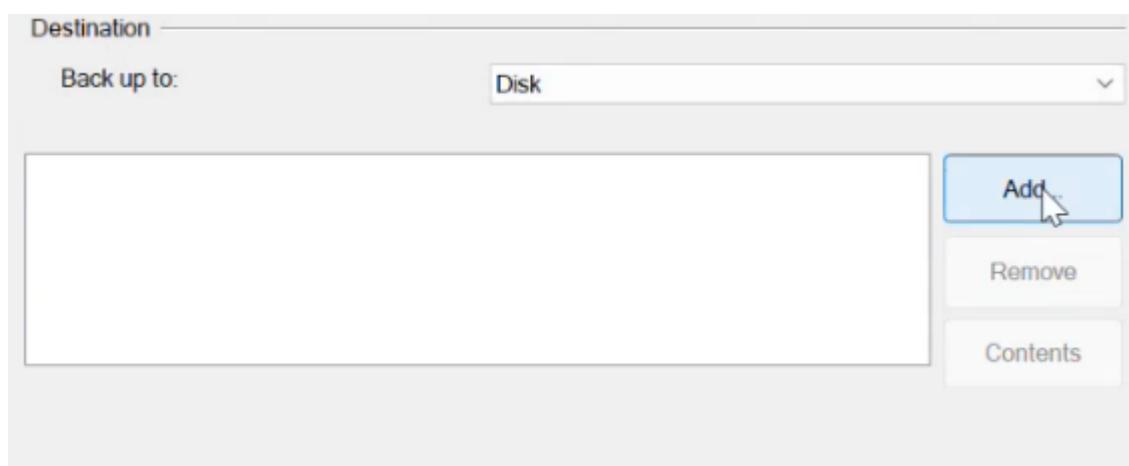


طیب اعمل ال Backup ده ازای ؟

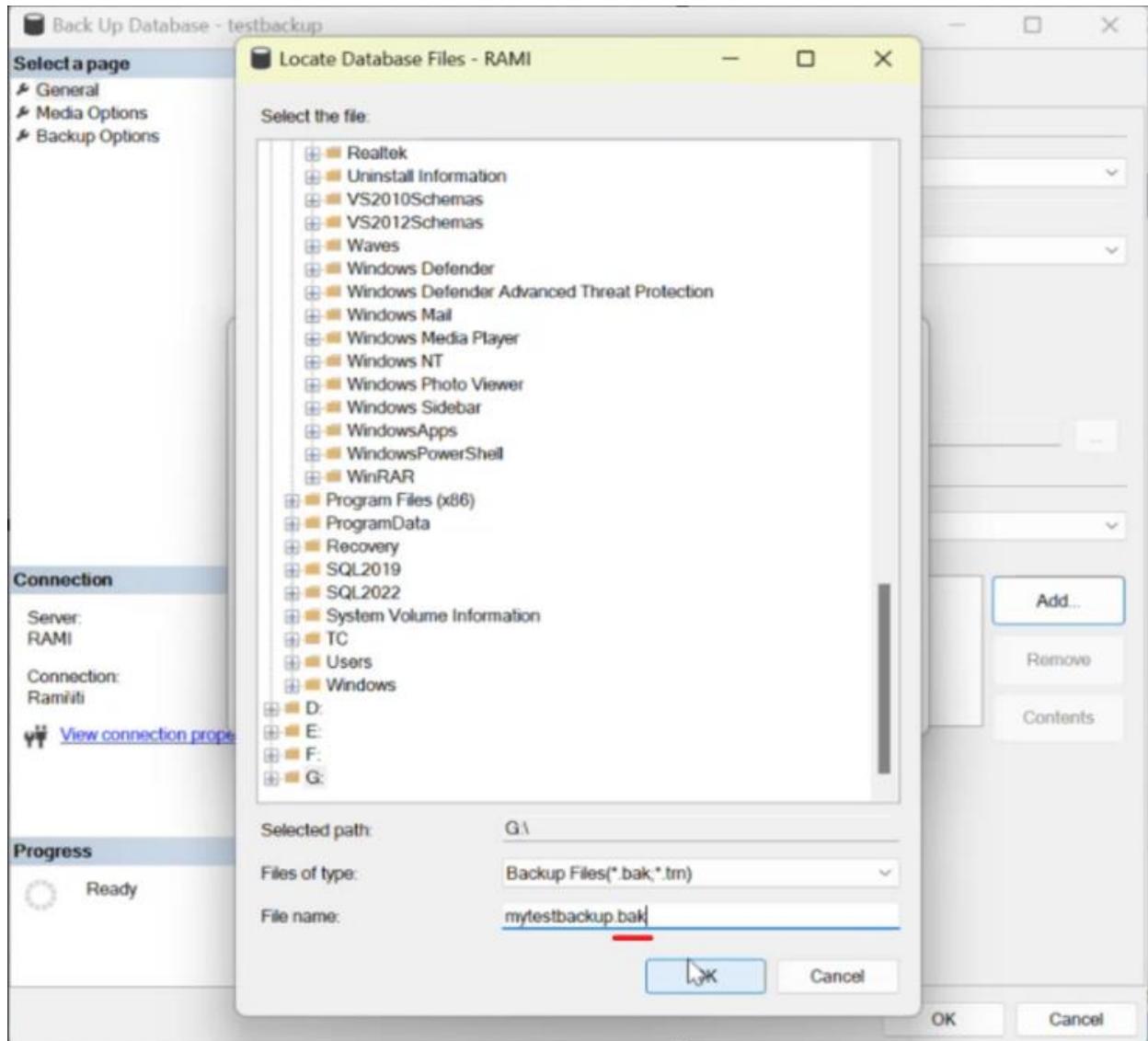


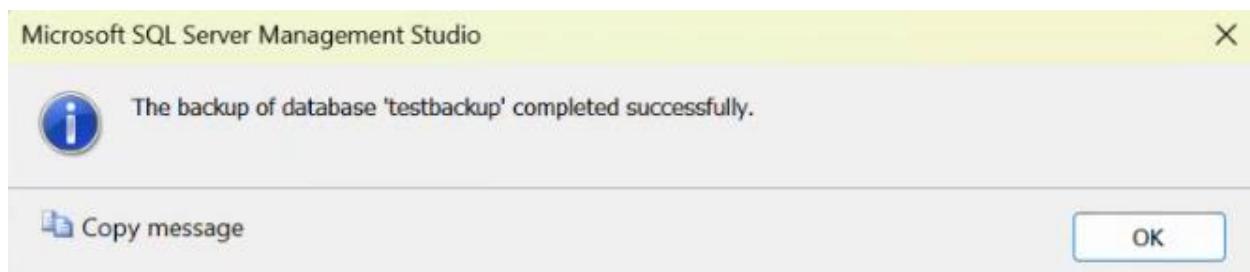
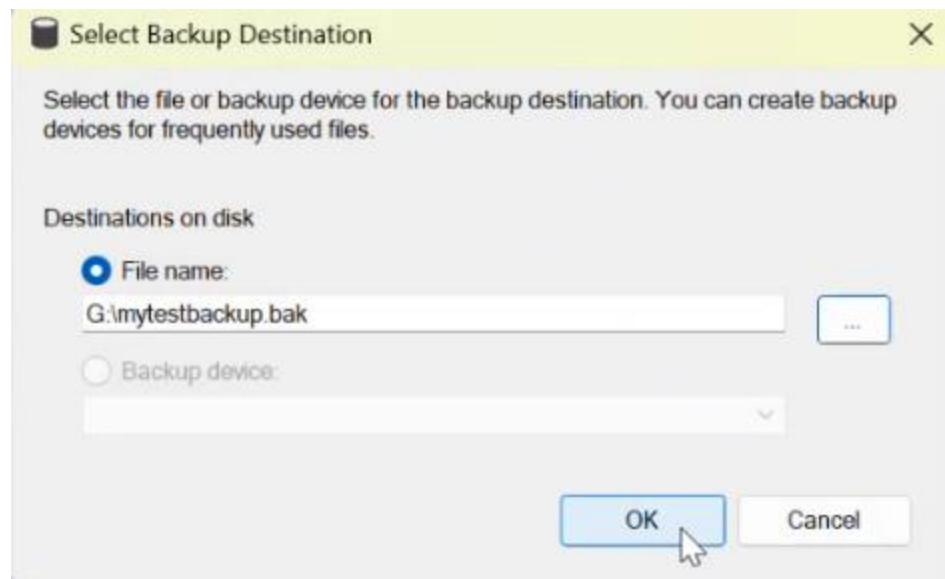


واحظ هنا ال Path اللي انا عايزه



وأختي ال Extension (.bak) بتابع الأسم





بس يا سيدى وکده عملنا Full Backup

**وده طبعا Backup لكل حاجة
ال Database وال Users وال Tables وكل حاجة**

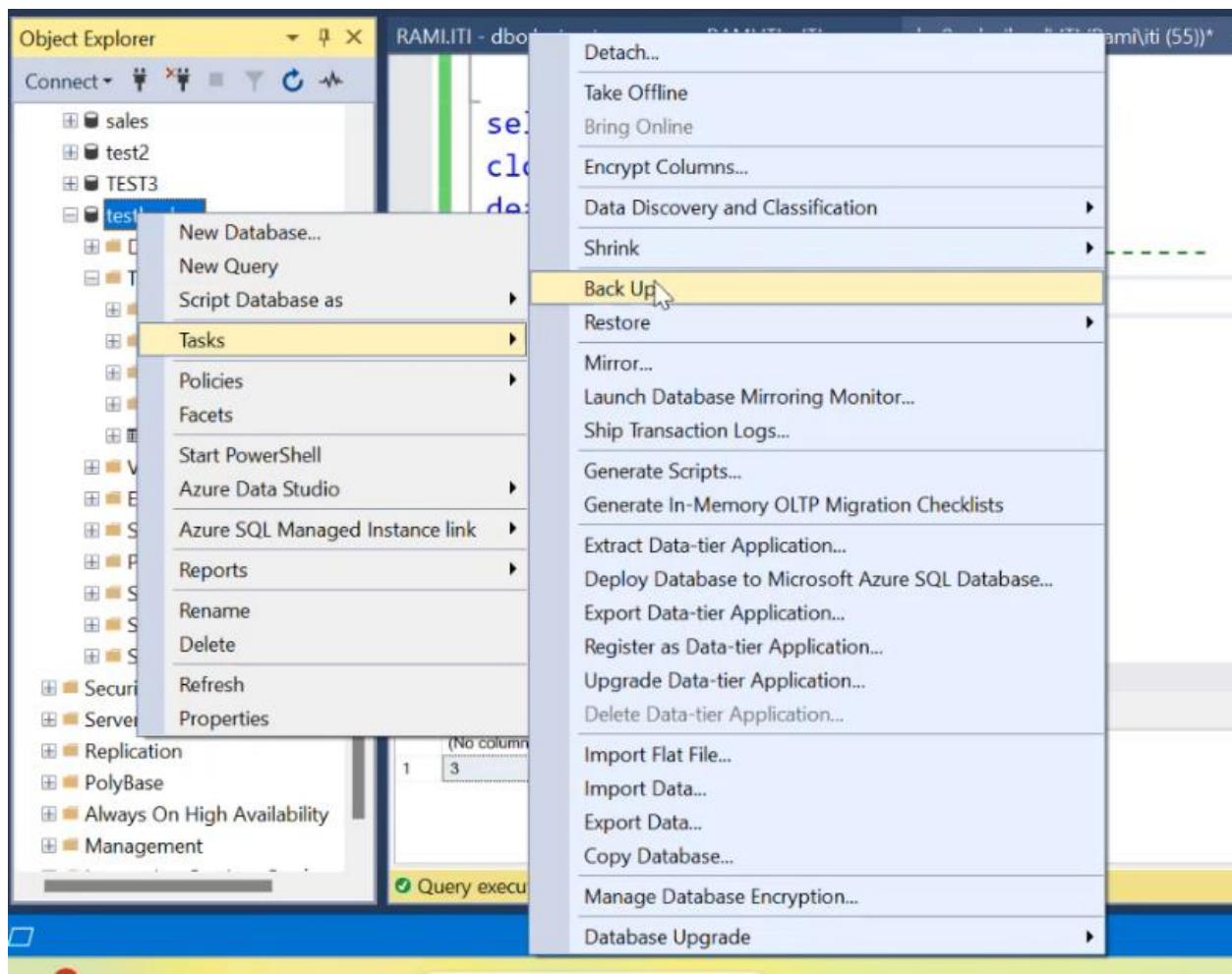
طيب انا كنت عامل Full Backup وده كان شكل ال Table عندي

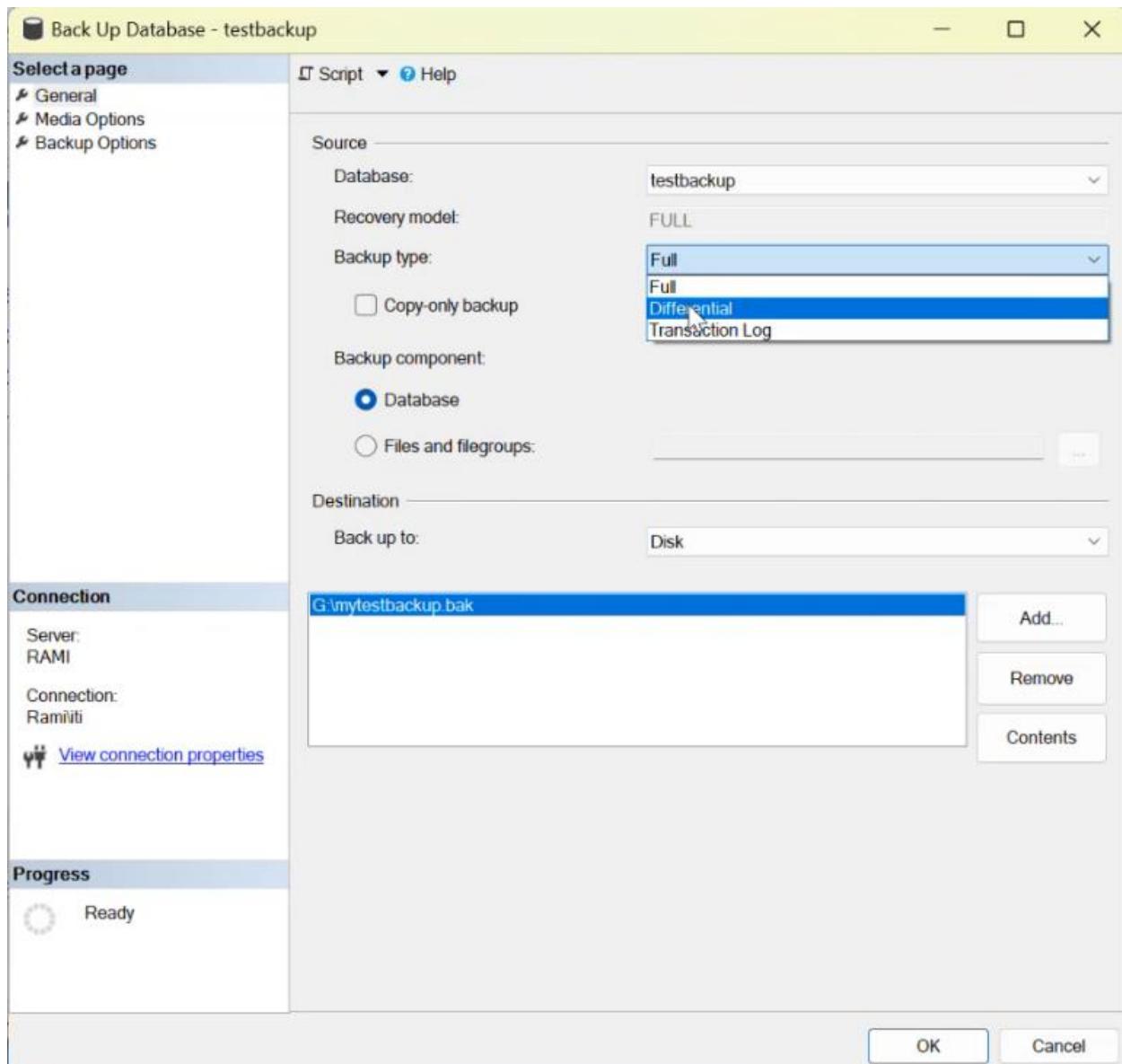
	UserID	username
▶	1	NULL
	2	NULL
	3	NULL
	4	NULL
	5	NULL
*	NULL	NULL

طيب مثلا انا زودت شوية rows

	UserID	username
	1	NULL
	2	NULL
	3	NULL
	4	NULL
	5	NULL
	6	NULL
	7	NULL
	8	NULL

ف لو هعمل Backup يجيبي التغيرات بس
ف اكيد هستخدم ال Differential Backup





Back Up Database - testbackup

Select a page:

Source:

Database: testbackup

Recovery model: FULL

Backup type: Differential

Copy-only backup

Backup component:

Database

Files and filegroups: _____

Destination:

Back up to: Disk

Connection:

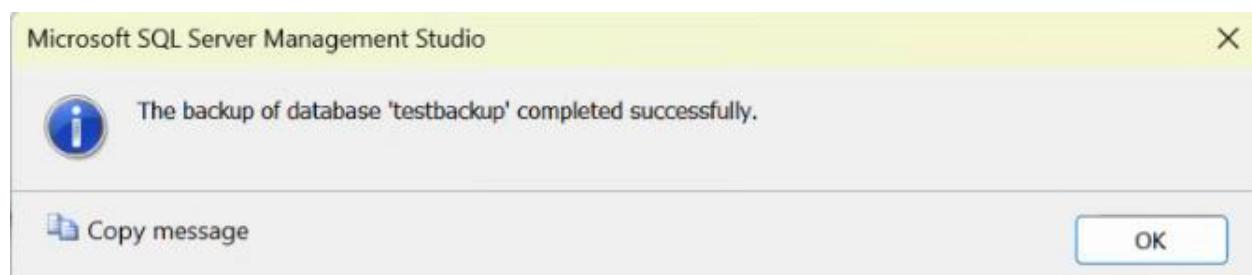
Server: RAMI

Connection: Ramili

[View connection properties](#)

Progress:

Ready

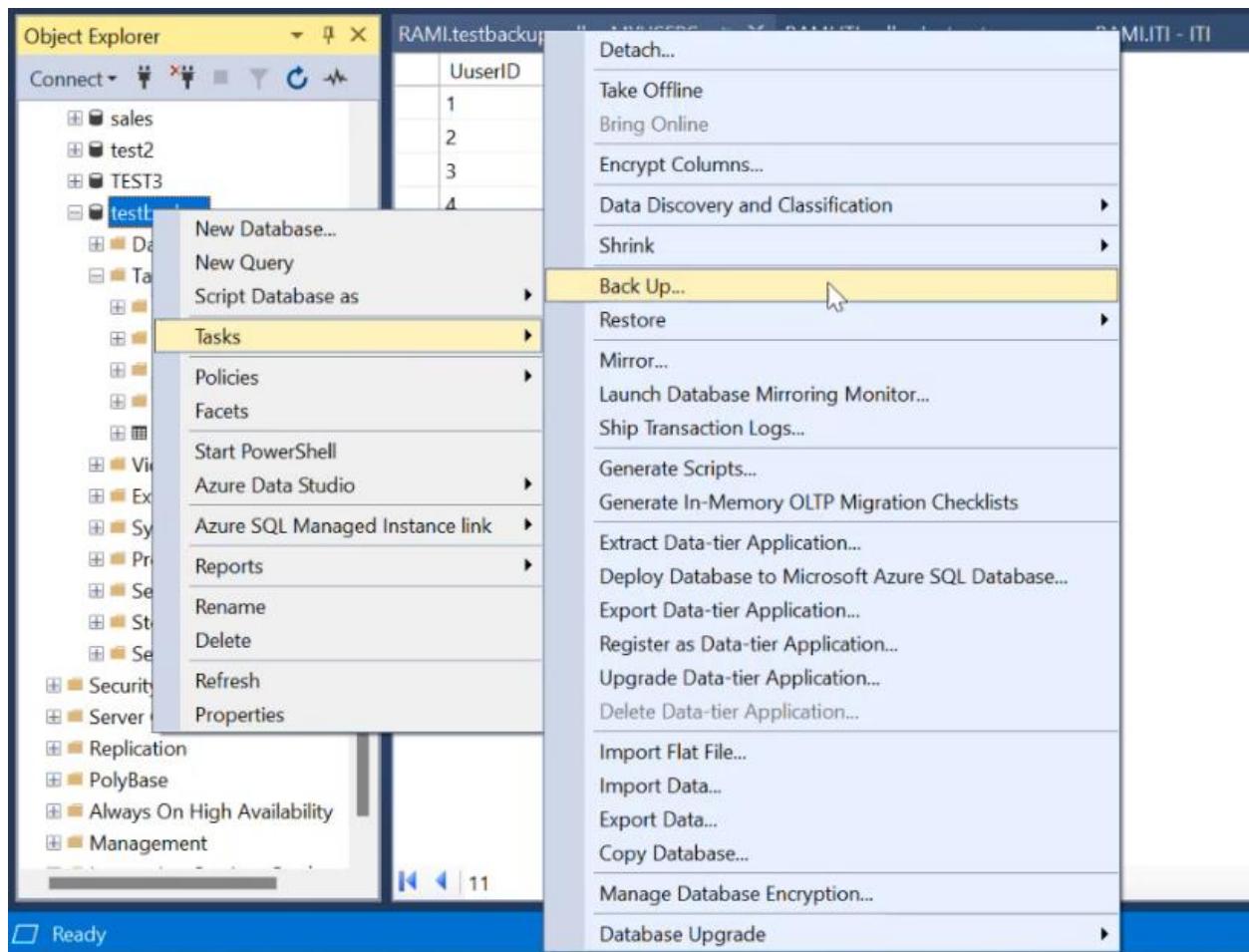


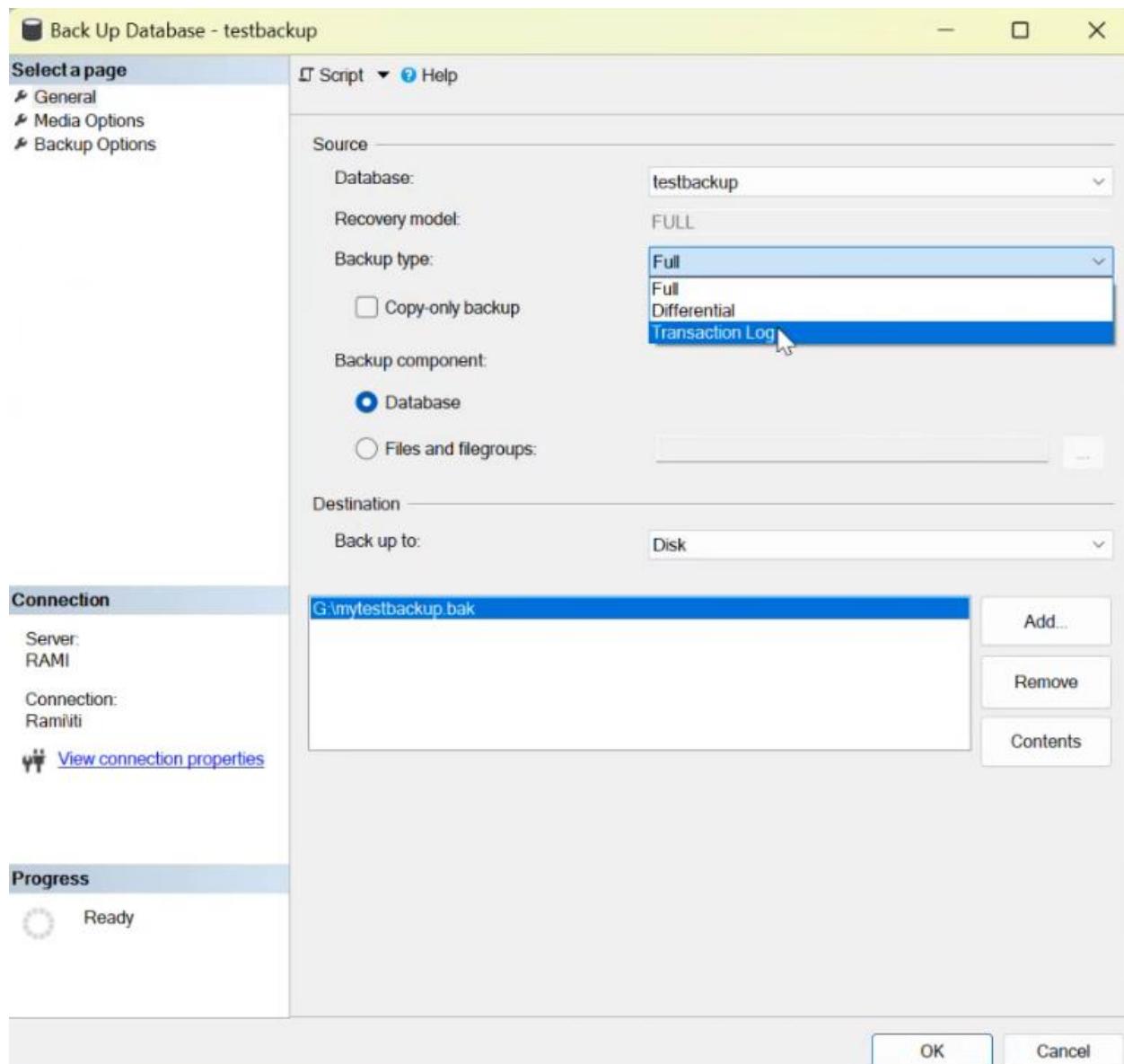
طيب نو زودت rows کمان (الساعة 10:59 PM مثلًا)

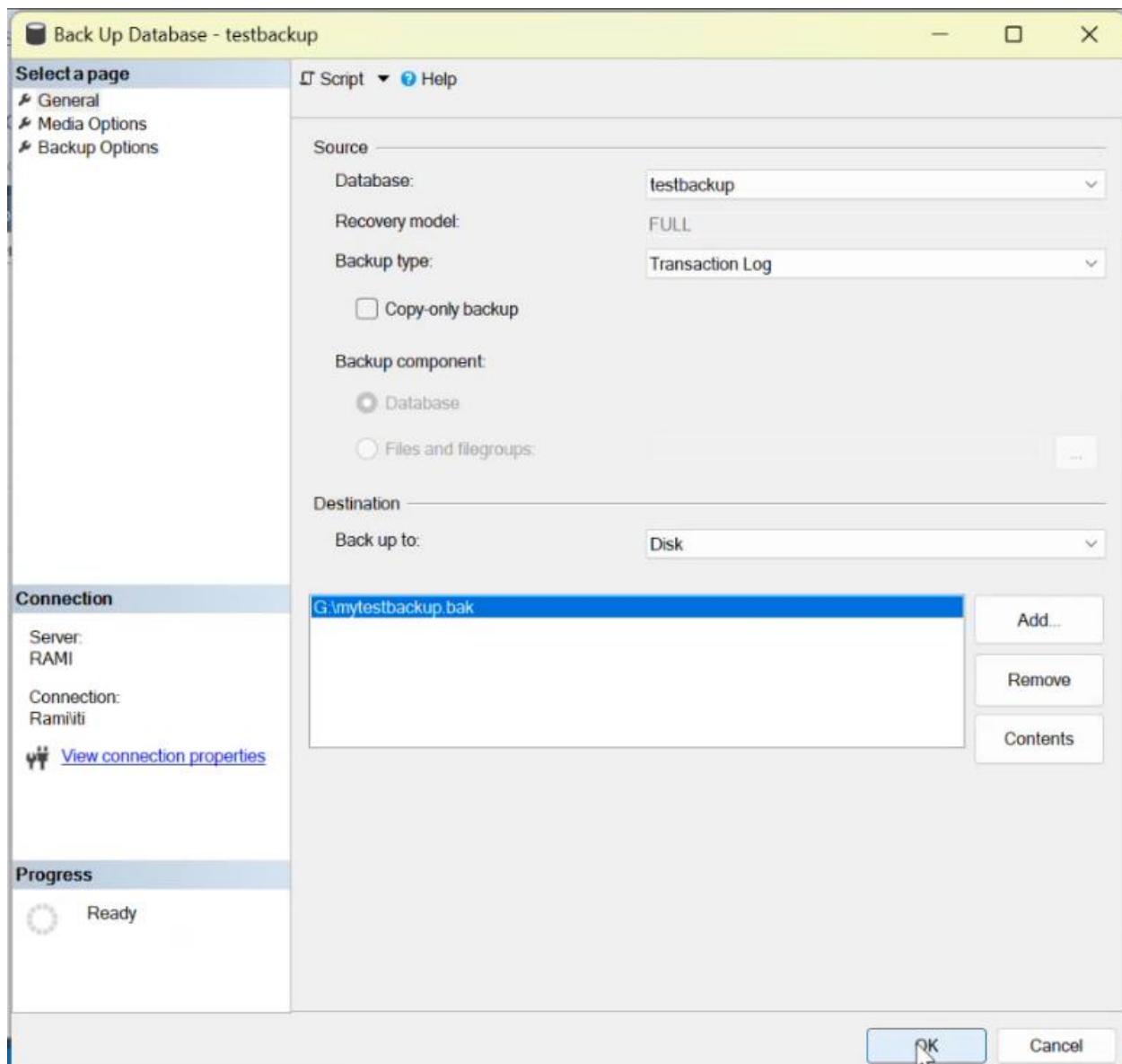
UserID	username
1	NULL
2	NULL
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
8	NULL
9	NULL

وزدت row کمان بعدها بکام دقيقة (الساعة 11:02 PM مثلًا)
ورکز هنا ف ال Time لاننا هنعمل Transactional log Backup

UserID	username
1	NULL
2	NULL
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
8	NULL
9	NULL
10	NULL

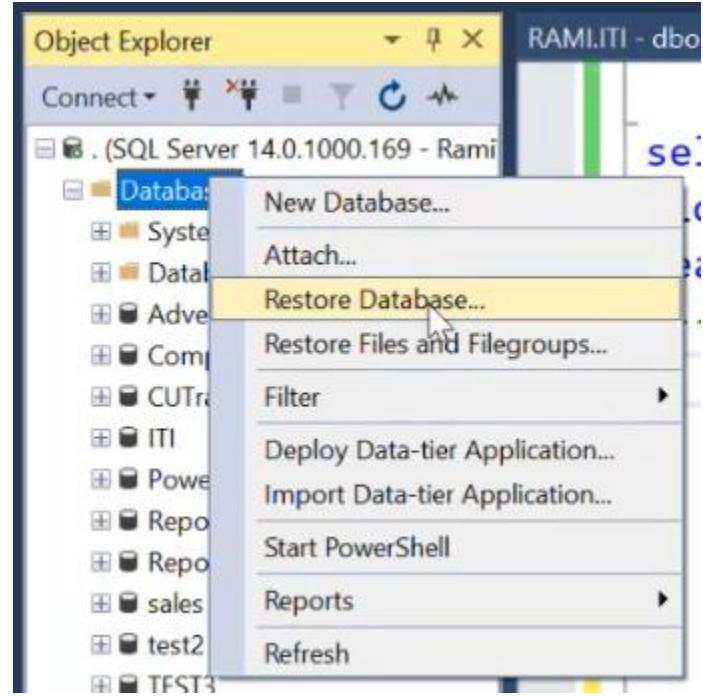


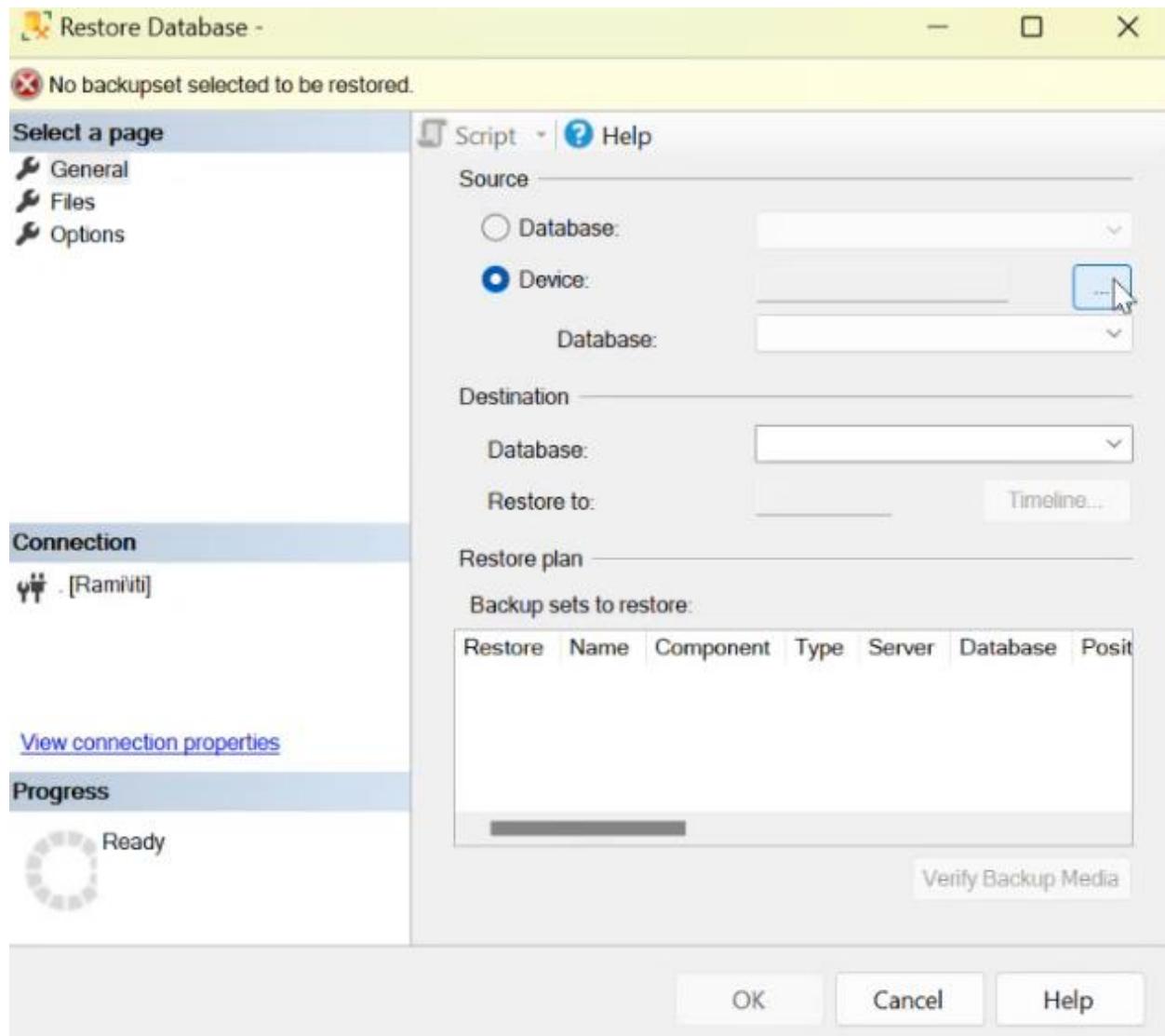




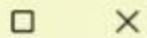
ف هو كده هي عمل Backup 2 rows انا ضيفتهم

نیجي بقی لاستخدام ال Backups دی
لو انا عایز اعمل Restore لل Backups





Select backup devices



Specify the backup media and its location for your restore operation.

Backup media type:

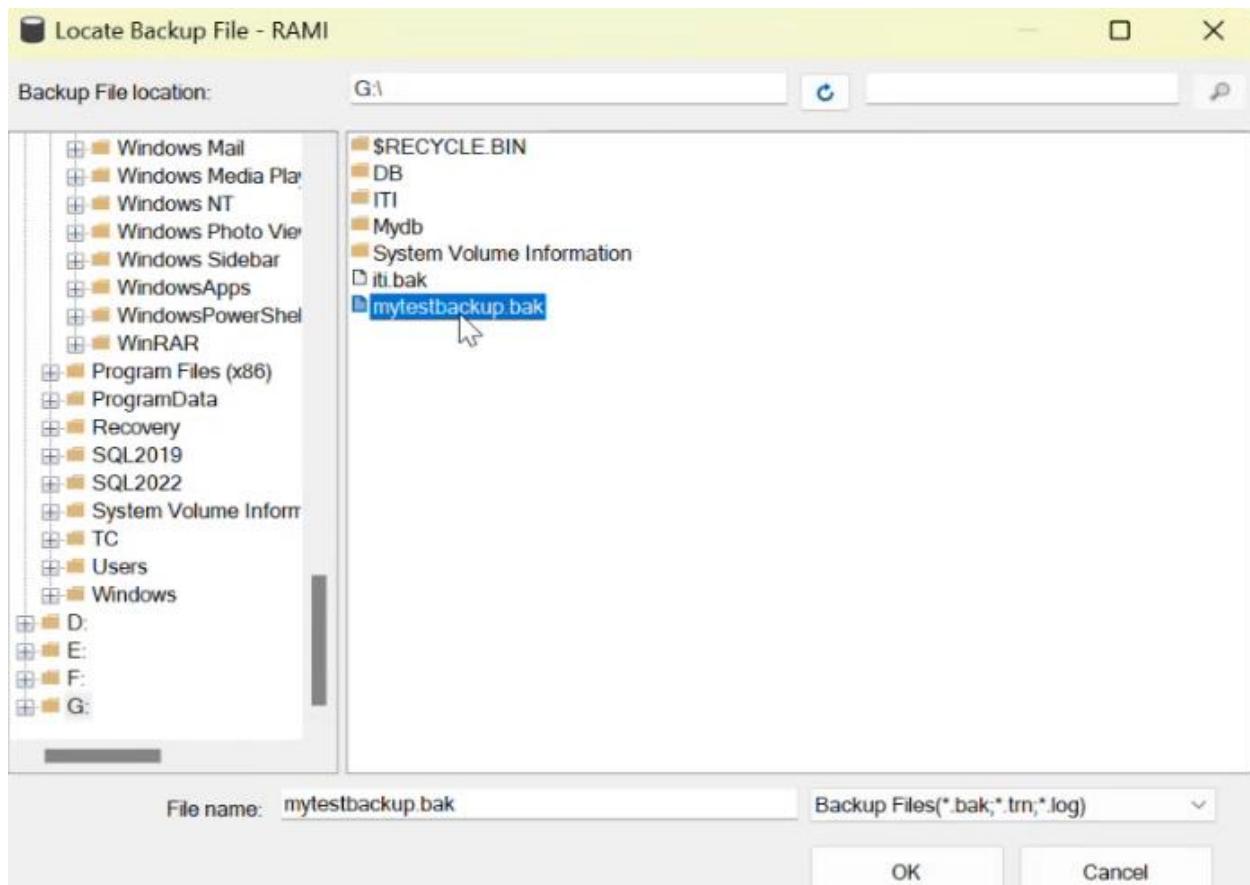
File

Backup media:

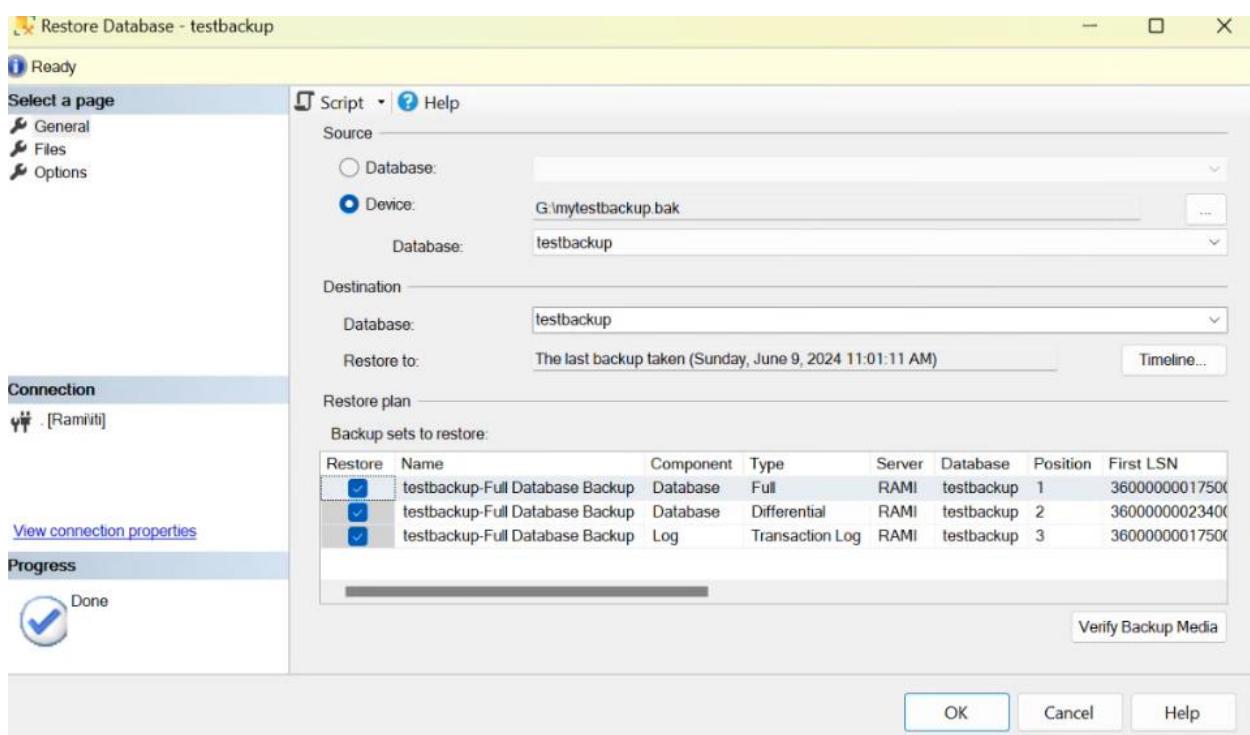
OK

Cancel

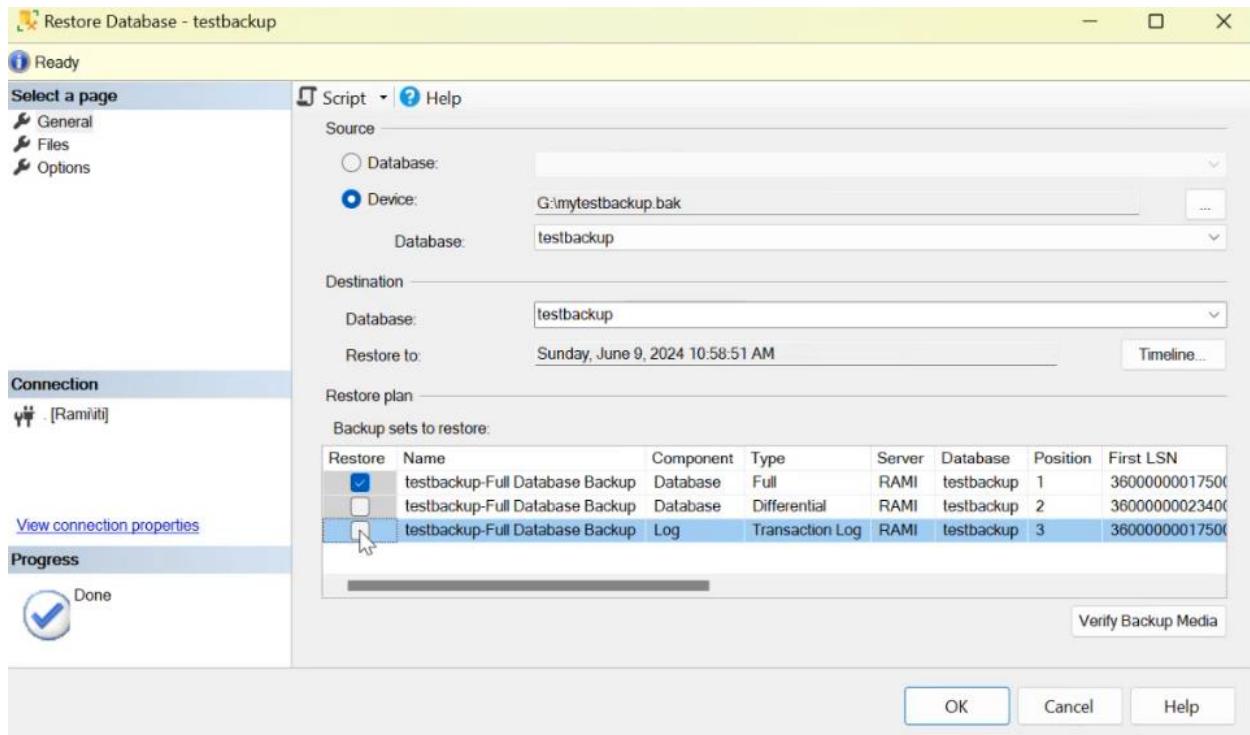
Help



ف هیفتحي ال File ده وجواه ال 3 Backups بتوعي



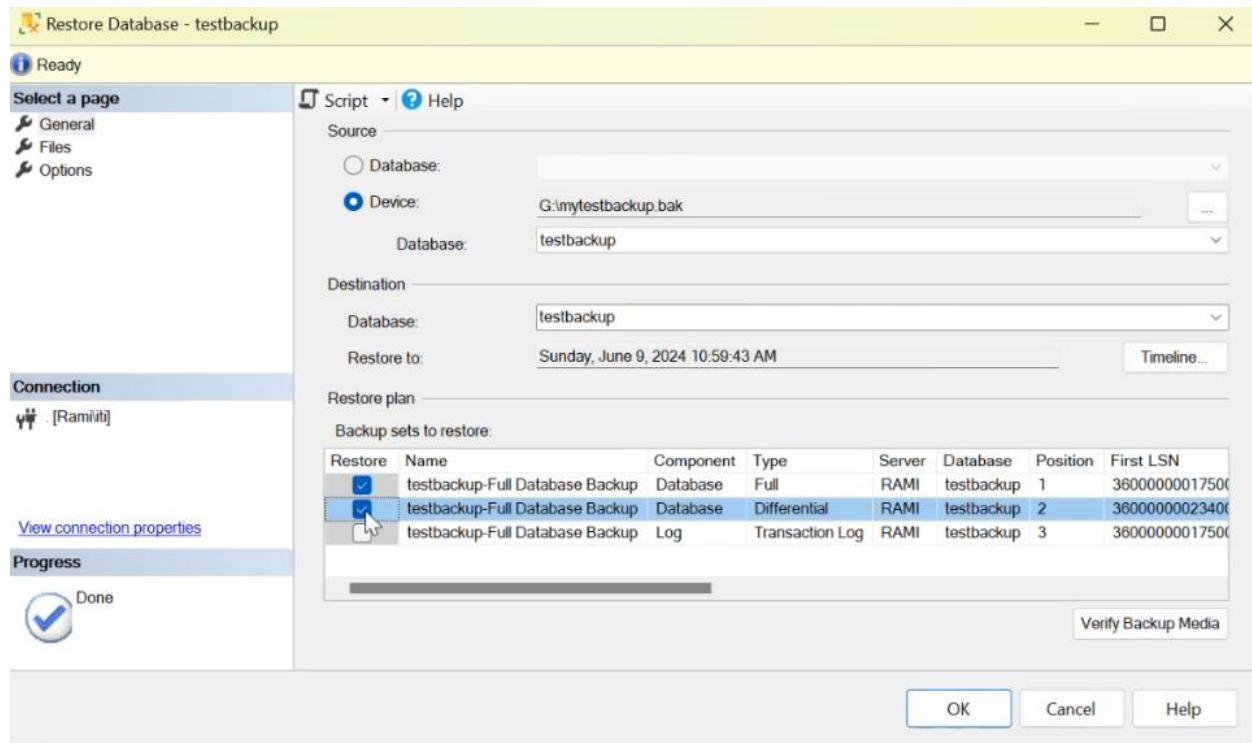
ممكن بقی اعمل Restore لی انا عایزه
يعني لو عایز اعمل Restore لل Full Backup
هعمل کده



وطبعا هنا هيرجع 5 rows

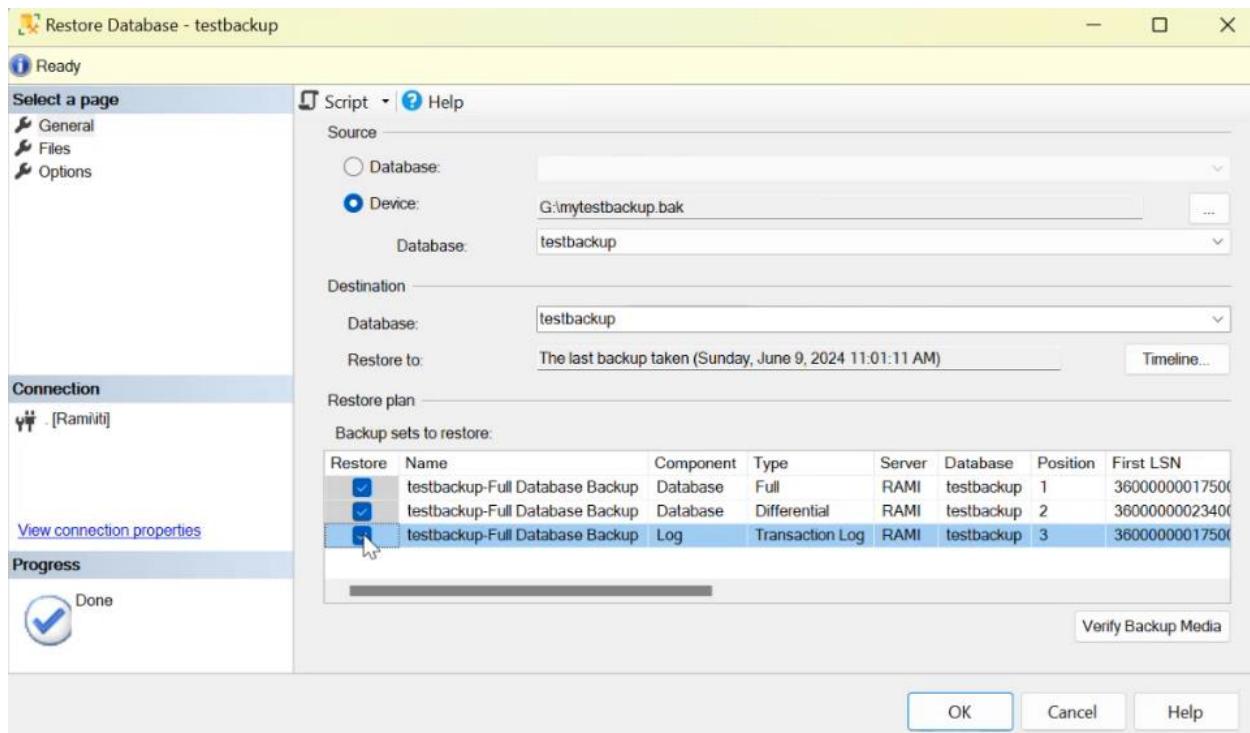
طیب ینفع ا دلایل Differential Restore لوحده

اکید لا لازم یکون معاہ اخر Full Backup



وطبعا هنا هيرجع 8 rows

طیب ینفع ا Differential Restore ال لوحده
اکید لا لازم يكون معاه اخر Differential
وبالتالي ال Full Backup هيكون معاه اخر Differential



وطبعا هنا هيرجع 10 rows

طيب ممكن ارجع ؟ 4 rows

اكيد لا

طيب ممكن ارجع ؟ 9 rows

اه

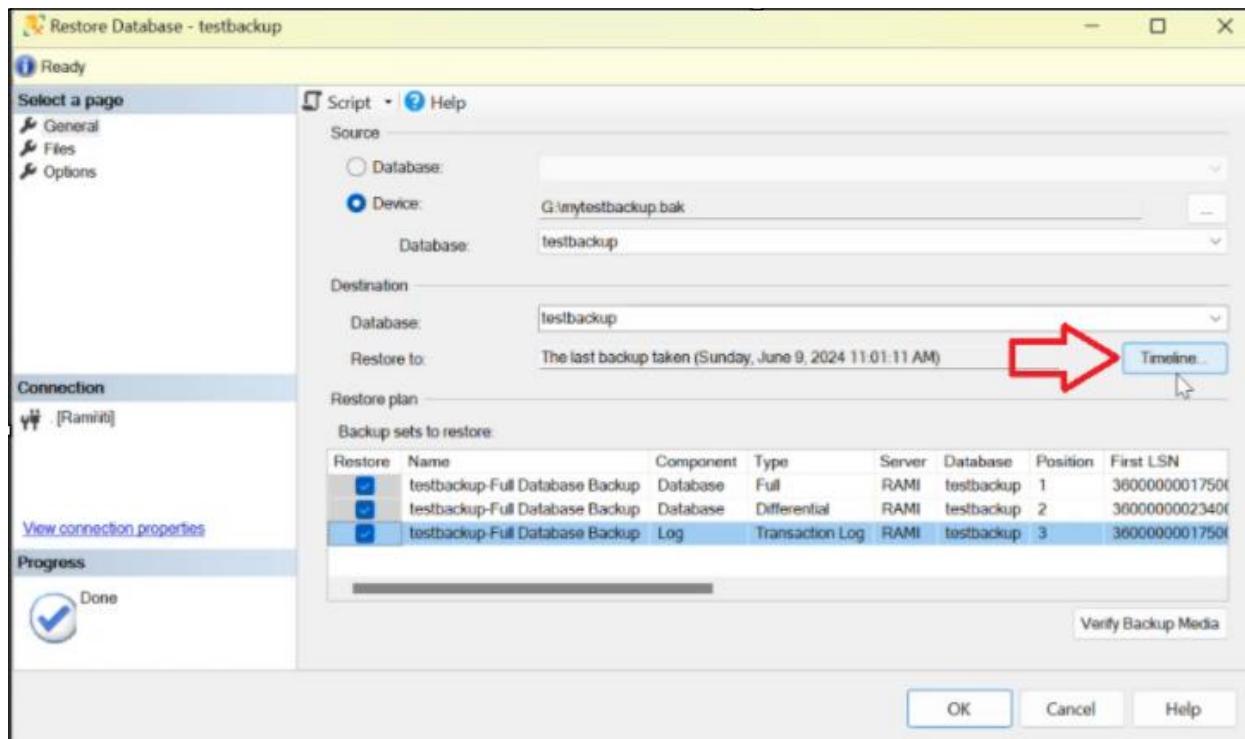
لأن اخر Backup كان Transactional

وكان فيه 2 rows

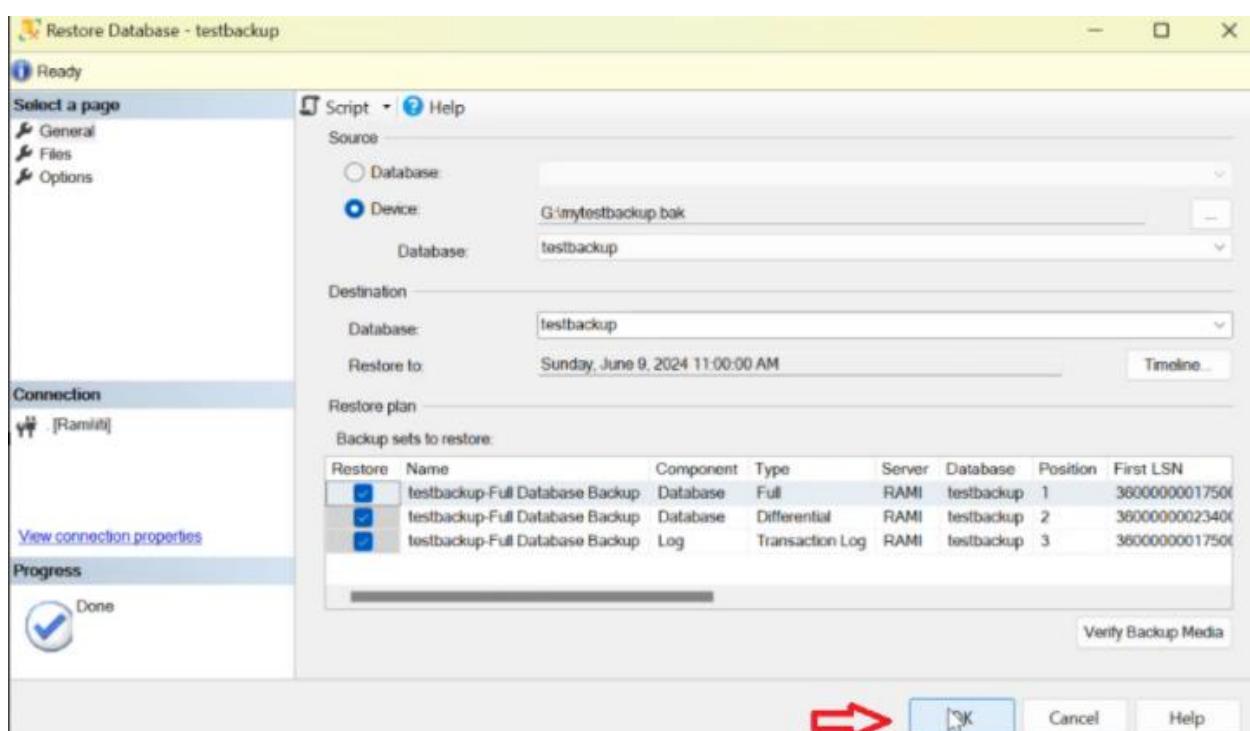
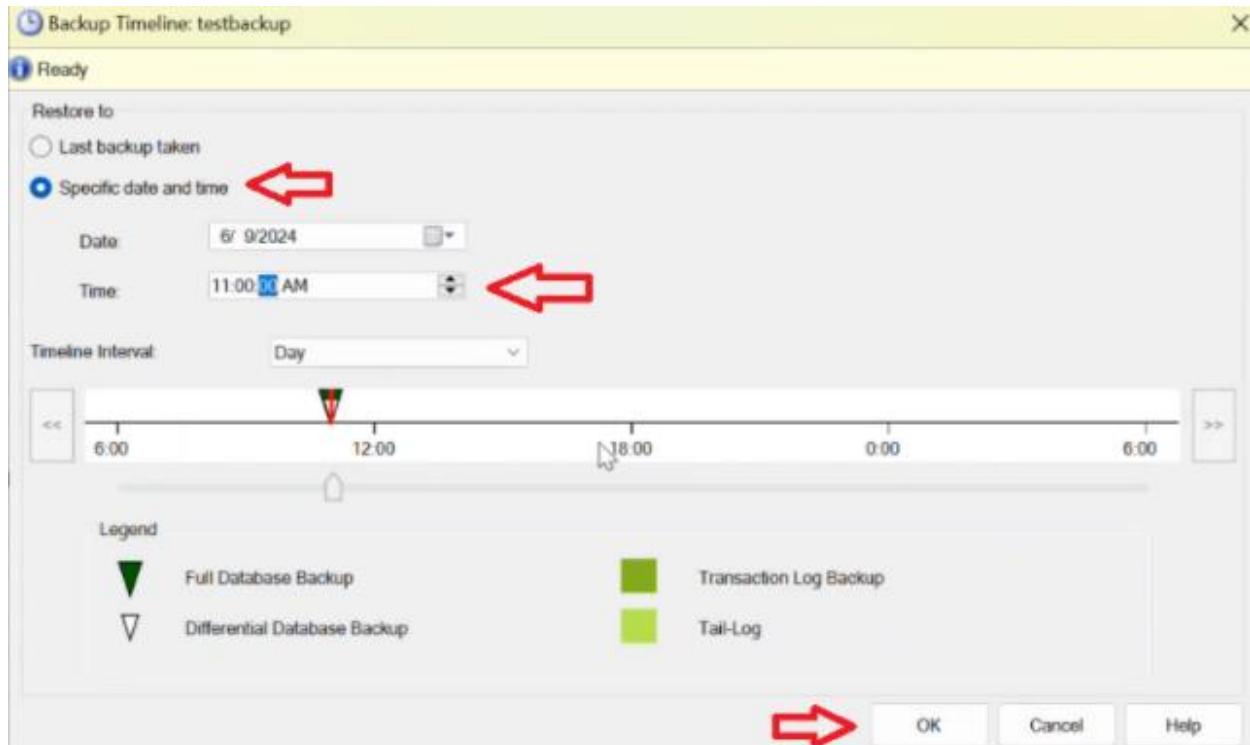
فانا ممكن احدد ال Time

وارجع 9 rows بس مش ال 10 rows

طيب ازاي اعمل كده



واحدله ال Time اللي انا عايزه





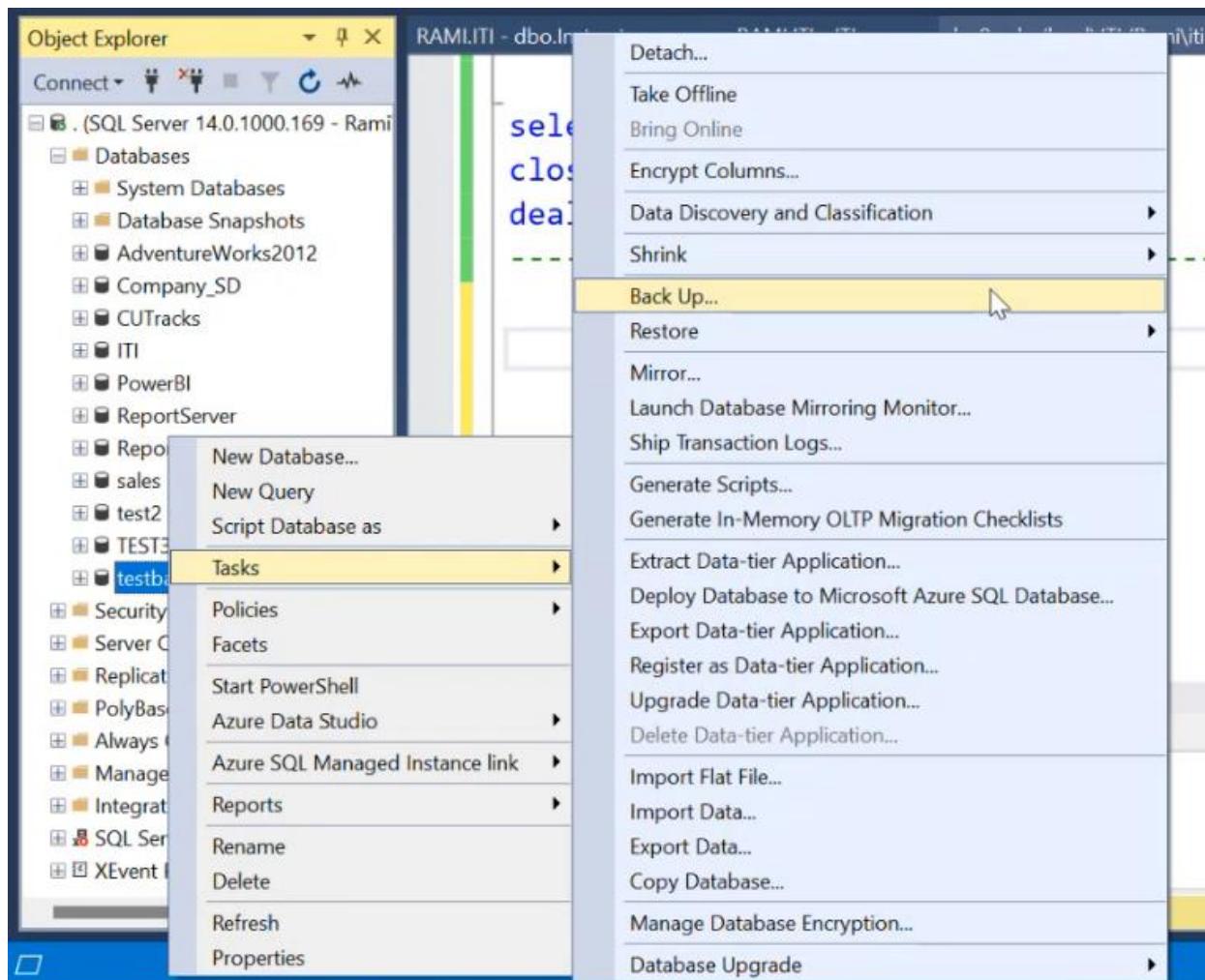
Database 'testbackup' restored successfully.

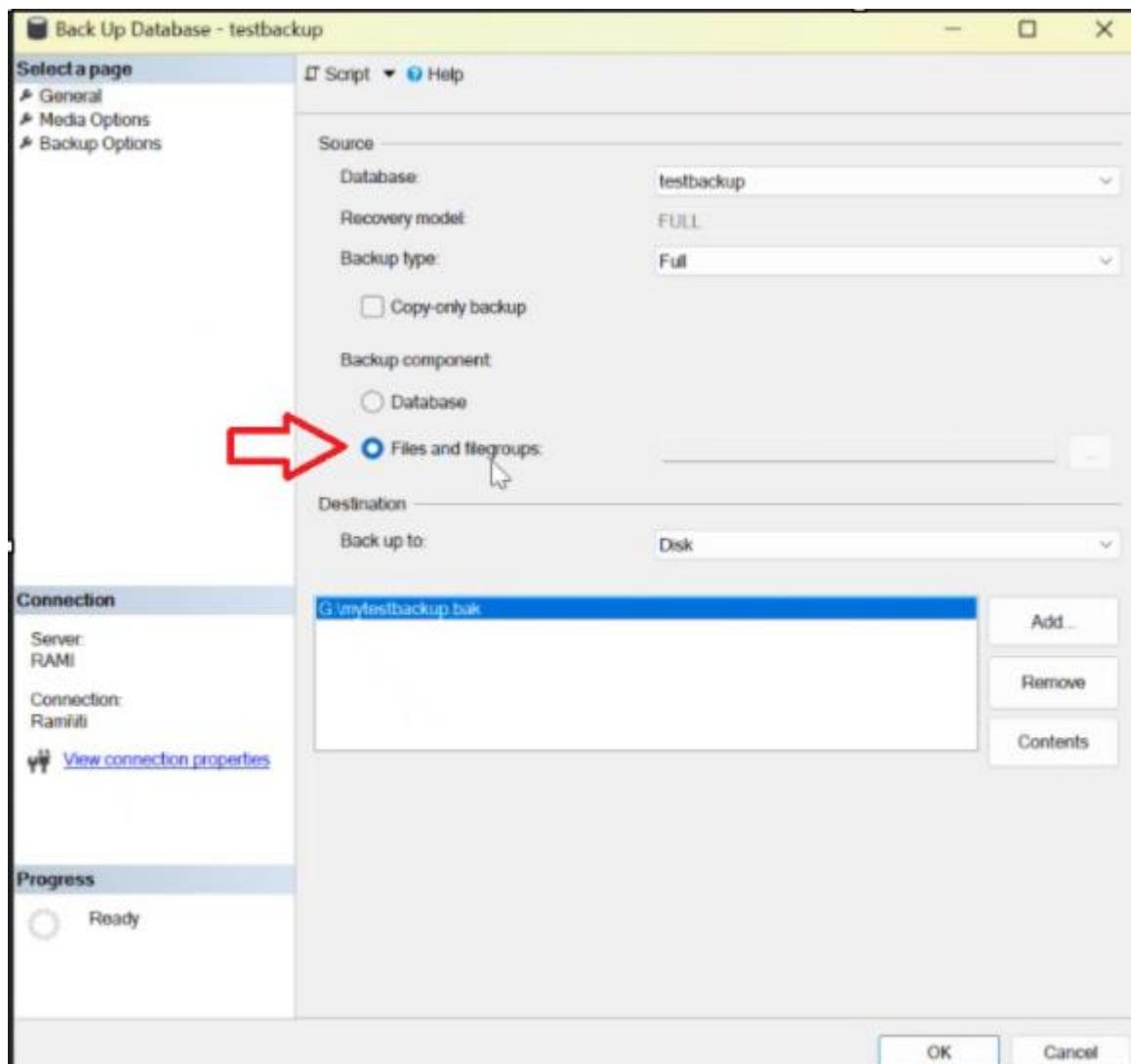
OK

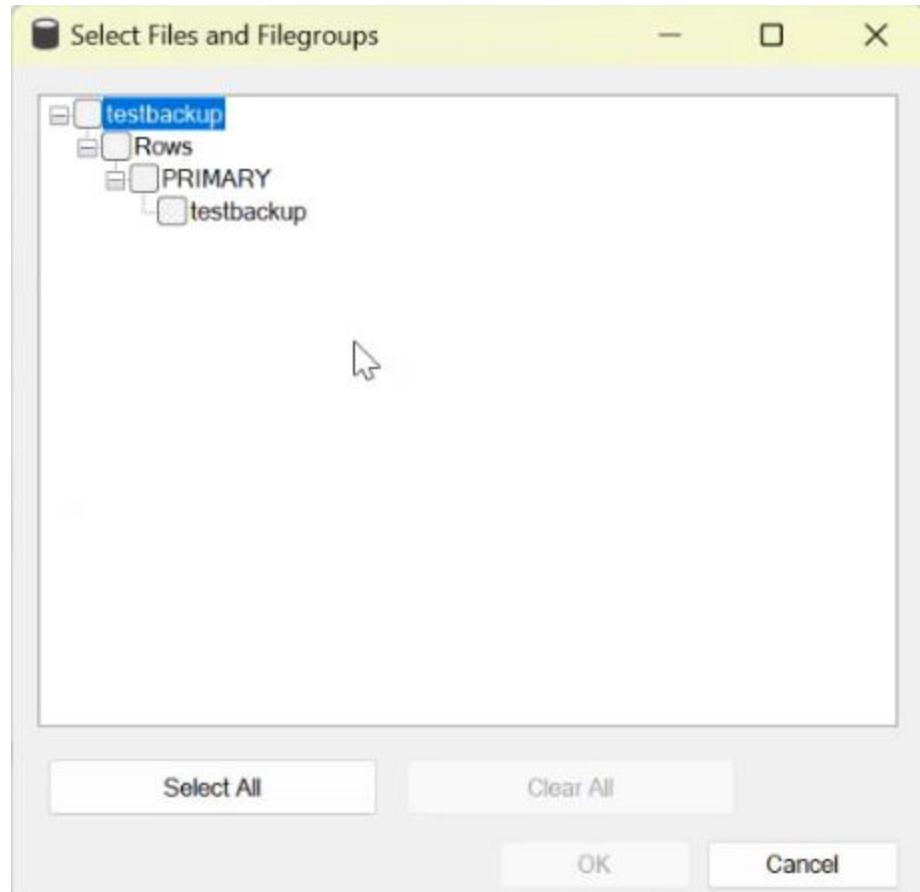
ف لما اشوف ال rows اللي رجعت
هلاقي 9 rows

	UserID	username
▶	1	NULL
	2	NULL
	3	NULL
	4	NULL
	5	NULL
	6	NULL
	7	NULL
	8	NULL
	9	NULL
*	NULL	NULL

وأقدر برضو اعمل Backup ل file group معين







ده يعني على افتراض إن أنا مقسم ال Tables على كذا
وأنا عارف أنا عدلت ف أنهي Table ف أنهي File group

طیب ممکن اعمل Backup بالکود ؟

اه اقدر

ازای اعمل **Full Backup**

```
| backup database ITI  
to disk='G:\ITI1.bak'
```

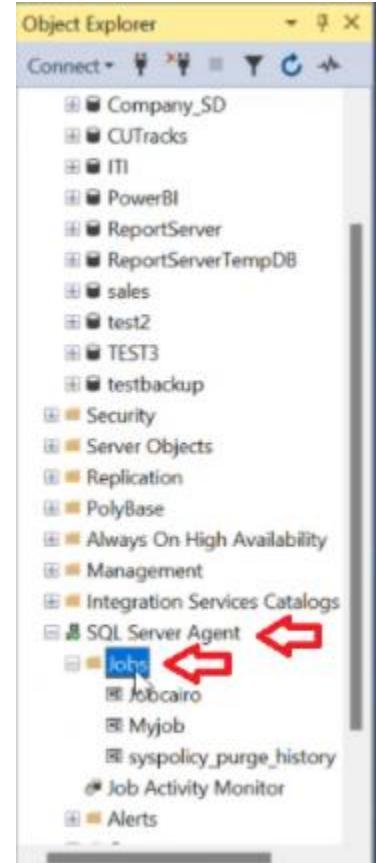
ازای اعمل **Differential Backup**

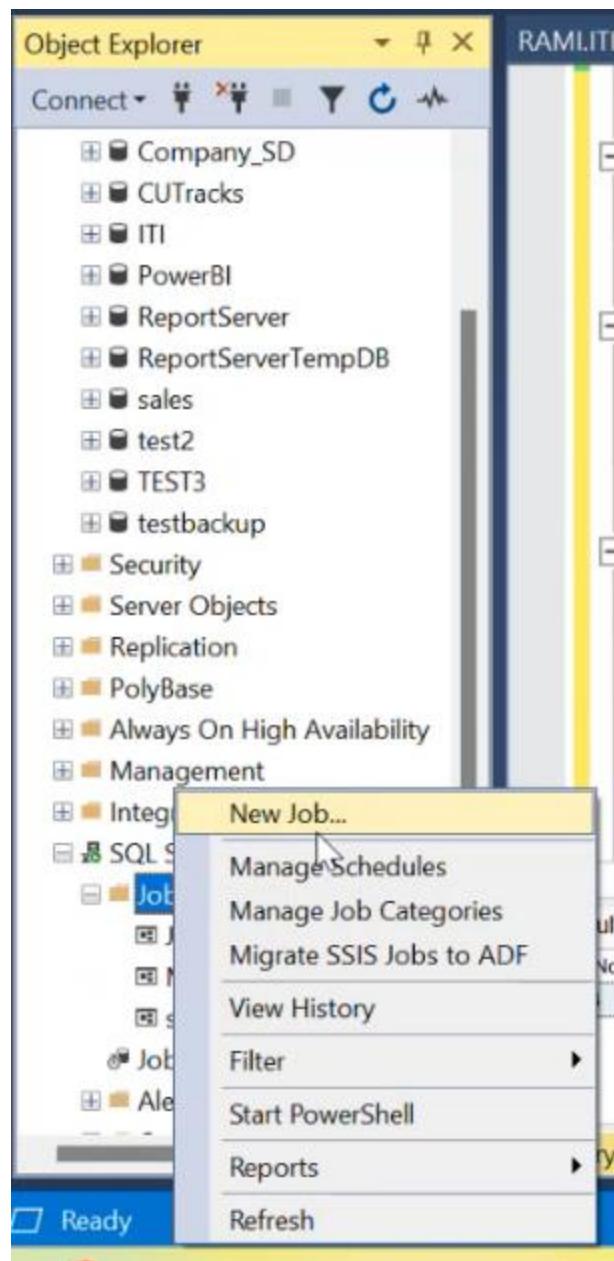
```
backup database ITI  
to disk='G:\ITI1.bak'  
with differential
```

ازای اعمل **Transactional log Backup**

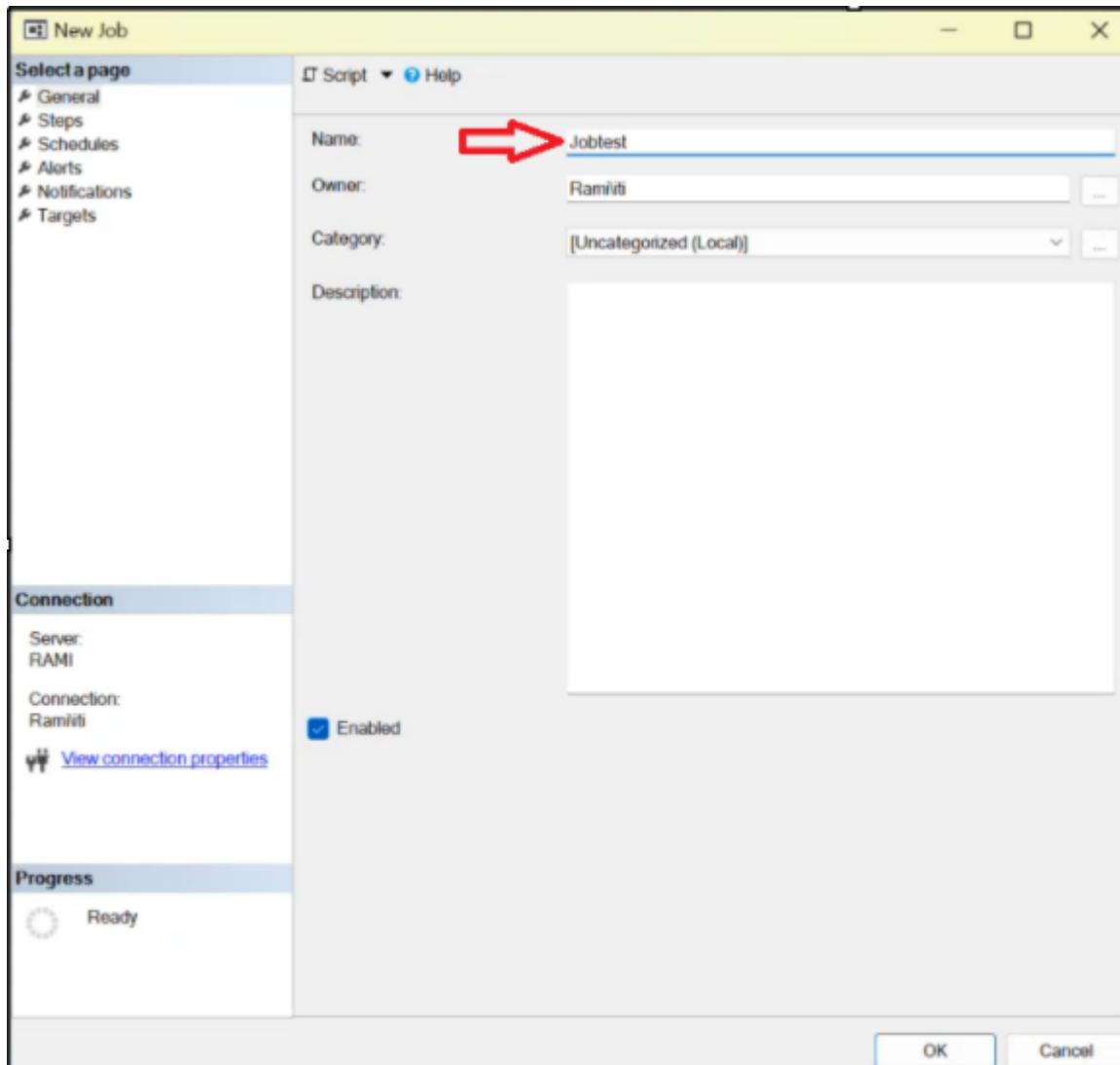
```
backup log ITI  
to disk='G:\ITI1.bak'
```

طبعاً ممكن اعمل ال Backups دي ف
طيب اعمل ال job ازاي ؟

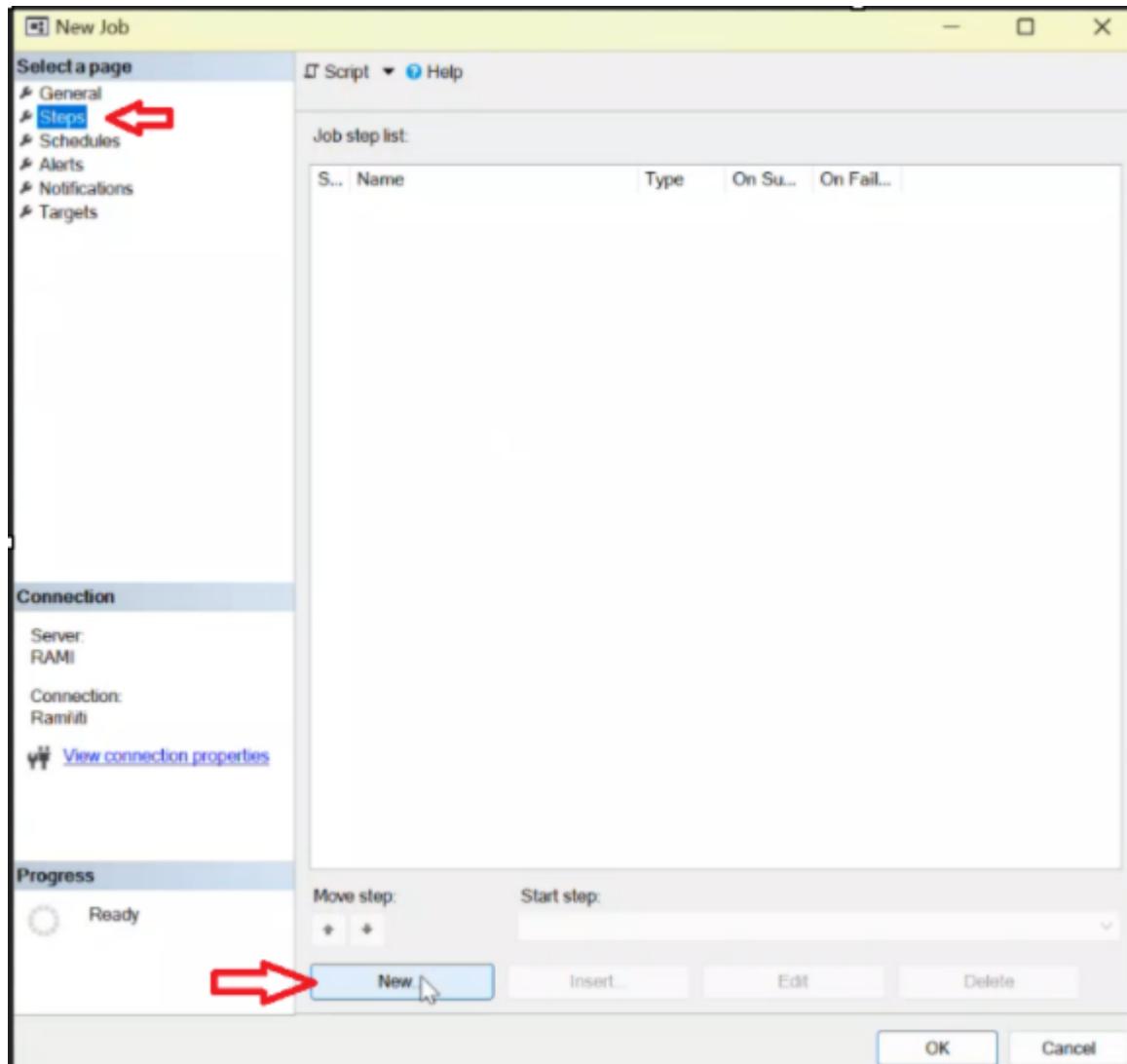




واكتب هنا اسم ال job



واعمل ال Steps بتابعني

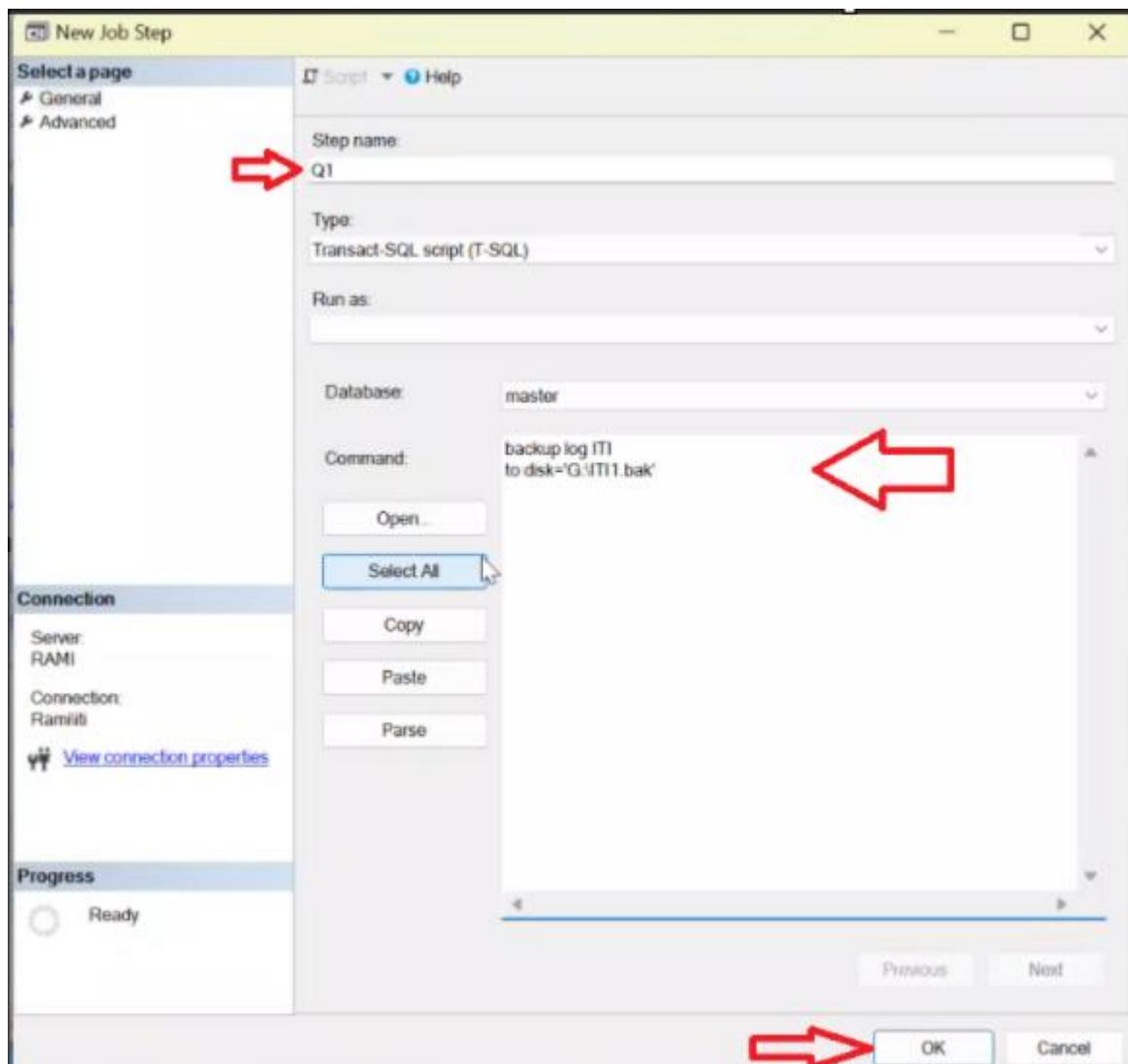


واكتب هنا اسم ال Step

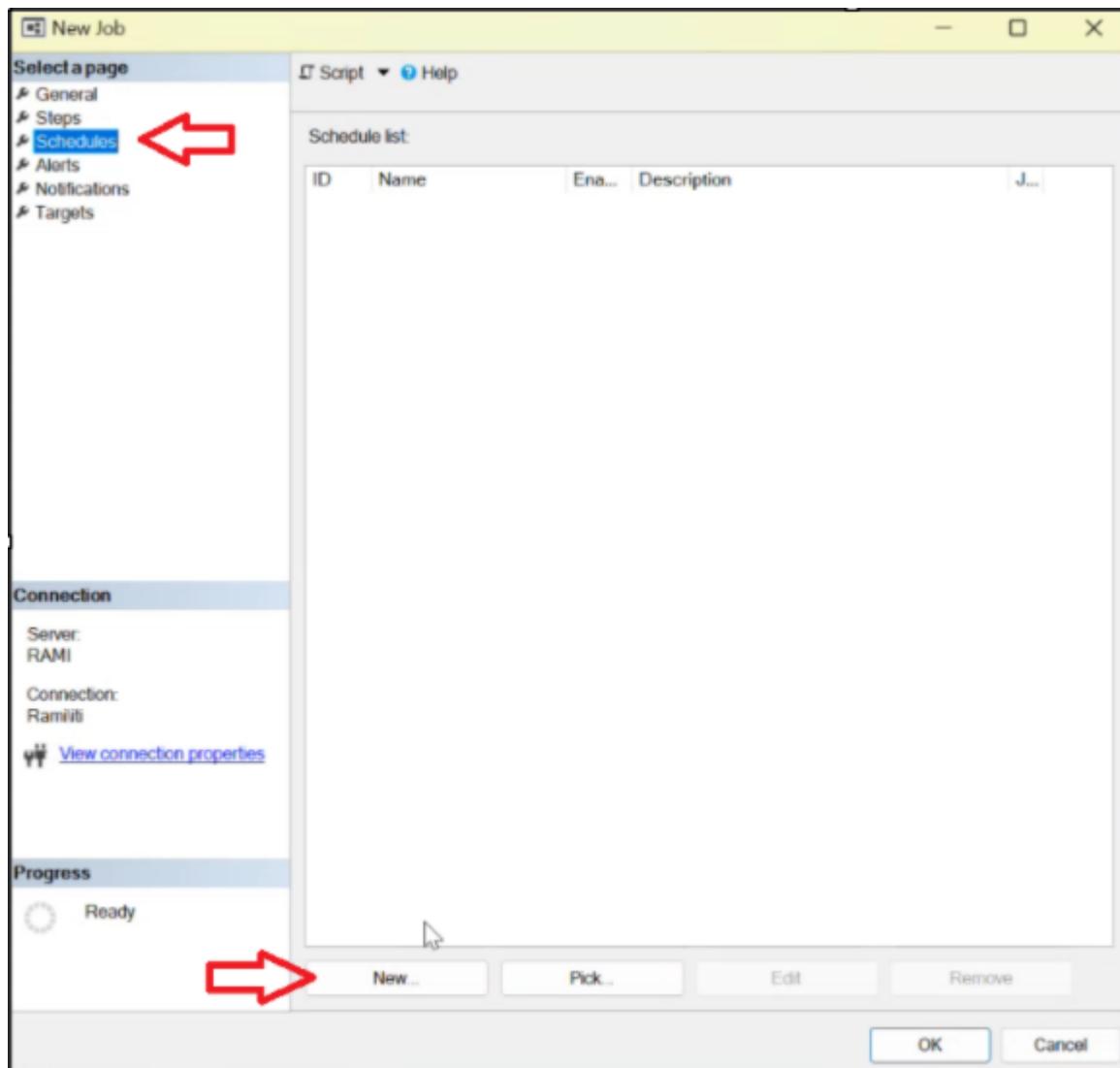
واكتب ال job query بتابعتي

اللي هي ممكن تكون Backup بقى او اي job انا عايزها

(Transactional log Backup)



واعمل بعد الـ Schedule اللي انا عايزه



New Job Schedule

Name: Jobs in Schedule

Schedule type: Recurring Enabled

One-time occurrence

Date: 6/ 9/2024 Time: 11:07:26 AM

Frequency

Occurs: Weekly

Recurs every:

Weekly
Daily
Monthly

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

Daily frequency

Occurs once at: 12:00:00 AM
 Occurs every: 1 hour(s) Starting at: 12:00:00 AM Ending at: 11:59:59 PM

Duration

Start date: 6/ 9/2024 End date: 6/ 9/2024 No end date:

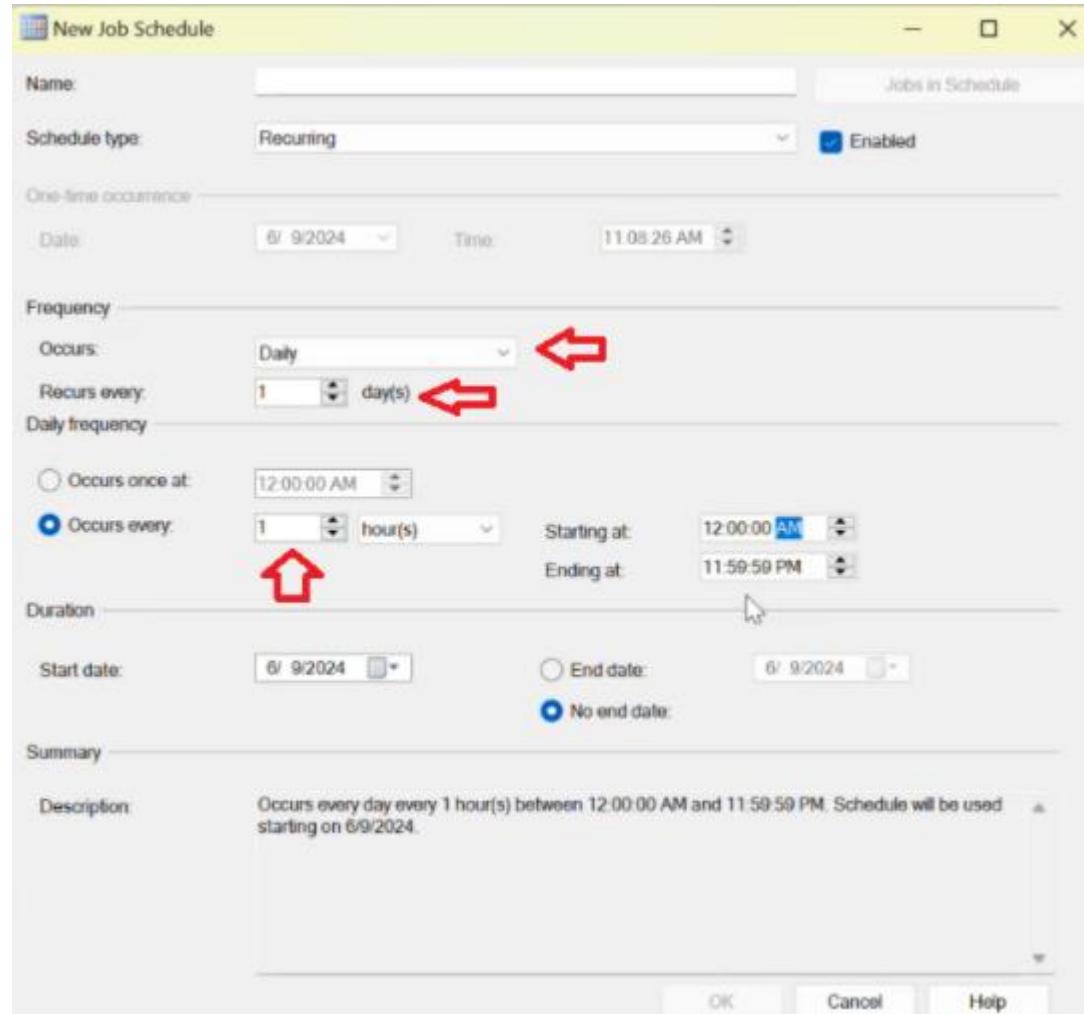
Summary

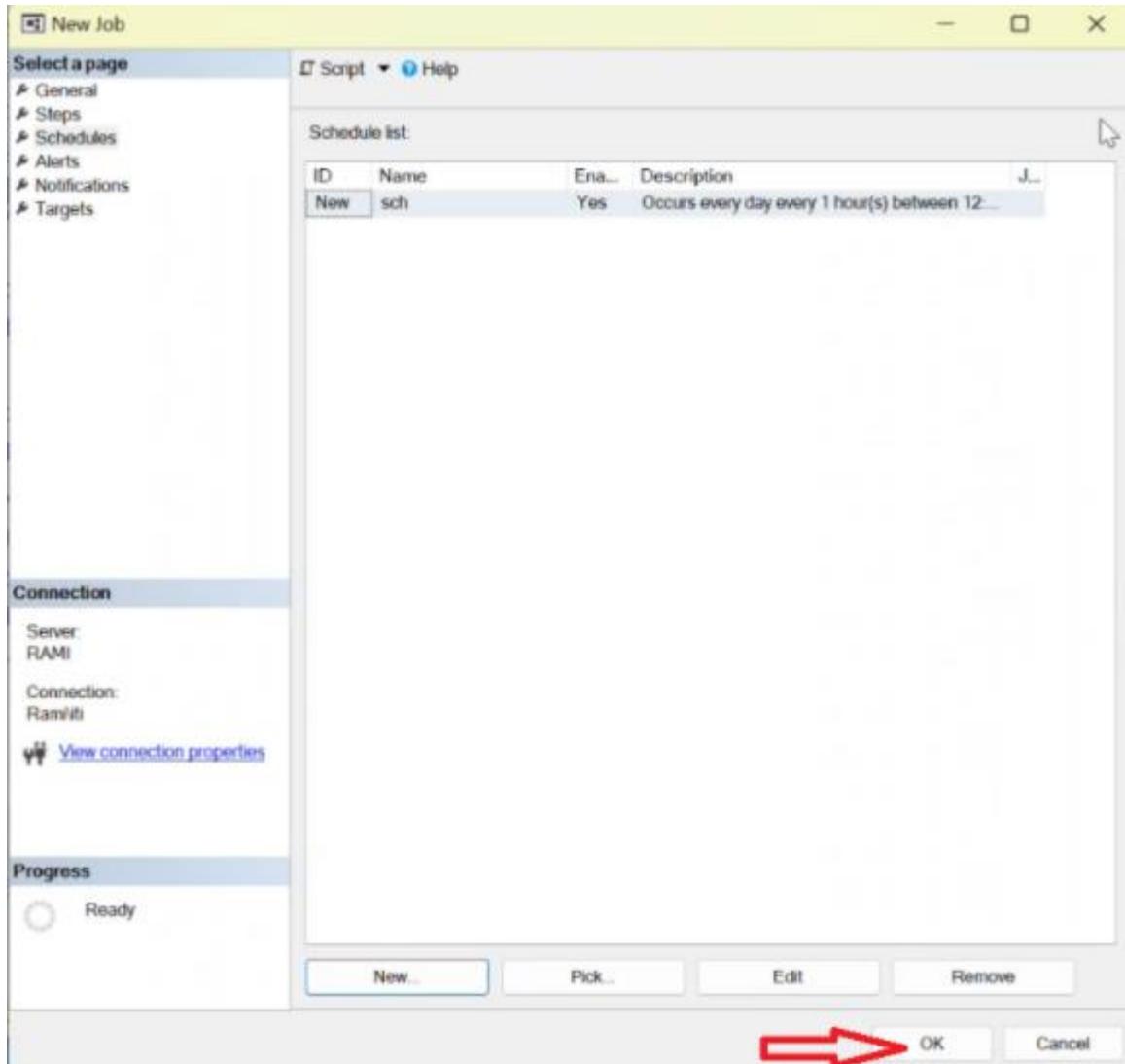
Description: Occurs every week on Sunday at 12:00:00 AM. Schedule will be used starting on 6/9/2024.

OK Cancel Help

واعمل كل اللي انا عايزه ف ال job براحتي بقى

يعني مثلا هنا هخليه يعمل Transactional log Backup يوميا كل ساعة





بس کده

query : ال job ممکن اعمل جواها اي حاجة واكتب جواها اي **Note**

مش Backup بس

انا لو عملت كده Table

```
CREATE TABLE dbo.T1 ( column_1 int, column_2 VARCHAR(30),  
column_3 int IDENTITY primary key);
```

ف انا عندي Column_3 ده PK ف اكيد ليه identity

هنبدأ insert data

```
INSERT T1 VALUES (1, 'Row #1');
```

ف انا هنا ب insert Column_1 & Column_2

واكيد مش هـ insert identity لأنـه Column_3 ف بيزيـد لوحـده

SELECT * FROM T1		
	column_1	column_2
1	100	Row #1
2	100	Row #1
3	100	Row #1
4	NULL	Row #2
5	NULL	Row #2
6	NULL	Row #2
7	NULL	Row #2
8	100	Row #1
9	100	Row #1
10	100	Row #1

طيب لو حبيـت امسـح شـوية rows من النـص

```
delete from T1 where Column_3 between 3 and 8
```

SELECT * FROM T1		
	column_1	column_2
1	100	Row #1
2	100	Row #1
3	100	Row #1
4	100	Row #1

ف لو حبيت اعمل insert تاني

```
INSERT T1 VALUES (100, 'Row #1');
```

ف هيطلع كده

A screenshot of the SQL Server Management Studio (SSMS) interface. At the top, there is a toolbar with various icons. Below the toolbar, a query window is open with the following text:

```
SELECT * FROM T1
```

The results pane shows a table with three columns: column_1, column_2, and column_3. The data is as follows:

	column_1	column_2	column_3
1	100	Row #1	1
2	100	Row #1	2
3	100	Row #1	9
4	100	Row #1	10
5	100	Row #1	11

فانا كده بقى عندي identity

ف لو حاولت انا أ insert كده ف Column_3

```
INSERT T1 VALUES (100, 'Row #1', 4);
```

ف مش هقدر بسبب ال identity

```
Msg 8101, Level 16, State 1, Line 110
An explicit value for the identity column in table 'T1' can only be specified when a column li
```

طيب هل عندي طريقة امني فيها ال Gabs اللي عندي ف ال identity ؟

ا

لأن ال Table identity اصلا عبارة عن Property معمولة عن ال

ON or OFF ف انا ممكن اعملها

```
SET IDENTITY_INSERT T1 ON;  
SET IDENTITY_Insert T1 off;
```

هي OFF بتنبيه by default

```
SET IDENTITY_Insert T1 off;
```

لأنها بتزيد لوحدها (Auto increment)

ف انا لو خليتها ON

```
|SET IDENTITY_INSERT T1 ON;
```

وحيث أ insert ف ال gab اللي عندي
مثلا هـ insert ف Columns_3 (4) زى م حاولنا فوق

```
INSERT T1 VALUES (100, 'Row #1', 4);
```

أو اعمل insert بالشكل ده عشان ممكن ميرضاش يعمل insert بالشكل اللي فوق

```
INSERT INTO T1 (column_3, column_1, column_2) VALUES  
(4, 1, 'Explicit identity value');
```

ف هلاقية اشتغل تمام و عمل insert

و هعمل insert تاني ب (5)

```
INSERT INTO T1 (column_3,column_1,column_2) VALUES  
(5,1, 'Explicit identity value');
```

ف لو شوفت ال Table هلاقیه کده

	column_1	column_2	column_3
1	100	Row #1	1
2	100	Row #1	2
3	1	Explicit identity value	4
4	1	Explicit identity value	5
5	100	Row #1	9
6	100	Row #1	10

وممكن اكمل ال gabs بتاعتي كلها بنفس الطريقة

بعد كده اعمل OFF لـ identity

```
SET IDENTITY_Insert T1 off;
```

طيب لو حبيت أ insert new value

```
INSERT T1 (column_2) VALUES ('Row #2');
```

ف ال Engine بيدور علي اكبر قيمة لـ identity عندي ويزود عليها

	column_1	column_2	column_3
1	100	Row #1	1
2	100	Row #1	2
3	1	Explicit identity value	4
4	1	Explicit identity value	5
5	100	Row #1	9
6	100	Row #1	10
7	100	Row #1	11

طيب هل ممكن ارجع ال identity لنقطة معينة ؟

ا

```
dbcc checkident(T1, RESEED, 3)
```

ف كده هيرجع لرقم (3)

طيب هل ممكن اجيبي ال identity اللي انا واقف عليها دلوقتي ؟

اه طبعا

```
select @@identity
```

أو في طريقة تانية بقوله اسم ال Table ويقولي identity اللي عليها كام

```
SELECT IDENT_CURRENT('MyCurrent')
```

--types of insert statement

- simple insert
- insert constructor
- insert based on select
- insert based on execute
- |--bulk insert

--simple insert
--insert constructor
--insert based on select
--insert based on execute

ب insert فيها كذا row في نفس الوقت
لو خدت Data من Table وعملت فيها insert
اللي بستخدمها مع ال Stored Procedure

ايه بقى ال

--bulk insert

بسخدمها لو انا عندي File عندي
Database احط ال Data عندي ف ال Table
وعايز احط ال Data عندي ف ال Table

ف انا هنا عملت Table فاضي

Column Name	Data Type	Allow Nulls
id	int	<input checked="" type="checkbox"/>
name	varchar(50)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

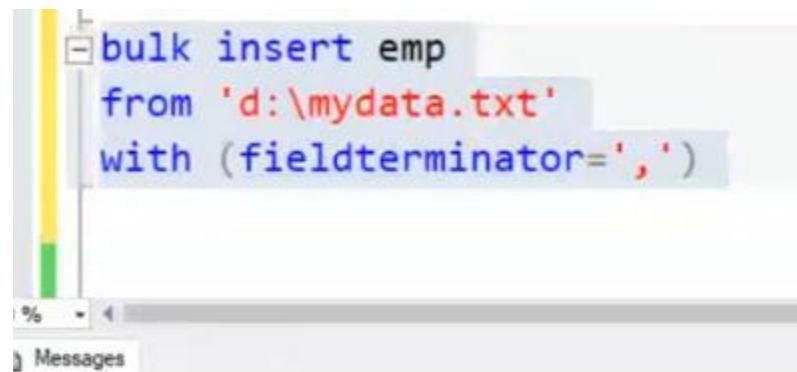
وعندي Data في شوية Delimited File



Mydata.txt - Notepad
File Edit Format View Help
100,ahmed
200,ali
300,mohamed
500,eman

ف انا هـ اـ الـ Data الـ Fـ الـ File دـ جـوا الـ Table اـزـاي ؟

عن طـريق Bulk insert

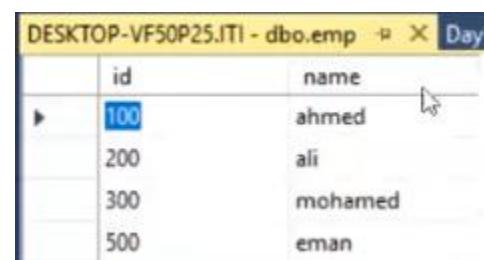


```
bulk insert emp
from 'd:\mydata.txt'
with (fieldterminator=',')
```

(4 row(s) affected)

bulk insert emp Table Name
from 'd:\mydata.txt' File location
with (fieldterminator=',') Declare that Data separated by Comma

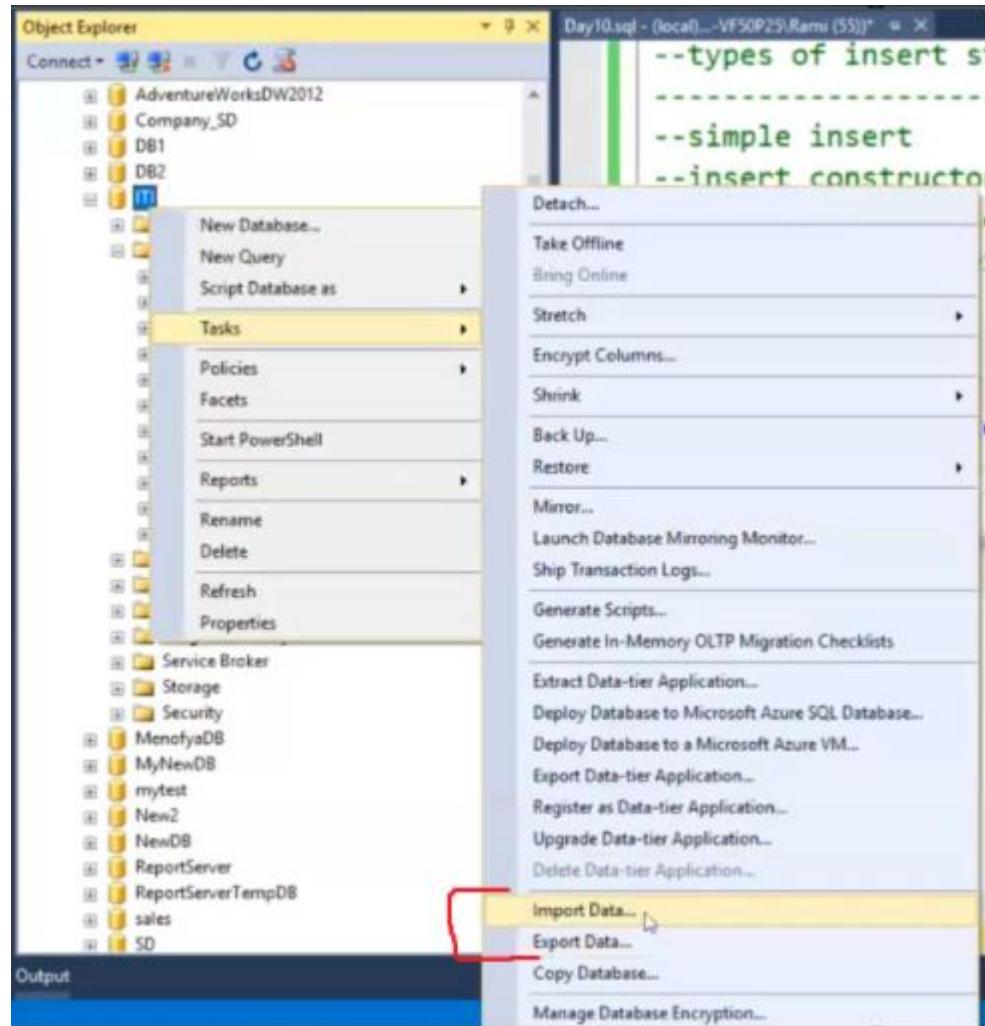
ودي الـ Data

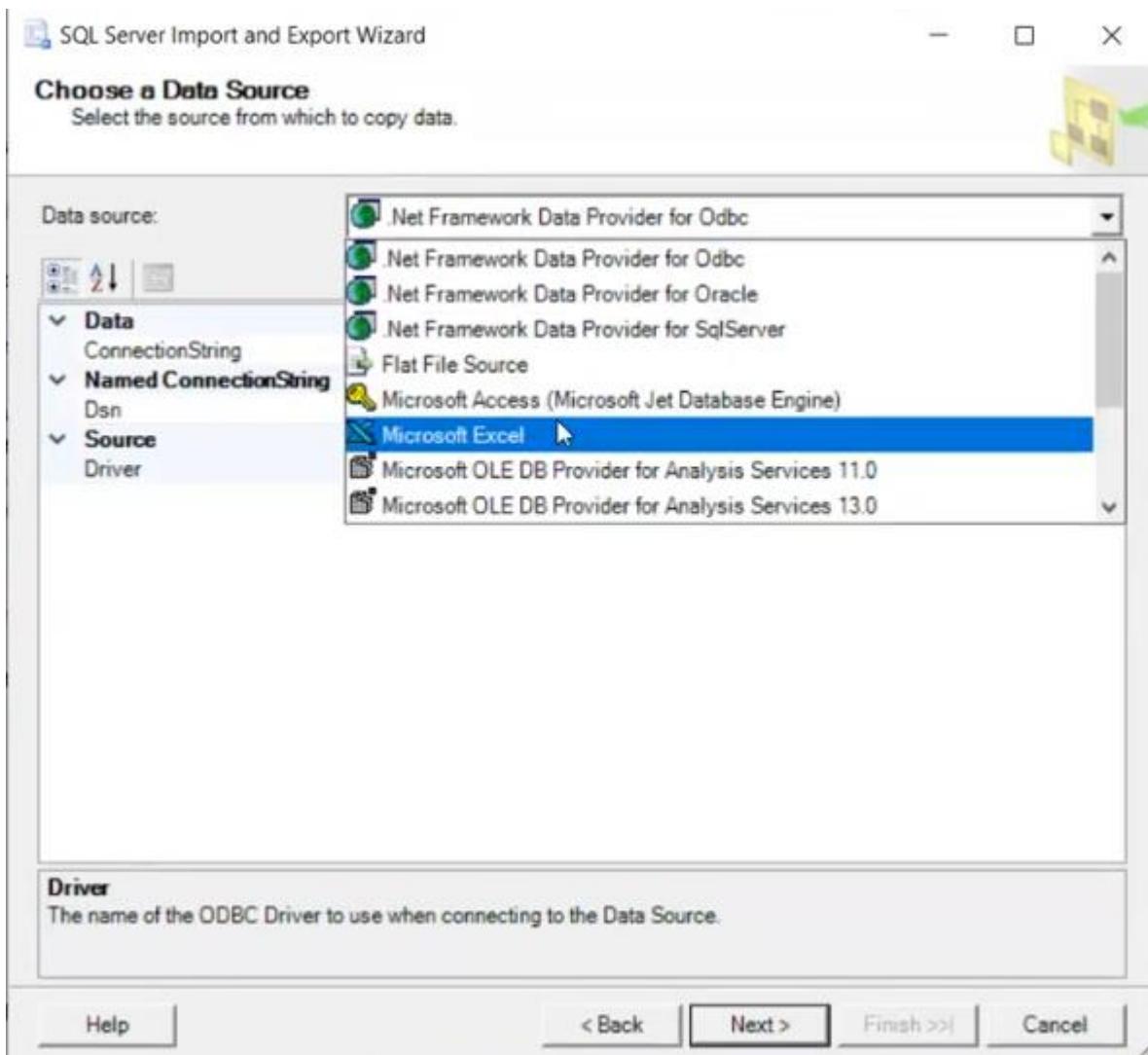


	id	name
▶	100	ahmed
	200	ali
	300	mohamed
	500	eman

انا کمان عندي import & export by wizard

ف لو عايزة مثل اعمل من Data import

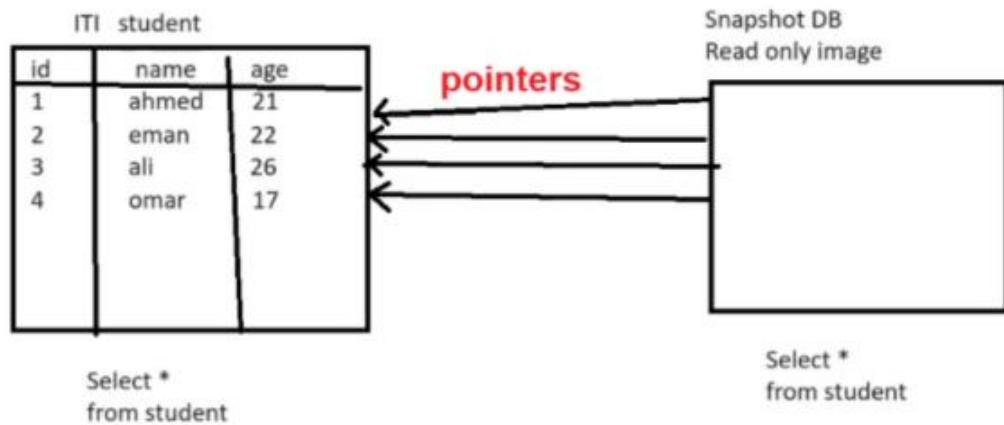




ويمكن برضو اعمل العكس
وانقل من Table لـ Excel

Snapshot [Image]

OLTP



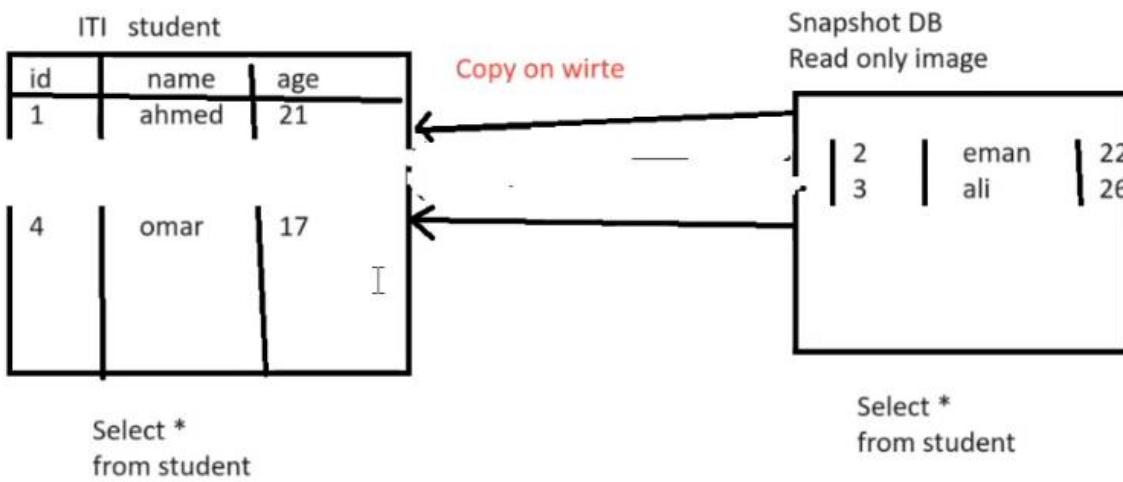
هنا لما اعمل Snapshot لـ Student Table

واعرض ال Data من ال Snapshot

Select *
from student

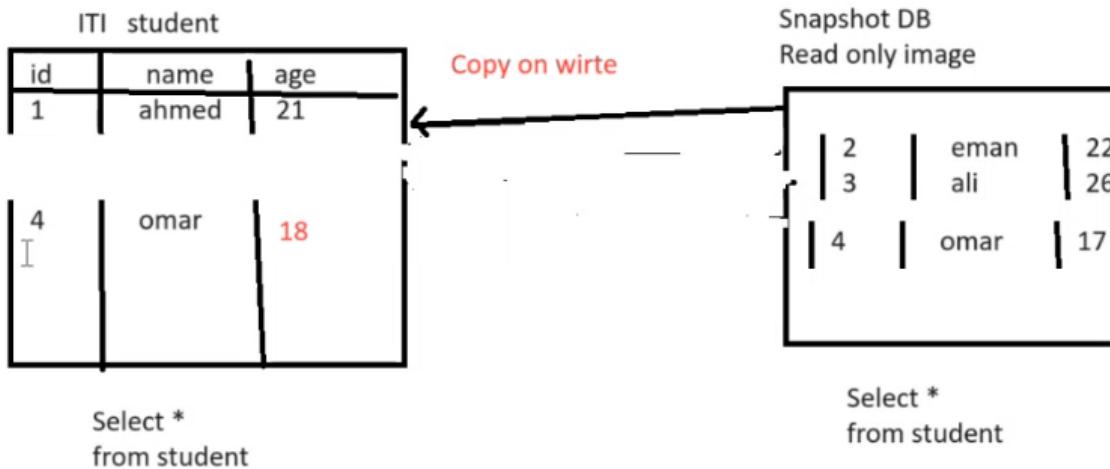
ف هيعرضلي ال 4 rows اللي عندي بشكل طبيعي

لكن لو مسحت Data من ال Table الأصلي بعد ما اخذت ال Snapshot



ف قبل ما ال 2 rows دول يتمسحوا
ال Snapshot هياخد ال 2 rows اللي عايز امسحهم دول ويحطهم عنده
ويمسح ال Pointers بتاعتهم
وده اسمه **Copy on write Technique**
يعني بمجرد ما يحس انك هت Write على ال Data
يعمل Copy على طول

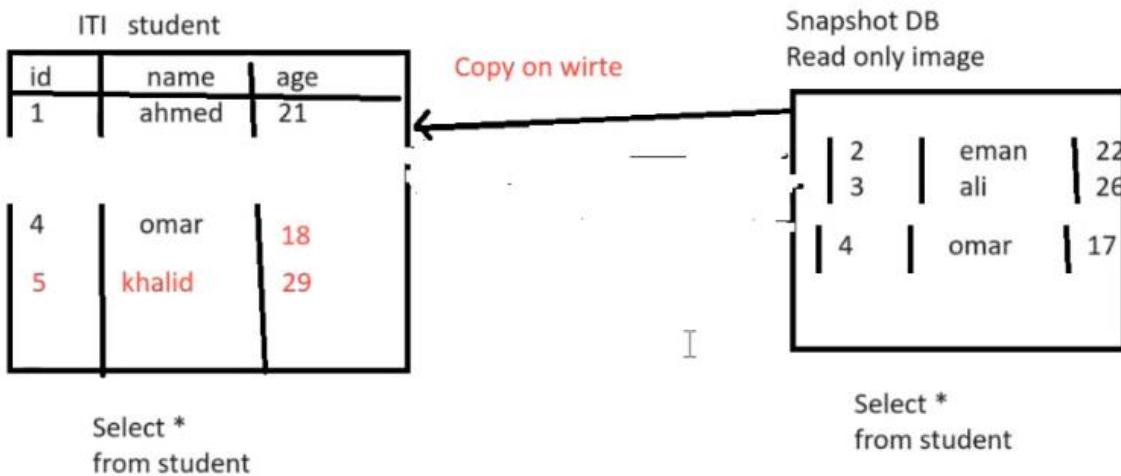
مثلاً عايز اعمل Update لـ row ف آخر Age



ف هي عمل نفس الموضوع

هياخذ ال row ف ال Snapshot بعد كده يعمل Update لـ row

طيب لو انا زودت row ف ال Database



ايه اللي هيحصل لما اعرض ال Snapshot

Select *
from student

4 rows هيعرض

دول موجودين اصلا

2	eman	22
3	ali	26
4	omar	17

وده ليه Pointer على ال Database

1	ahmed	21
---	-------	----

واكيد ال Snapshot ملهاش علاقة بال row الجديد

لأنه مكانش موجود وقت م اخذت ال Snapshot ف الأول

طبعا اقدر اعمل Restore لـ Database من ال Snapshot

بس على نفس ال Server

مش زي ال Backup

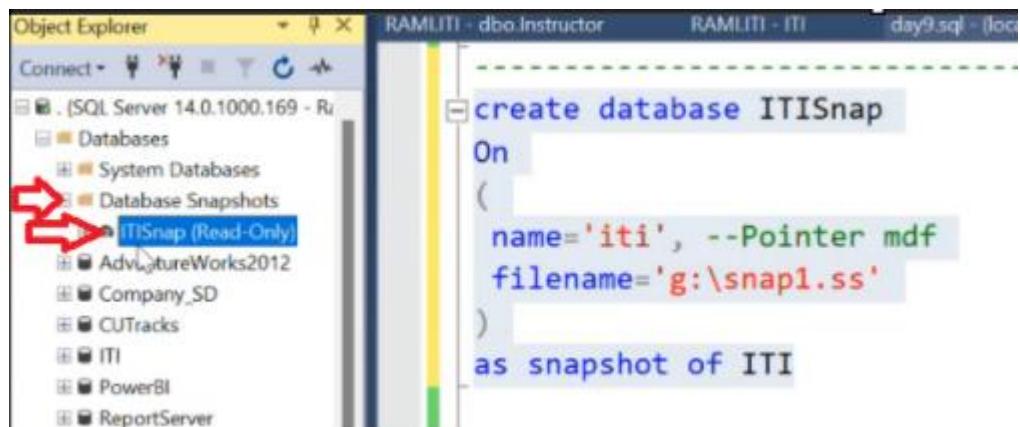
ممكن استخدمها ف Server تاني

اعمل ازاي Snapshot

```
create database ITISnap  
On  
(  
    name='iti', --Pointer mdf  
    filename='g:\snap1.ss'  
)  
as snapshot of ITI I
```

```
create database ITISnap → Snapshot Name  
On →  
(  
    name='iti', --Pointer mdf → mdf Name  
    filename='g:\snap1.ss' → File location that will contain Snapshot on Hard disk  
)  
as snapshot of ITI I → Database Name
```

ف هلاقیه عمل Snapshot اسمها



وکده هو خد image كاملة من ال Database بكل اللي فيها

طیب نو عندي ال Database ف اکتر من File
مثلا (mdf + ndf)

ف لازم يكون عدد ال Snapshot files
لازم تكون قد عدد ال Database Physical files

```
[create database ITISnap
On
(
    name='iti', --Pointer mdf
    filename='g:\snap1.ss'
),
(
    name='file', --Pointer ndf
    filename='g:\snap2.ss'
)
as snapshot of ITI
```

طیب نو هشوف من ال **instructor Table**

هلاقی النتیجة الطبیعیة

The screenshot shows the SSMS interface with the database 'ITI' selected in the Object Explorer. A red arrow points to the 'ITI' tab in the title bar. The 'dbo.Instructor' table is selected in the results grid, and the following query is displayed:

```
select * from Instructor
```

The results grid displays 19 rows of data from the 'Instructor' table:

	Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	1	Ahmed	Master	287100.00	10
2	2	Hony	Master	287100.00	10
3	3	Reham	Master	287100.00	10
4	4	Yasmin	PHD	287100.00	10
5	5	Amany	PHD	287100.00	10
6	6	Eman	Master	287100.00	10
7	7	ahmed	NULL	287100.00	10
8	8	Hony	NULL	287100.00	20
9	9	Hussien	NULL	287100.00	20
10	10	Khalid	NULL	287100.00	20
11	13	Ahmed	NULL	287100.00	30
12	14	Ahmed	NULL	287100.00	30
13	15	Hony	NULL	287100.00	30
14	79	NULL	NULL	287100.00	NULL
15	100	NULL	NULL	287100.00	NULL
16	300	Hony	NULL	287100.00	NULL
17	667	NULL	NULL	287100.00	NULL
18	6000	NULL	NULL	287100.00	NULL
19	9000	ahmed	NULL	287100.00	NULL

طیب نو هشوف من ال Instructor Table

هیطلعلی نفس الناتج

The screenshot shows the SSMS interface with a red arrow pointing to the title bar 'ITISnap'. The title bar also displays the database name 'RAMLITI - db.Instructor' and the command 'as snapshot of ITI'. In the center, a query window contains the SQL statement: 'select * from Instructor'. Below the query window is the 'Results' tab, which displays the data from the Instructor table. The table has columns: Ins_Id, Ins_Name, Ins_Degree, Salary, and Dept_Id. The data is as follows:

	Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	1	Ahmed	Mester	287100.00	10
2	2	Hany	Mester	287100.00	10
3	3	Rehem	Mester	287100.00	10
4	4	Yosmin	PHD	287100.00	10
5	5	Amany	PHD	287100.00	10
6	6	Eman	Mester	287100.00	10
7	7	ahmed	NULL	287100.00	10
8	8	Hony	NULL	287100.00	20
9	9	Hussien	NULL	287100.00	20
10	10	Khalid	NULL	287100.00	20
11	13	Ahmed	NULL	287100.00	30
12	14	Ahmed	NULL	287100.00	30
13	15	Hany	NULL	287100.00	30
14	29	NULL	NULL	287100.00	NULL
15	100	NULL	NULL	287100.00	NULL
16	300	Hany	NULL	287100.00	NULL
17	667	NULL	NULL	287100.00	NULL
18	6000	NULL	NULL	287100.00	NULL
19	9000	ahmed	NULL	287100.00	NULL

طیب نو جیت امسح شویة ال rows دی من ITI Database

RAMI.İTI - dbo.Instructor					
	Ins_Id	Ins_Name	Ins_Degr...	Salary	Dept_Id
	1	Ahmed	Master	287100.0...	10
	2	Hany	Master	287100.0...	10
	3	Reham	Master	287100.0...	10
	4	Yasmin	PHD	287100.0...	10
	5	Amany	PHD	287100.0...	10
	6	Eman	Master	287100.0...	10
	7	ahmed	NULL	287100.0...	10
	8	Hany	NULL	287100.0...	20
	9	Hussien	NULL	287100.0...	20
	10	Khalid	NULL	287100.0...	20
	13	Ahmed	NULL	287100.0...	30
	14	Ahmed	NULL	287100.0...	30
	15	Hany	NULL	287100.0...	30
	79	NULL	NULL	287100.0...	NULL
	100	NULL	NULL	287100.0...	NULL
	300	Hany	NULL	287100.0...	NULL
	667	NULL	NULL	287100.0...	NULL
	6000	NULL	NULL	287100.0...	NULL
▶	9000	ahmed	NULL	287100.0...	NULL
*	NULL	NULL	NULL	NULL	NULL

وعدلت کمان شویة ال rows دی ف ITI Database

RAMI.İTI - dbo.Instructor					
	Ins_Id	Ins_Name	Ins_Degr...	Salary	Dept_Id
	1	A	Master	287100.0...	10
	2	B	Master	287100.0...	10
	3	C	Master	287100.0...	10
	4	D	PHD	287100.0...	10
▶	5	Amany	PHD	287100.0...	10
	6	Eman	Master	287100.0...	10
	7	ahmed	NULL	287100.0...	10
	8	Hany	NULL	287100.0...	20
	9	Hussien	NULL	287100.0...	20
	10	Khalid	NULL	287100.0...	20
	13	Ahmed	NULL	287100.0...	30
	14	Ahmed	NULL	287100.0...	30
	15	Hany	NULL	287100.0...	30
*	NULL	NULL	NULL	NULL	NULL

ف لو حبيت اعرض من instructor Table

طبعي هيطلعلي ال Table بالتعديلات اللي عملتها

The screenshot shows the SQL Server Management Studio interface. On the left is the Object Explorer pane, which lists various database objects including tables like Course, Department, depts, emps, fromcmd, grades, history_audit, Ins_Course, Instructor, ITIdata, ITIemployees, mystaff, Stud_Course, Student, tab2, tab3, tab5, tab7, tes3, test, test2, test4, and Topic. A red arrow points to the 'Instructor' entry in the list. On the right is the Results pane where the query `select * from Instructor` has been executed. The results show 12 rows of data:

	Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	1	A	Master	287100.00	10
2	2	B	Master	287100.00	10
3	3	C	Master	287100.00	10
4	4	D	PHD	287100.00	10
5	5	Amany	PHD	287100.00	10
6	6	Eman	Master	287100.00	10
7	7	ahmed	NULL	287100.00	10
8	8	Hany	NULL	287100.00	20
9	9	Hussien	NULL	287100.00	20
10	10	Khalid	NULL	287100.00	20
11	13	Ahmed	NULL	287100.00	30
12	14	Ahmed	NULL	287100.00	30

لكن لو حبيت اعرض instructor Table من ال

The screenshot shows the SSMS interface. On the left, the 'Object Explorer' pane displays a tree of database objects under 'Graph Tables'. In the center, the 'SQL Query Editor' pane contains the query 'select * from Instructor'. The results are shown in the 'Results' pane below, which displays 19 rows of data from the 'Instructor' table.

Ins_Id	Ins_Name	Ins_Degree	Salary	Dept_Id
1	Ahmed	Master	287100.00	10
2	Henry	Master	287100.00	10
3	Reham	Master	287100.00	10
4	Yosmin	PHD	287100.00	10
5	Amany	PHD	287100.00	10
6	Eman	Master	287100.00	10
7	ahmed	NULL	287100.00	10
8	Henry	NULL	287100.00	20
9	Hussien	NULL	287100.00	20
10	Kholid	NULL	287100.00	20
11	Ahmed	NULL	287100.00	30
12	Ahmed	NULL	287100.00	30
13	Henry	NULL	287100.00	30
14	79	NULL	287100.00	NULL
15	100	NULL	287100.00	NULL
16	300	Henry	287100.00	NULL
17	667	NULL	287100.00	NULL
18	6000	NULL	287100.00	NULL
19	9000	ahmed	287100.00	NULL

هلاقية جابلي ال Table قبل التعديل ومحتفظ بالبيانات القديمة

ومحتفظ بعدد ال (19) rows

طيب هل اقدر اعمل Restore لـ Database من Snapshot ؟

اه اقدر

```
restore database ITI  
from database_snapshot='ITIsnap'
```

ف لو بصيت دلوقتي على Instructor Table من ITI Database
هلاقية رجع تاني لشكله قبل التعديل

	Ins_Id	Ins_Name	Ins_Degr...	Salary	Dept_Id
▶	1	Ahmed	Master	287100.0...	10
	2	Hany	Master	287100.0...	10
	3	Reham	Master	287100.0...	10
	4	Yasmin	PHD	287100.0...	10
	5	Amany	PHD	287100.0...	10
	6	Eman	Master	287100.0...	10
	7	ahmed	NULL	287100.0...	10
	8	Hany	NULL	287100.0...	20
	9	Hussien	NULL	287100.0...	20
	10	Khalid	NULL	287100.0...	20
	13	Ahmed	NULL	287100.0...	30
	14	Ahmed	NULL	287100.0...	30
	15	Hany	NULL	287100.0...	30
	79	NULL	NULL	287100.0...	NULL
	100	NULL	NULL	287100.0...	NULL
	300	Hany	NULL	287100.0...	NULL
	667	NULL	NULL	287100.0...	NULL
	6000	NULL	NULL	287100.0...	NULL
	9000	ahmed	NULL	287100.0...	NULL
*	NULL	NULL	NULL	NULL	NULL

وانا ممكن بقى اعمل job تاخذ Snapshot كل ساعة مثل
وممكن استخدمها كبديل لل Backup
شرط تكون على نفس ال Server

Note : انا مقدرش امسح ال Database لو انا واخد منها Snapshot
ف لازم امسح الأول ال Snapshots اللي عندي
بعد كده اقدر امسح ال Database

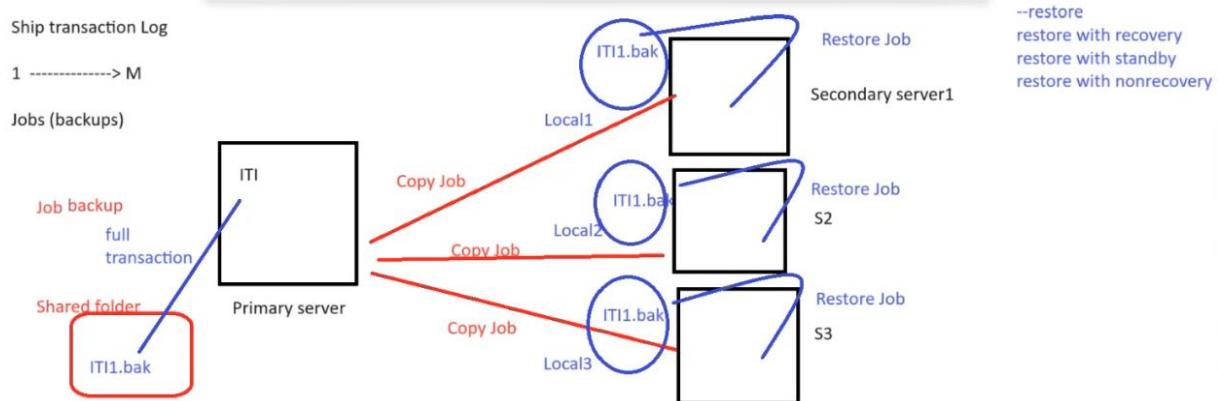
--high availability

معناها ايه اللي انا بعمله عشان اخلي ال Applications or Dashboards Available
بتاعتي دائمًا عندي 5 انواع

--->failover clustering
--->peer to peer replication
--->always on
--->DB mirroring
--->ship transaction Log

بس هنا احنا هنشتغل على ال

--->ship transaction Log



Full Backup بيتعمل على ال Primary Server بيكون Backup Note

بعد كده ال Transactional log Backup بتبقى Backups

ال Recovery 3 Secondary Servers بيعملوا

يـ اما

restore with standby

وده بيخليني اعمل **read** لـ **Data** مش اكتر

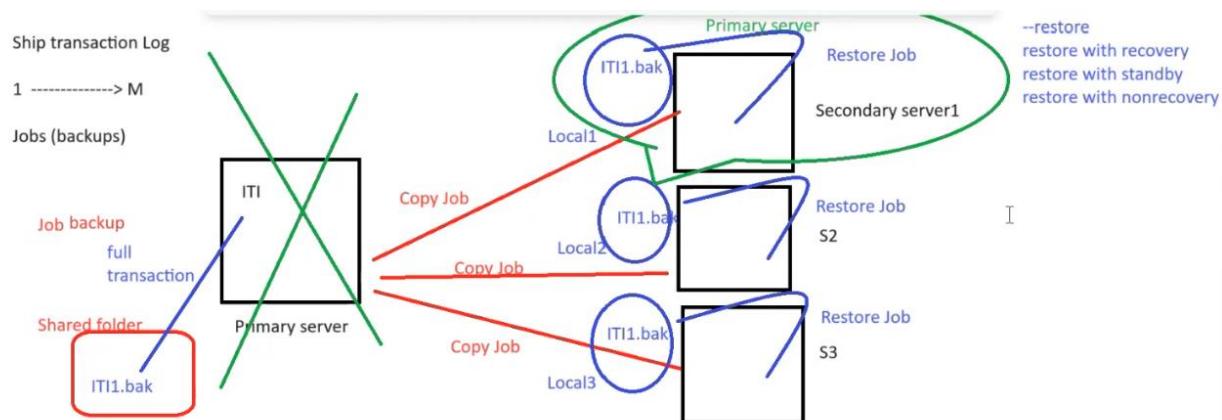
ف مش هقدر اعمل insert or update or delete

يـ اما

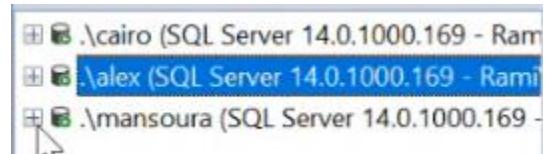
restore with nonrecovery

ودي محدث هيقدر يعمل فيها حاجة غير والوحيد اللي ليه **Control** عليها

هو ال **Server**



طيب خلينا نجرب نشوف تطبيق ب Scale صغير بحيث نفهم الفكرة



(Cairo – Alex – Mansoura) 3 Servers

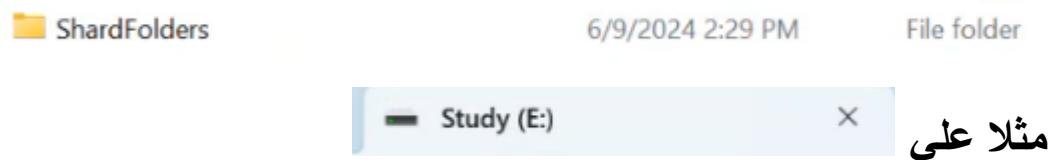
لازم اتأكد إن ال Sql Server Agent شغال عندي ف ال

لأن أنا شغلي هيكون معتمد على ال jobs

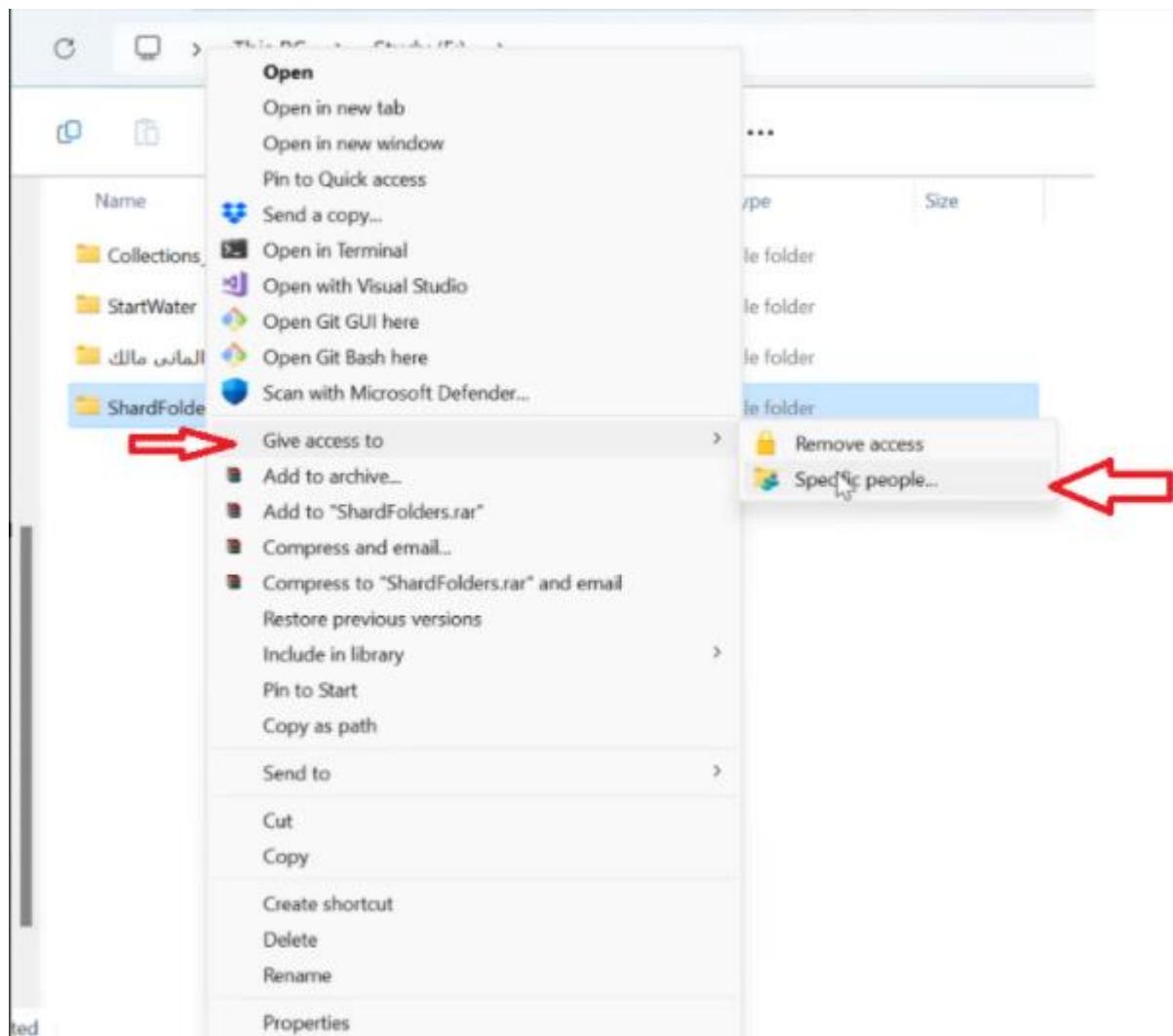


ونخلي Primary Server كـ 1 Server
وال Secondary Servers كـ 2 Servers

ونعمل Create لـ Shared Folder اللي هنستخدمه ف ال Primary



واخليه Backups علی ال Network عشان احط فيه ال Shared



← Network access

Choose people to share with

Type a name and then click Add, or click the arrow to find someone.

Name	Permission Level
iti	Owner

I'm having trouble sharing.

 Share Cancel

← Network access

Your folder is shared.

You can [e-mail](#) someone links to these shared items, or [copy](#) and paste the links into another app.

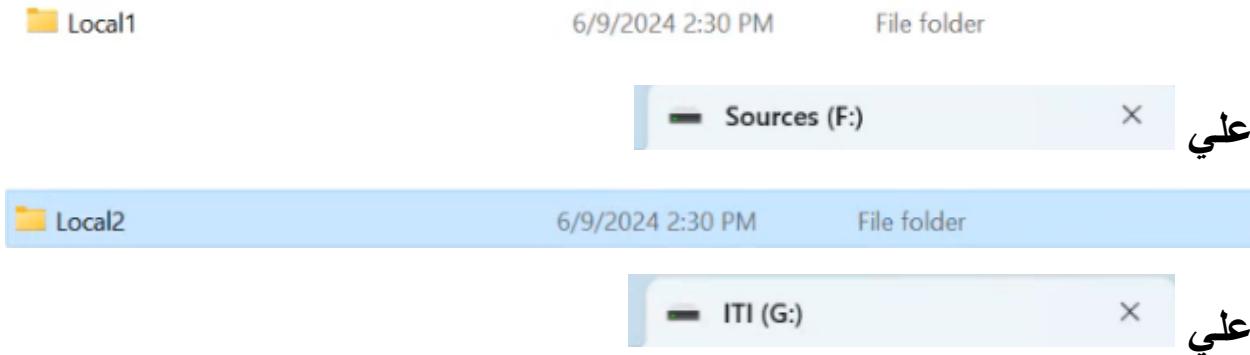
Individual Items

ShardFolders
\\RAM\\ShardFolders

 ده اسم ال Shared Folder اللي محط فيه ال Backups

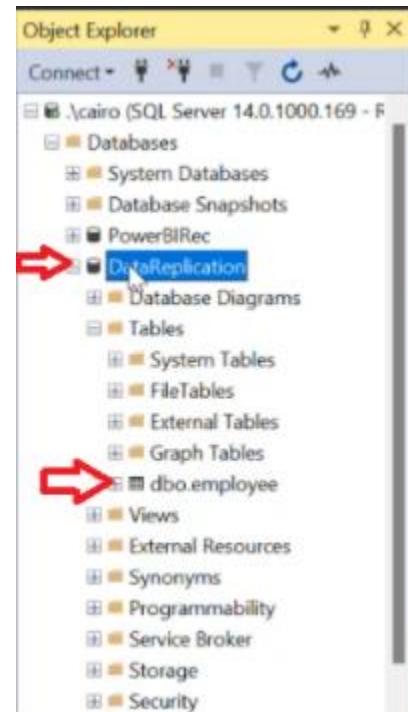
 Done

و هعمل برضو لكل **Secondary Server** خاص بيه **(local Folder)**



واخلي كل **Folder** من ال ٣ اللي عملتهم يكون في **Drive** مختلف
وكأني ب **3 Servers** انهم **Simulate**

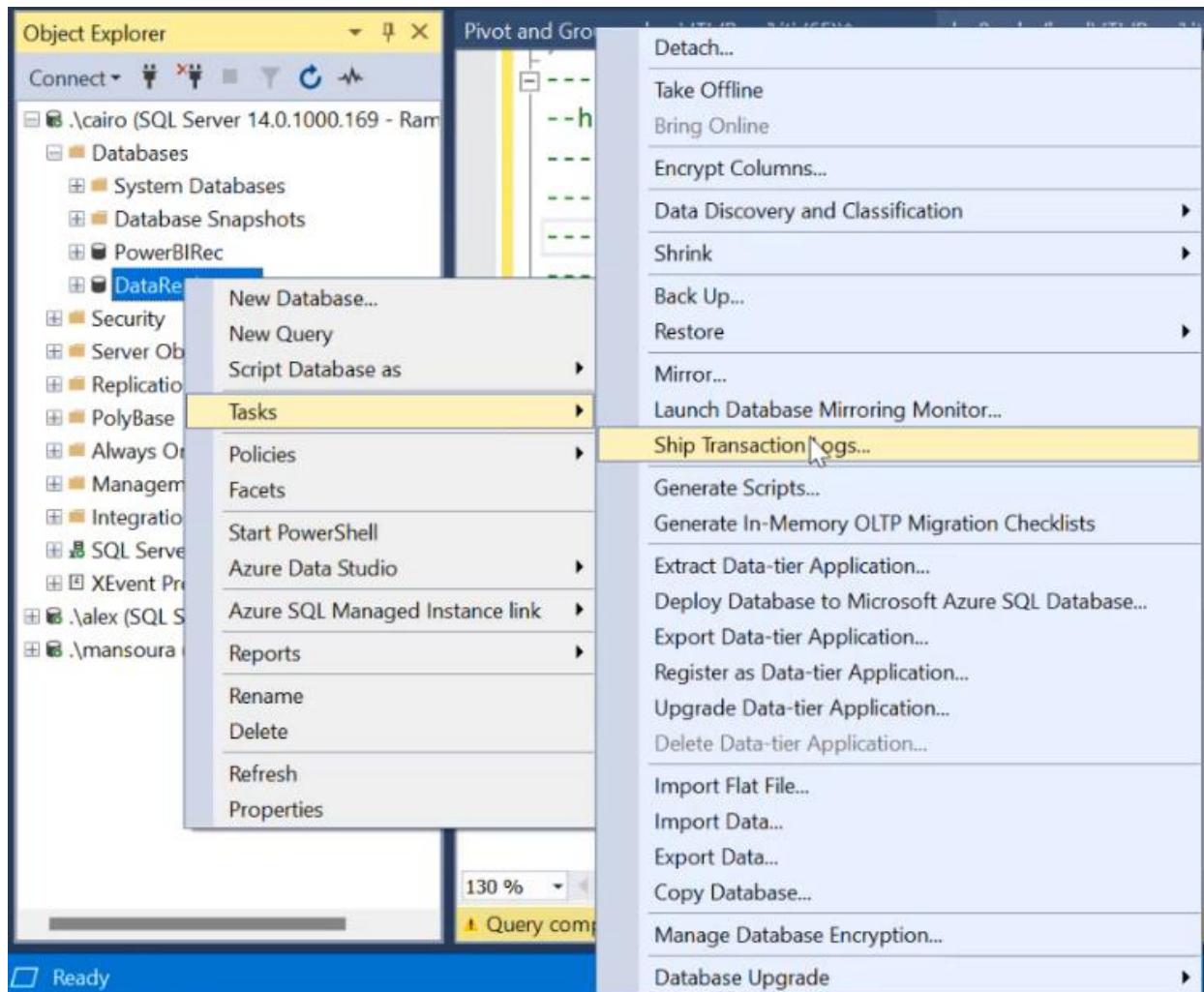
طيب انا هخلني **Cairo** يكون ال **Primary Server**

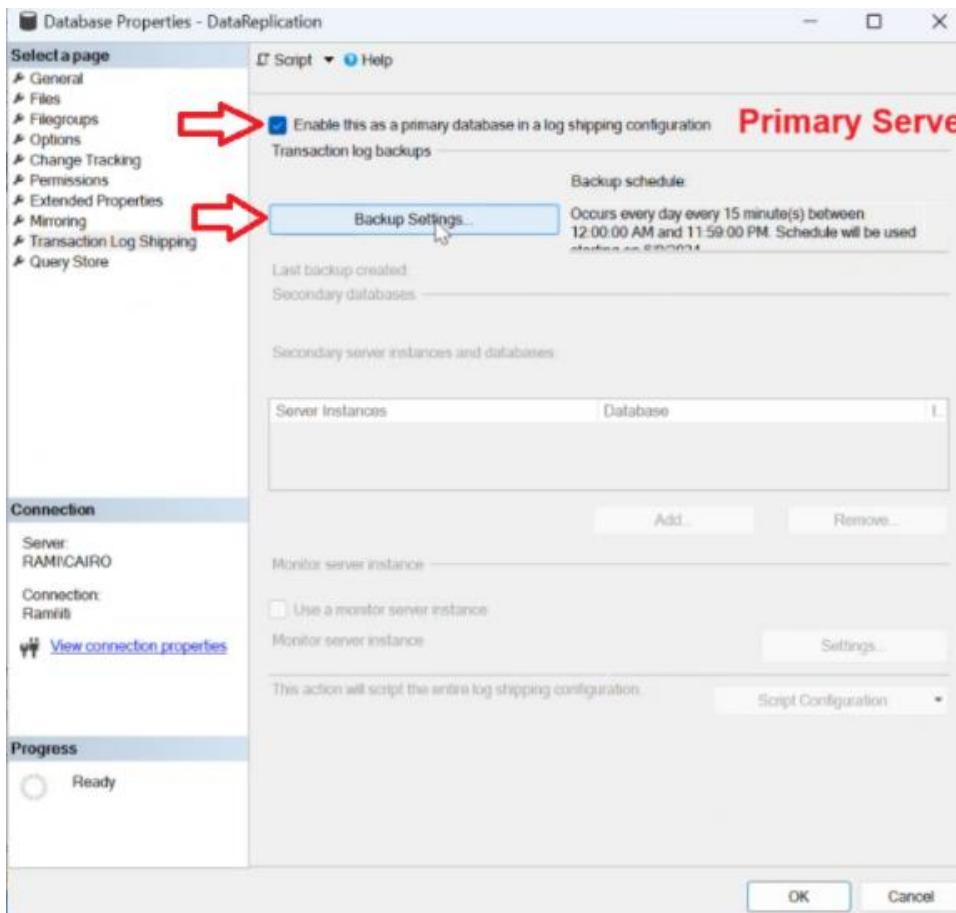


ف انا عندي اهو **Database** وجواها **Table**

ف انا عايزة اعمل Replicate لـ 2 Servers على الـ Database

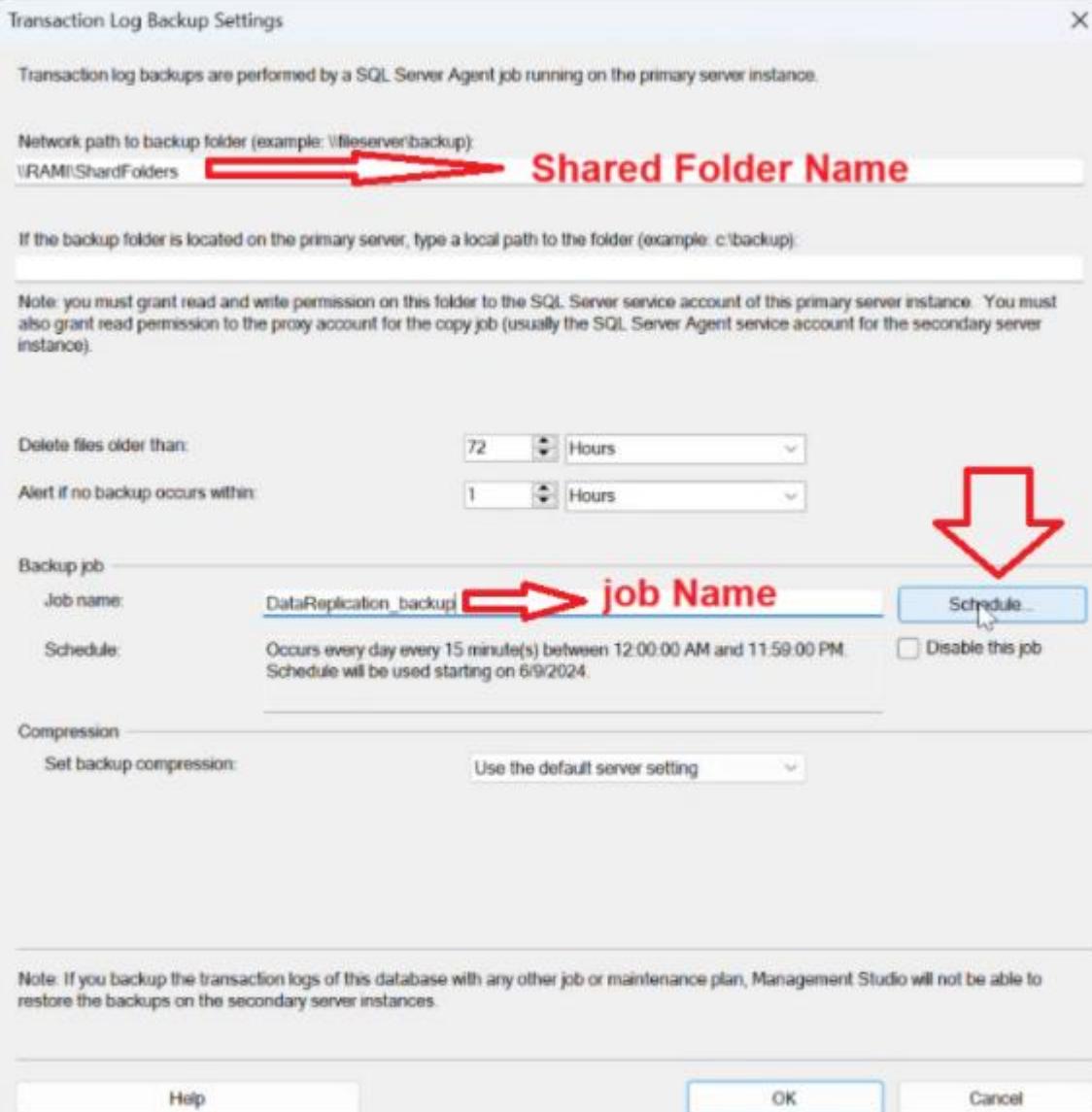
ف انا هـ اختار الـ Database واختار



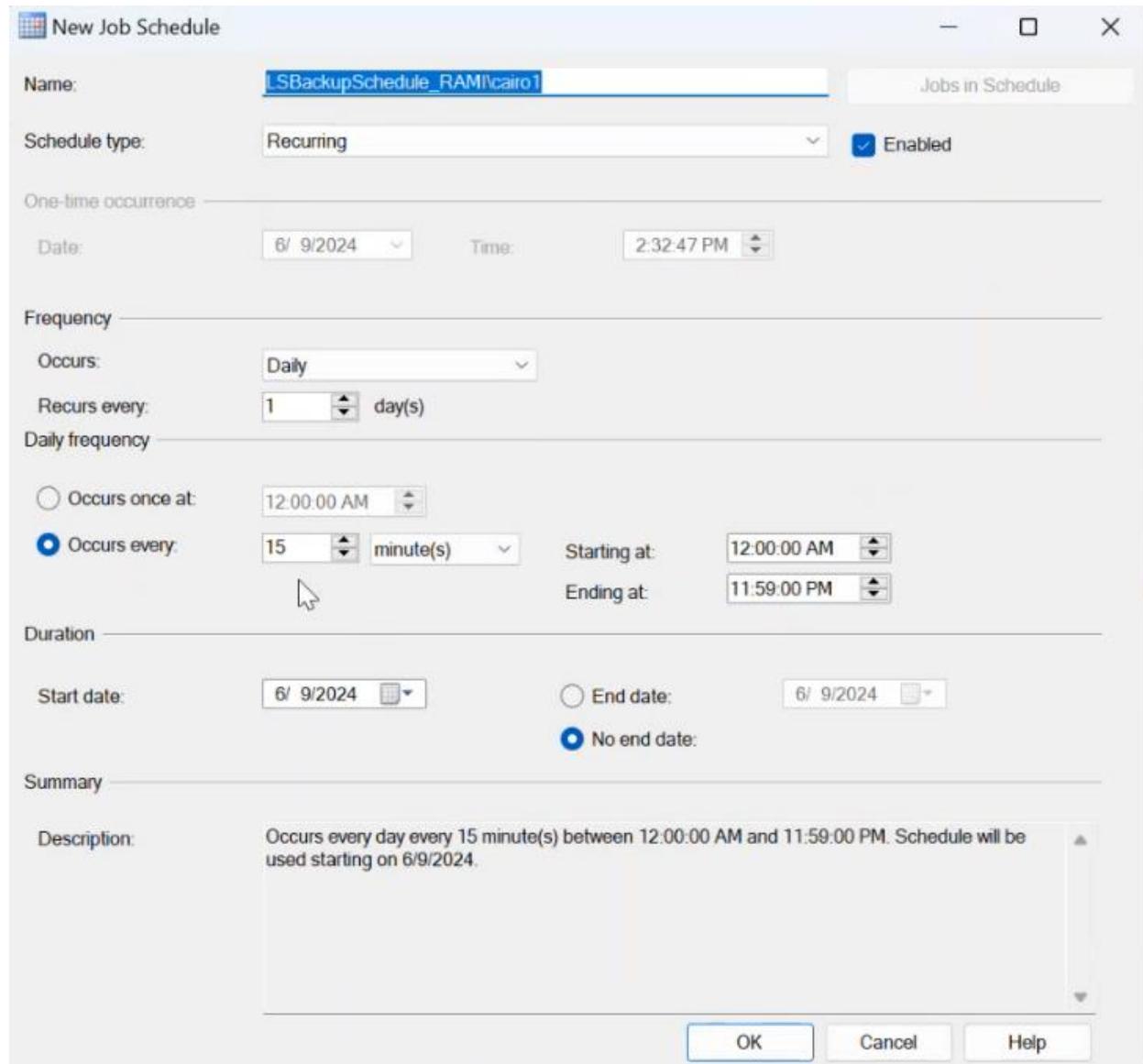


لازم هنا اقوله بقى اسم ال **Backup**
هت **Run** كل قد ايه

فين ال **Backup** اللي هحط فيه ال **Shared Folder**



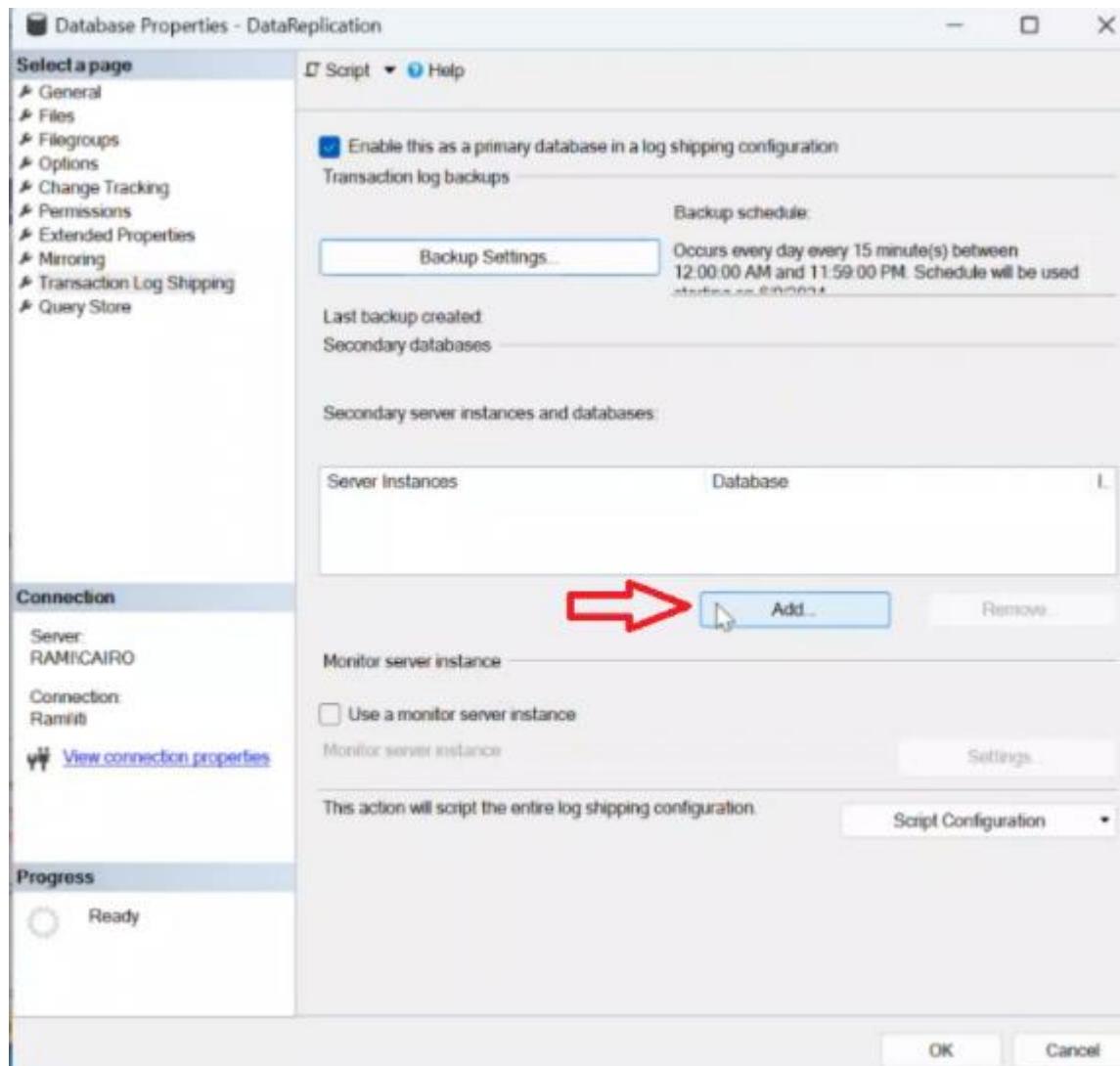
وهنا مثلا هيعمل job دى ت Run كل ربع ساعة



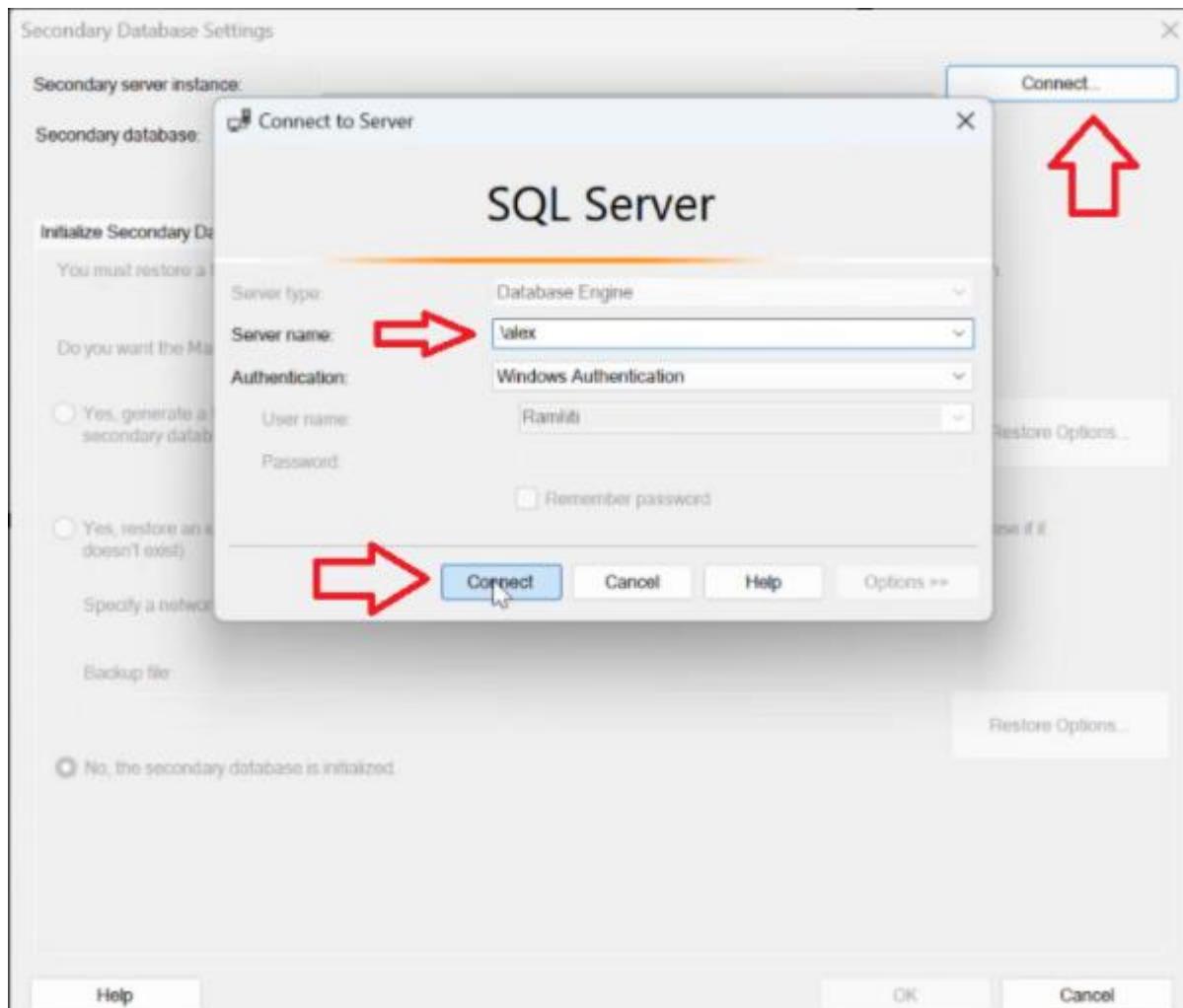
ف هو كده هيعمل Backup كل ربع ساعة

ويحطها ف ال Shared Folder

بعد کده بقوله مین هی ال Secondary Servers



ده کده ال Secondary Server الاول



بعد کده بیسالنی هل انت عندك Database شبها على ال Server

لو اه هختار

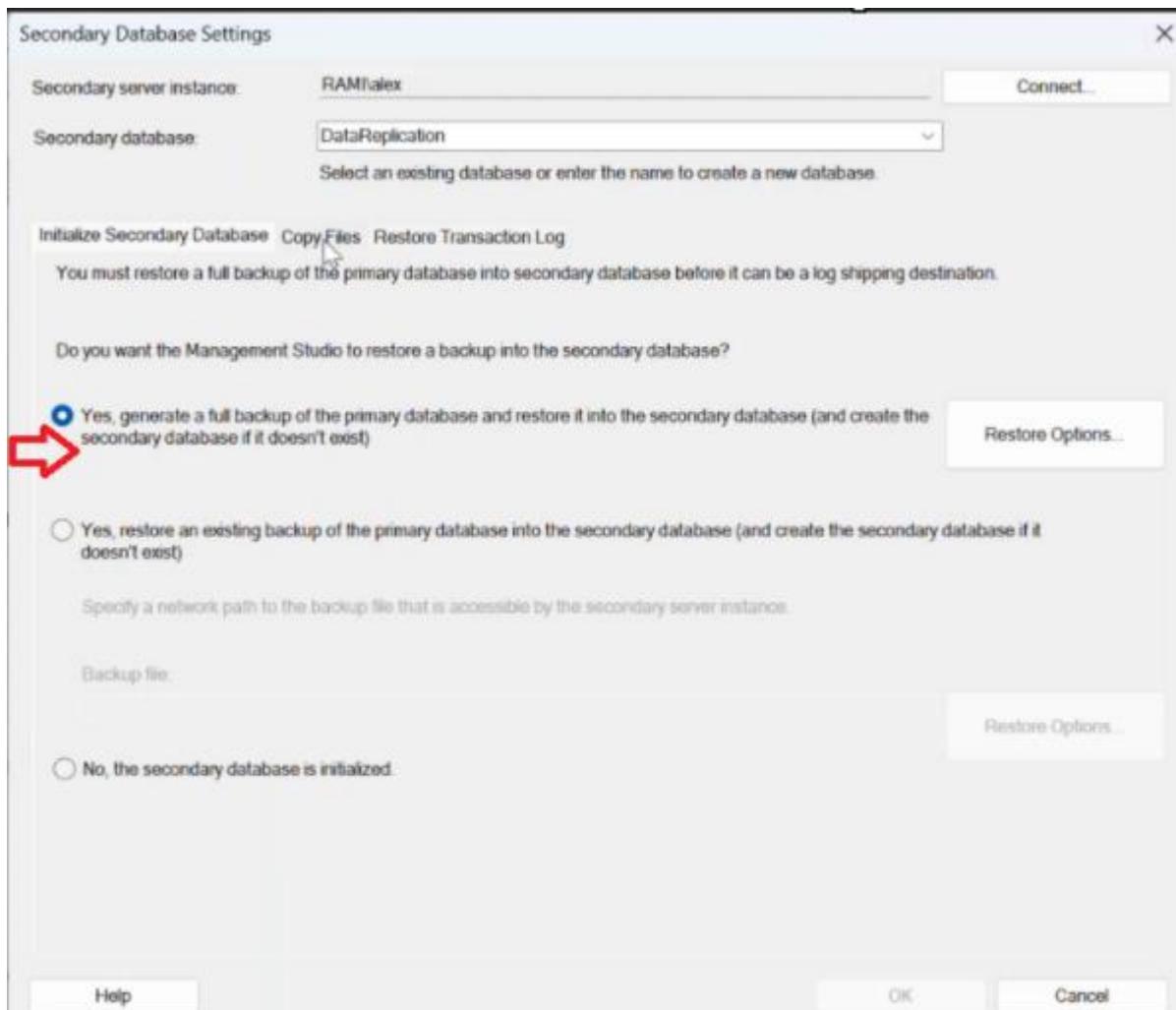
No, the secondary database is initialized.

ولا عایزني اعملک Backup من ال Primary واحظهولک ف ال Secondary

لو اه هختار

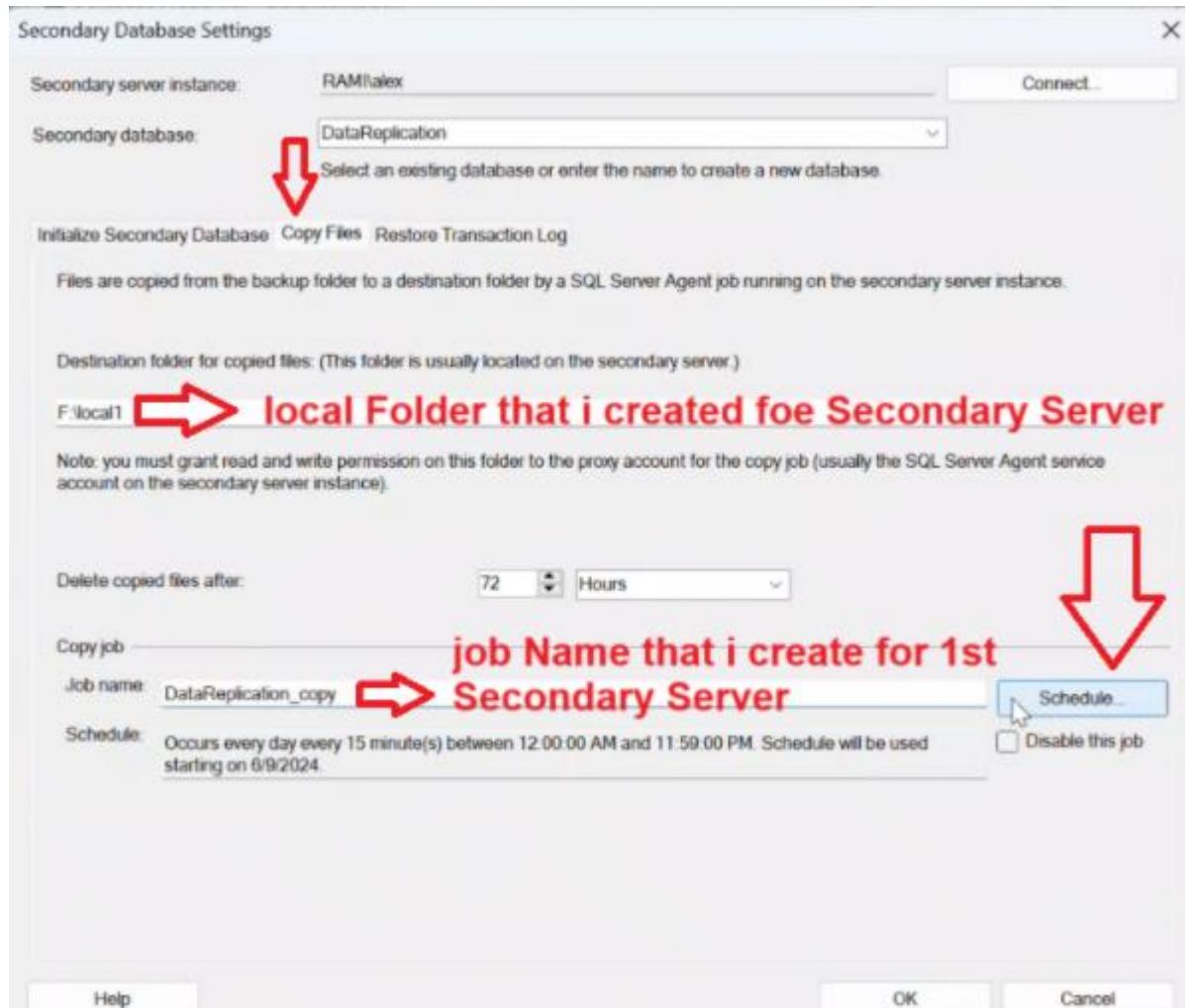
Yes, generate a full backup of the primary database and restore it into the secondary database (and create the secondary database if it doesn't exist)

بس انا طبعا هختار الاختيار الثاني
لأن ال Primary Database ميعرفش حاجة عن ال Secondary ف هختار كده



بعد كده اقوله ال local job وال Restore job

نبدأ بال local job



دي



ال local Folder اللي هتعمل job على ال Secondary Server ف ال Secondary Server اللي انا عملته لل

F:\local1

واخلي ال job دي ت Run كل ربع ساعة برضو

New Job Schedule

Name: DefaultCopyJobSchedule

Schedule type: Recurring Enabled

One-time occurrence

Date: 6/ 9/2024 Time: 2:34:25 PM

Frequency

Occurs: Daily

Recurs every: 1 day(s)

Daily frequency

Occurs once at: 12:00:00 AM
 Occurs every: 15 minute(s) Starting at: 12:00:00 AM Ending at: 11:59:00 PM

Duration

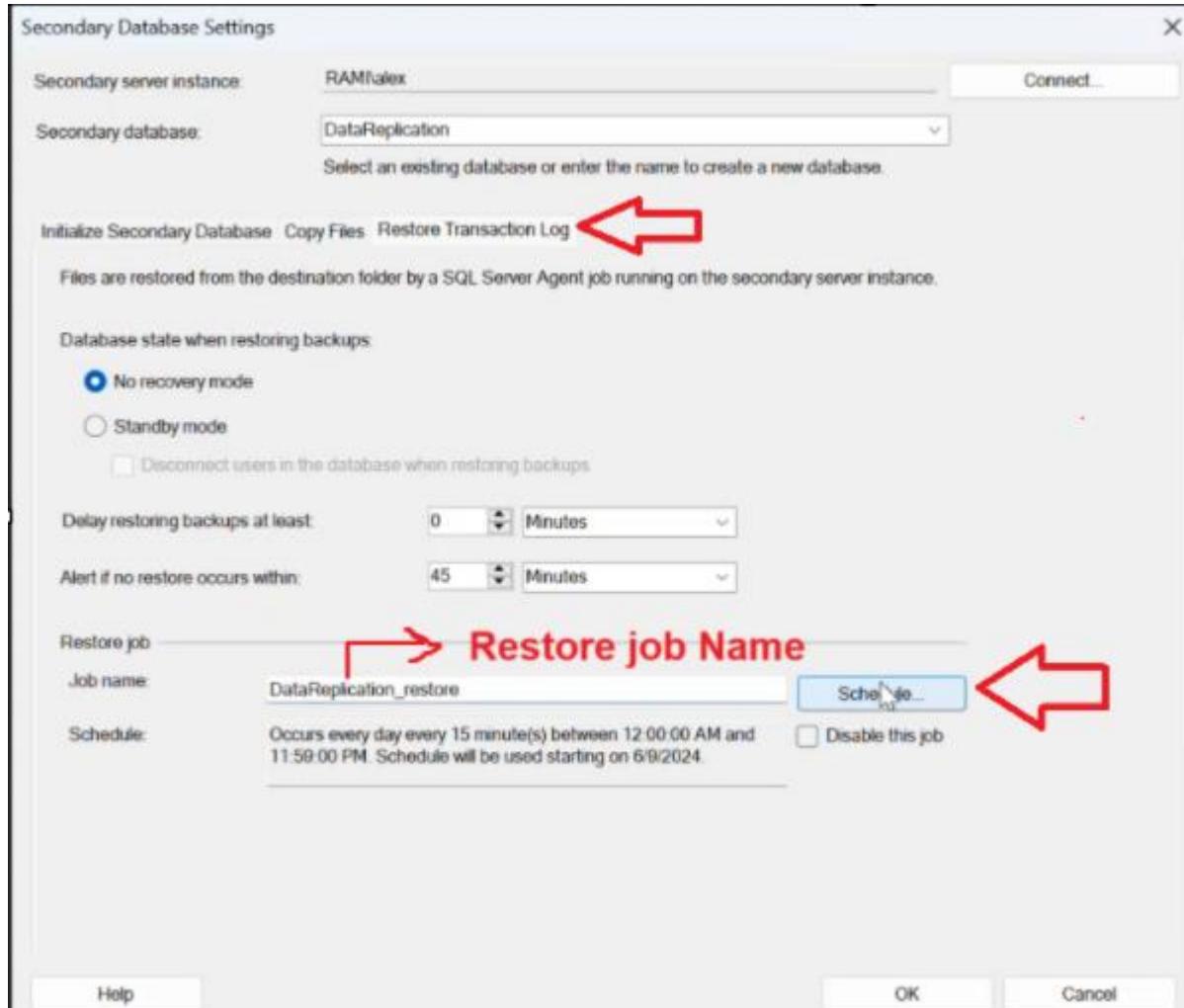
Start date: 6/ 9/2024 End date: 6/ 9/2024
 No end date:

Summary

Description: Occurs every day every 15 minute(s) between 12:00:00 AM and 11:59:00 PM. Schedule will be used starting on 6/9/2024.

OK Cancel Help

واعمل job تانية لل Restore



واخلي ال job دي ت Run كل ربع ساعة برضو

New Job Schedule

Name: DefaultRestoreJobSchedule

Schedule type: Recurring Enabled

One-time occurrence

Date: 6/ 9/2024 Time: 2:34:42 PM

Frequency

Occurs: Daily

Recur every: 1 day(s)

Daily frequency

Occurs once at: 12:00:00 AM
 Occurs every: 15 minute(s) Starting at: 12:00:00 AM Ending at: 11:59:00 PM

Duration

Start date: 6/ 9/2024 End date: 6/ 9/2024 No end date

Summary

Description: Occurs every day every 15 minute(s) between 12:00:00 AM and 11:59:00 PM. Schedule will be used starting on 6/9/2024.

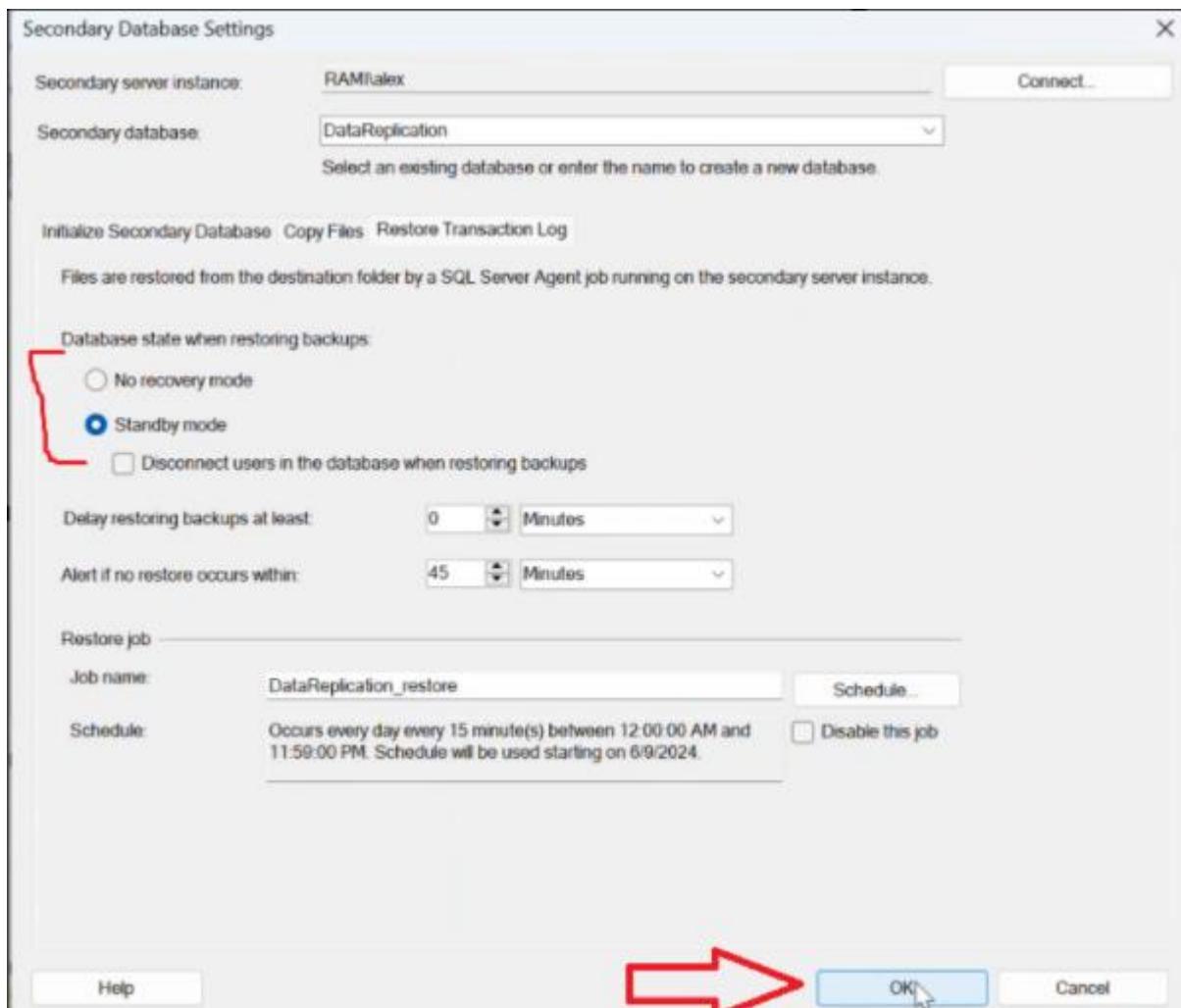
OK Cancel Help

بعد کده هختار ال Database دي تكون

No recovery mode

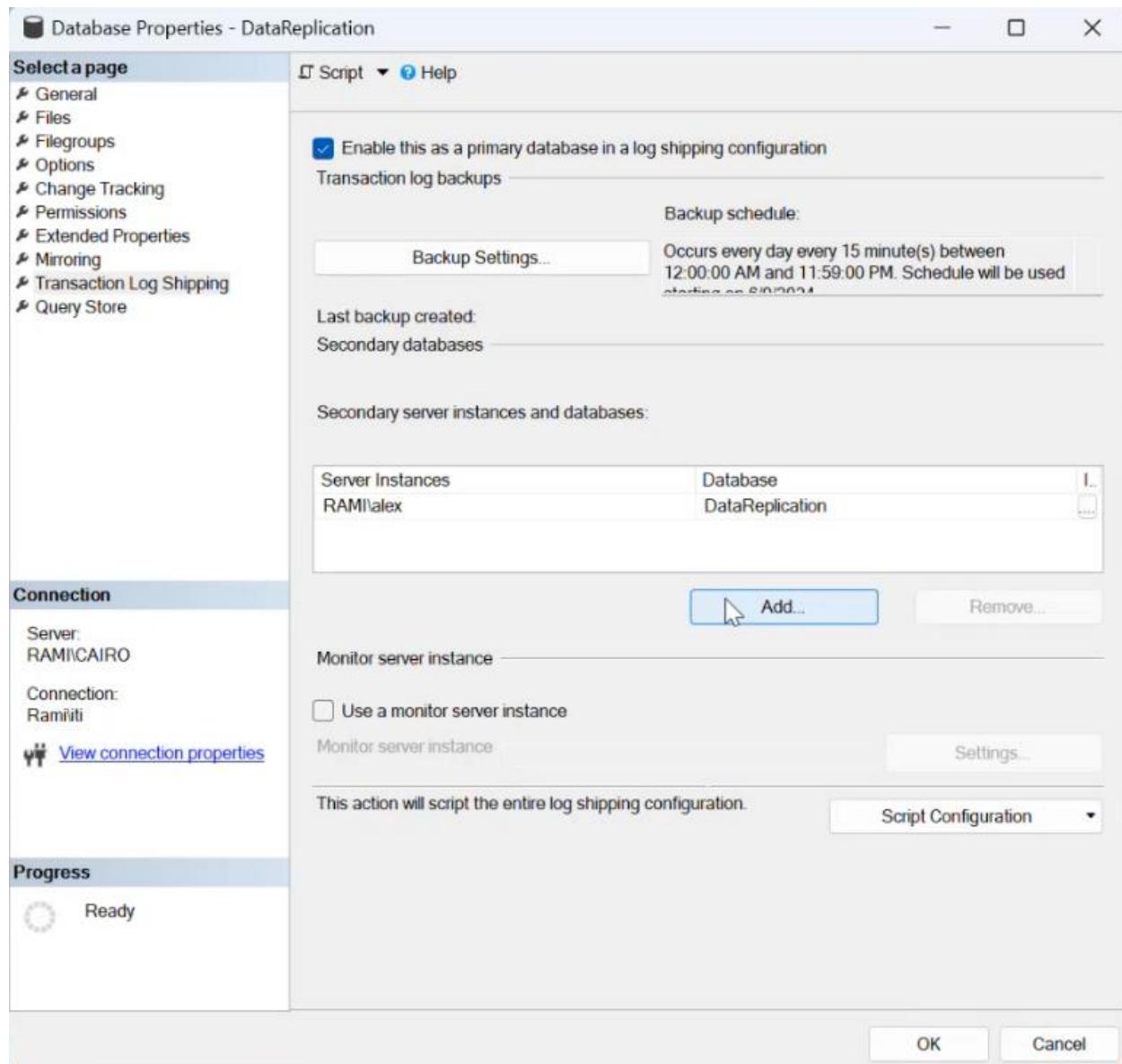
و لا

Standby mode

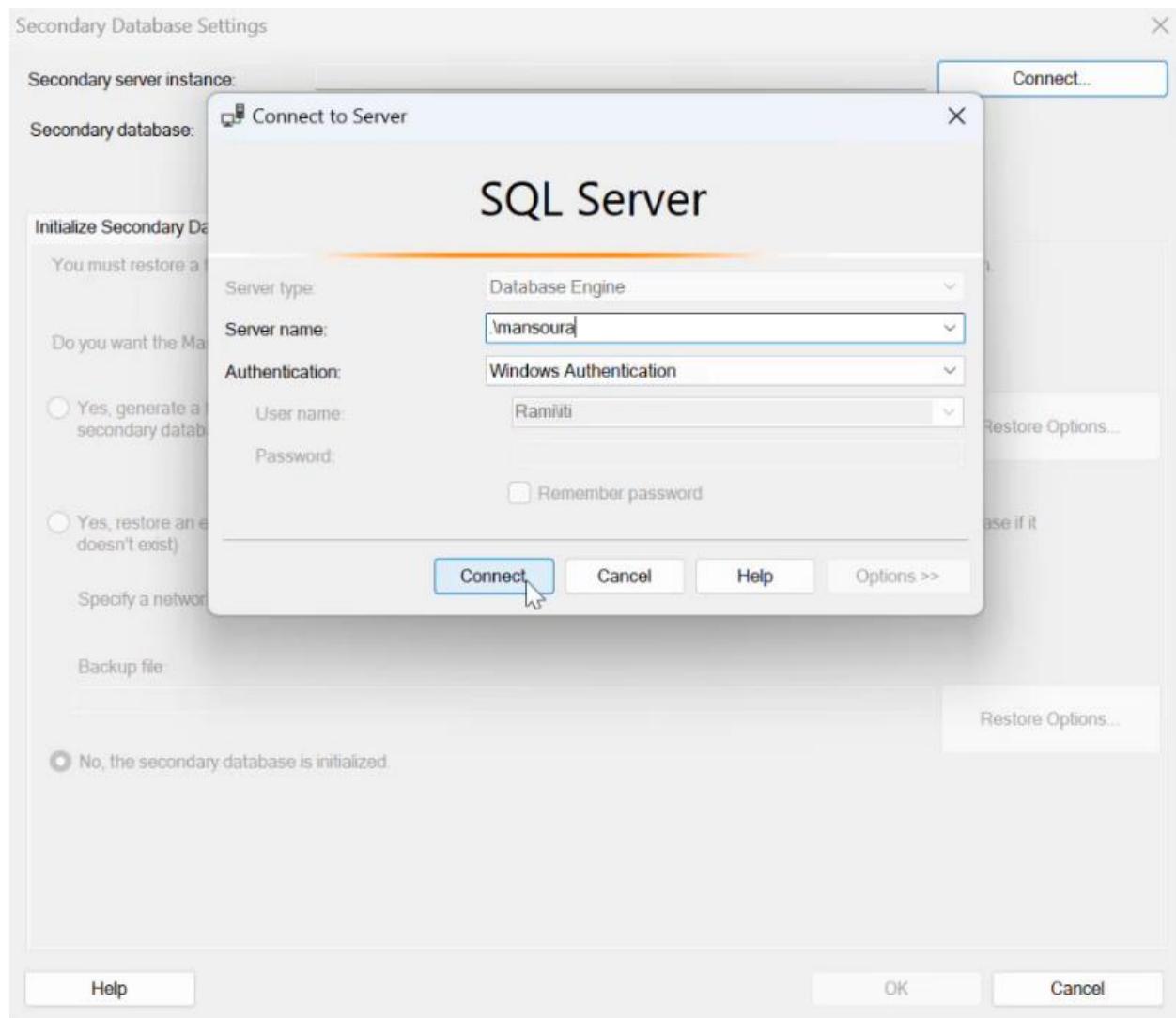


ف عملناها هنا مثلا Standby

بعد كده نختار ال Secondary Server الثاني



وهنطبق عليه نفس الخطوات



Secondary Database Settings X

Secondary server instance: RAM\mansoura Connect...

Secondary database: DataReplication ▼

Select an existing database or enter the name to create a new database.

Initialize Secondary Database Copy Files Restore Transaction Log

You must restore a full backup of the primary database into secondary database before it can be a log shipping destination.

Do you want the Management Studio to restore a backup into the secondary database?

Yes, generate a full backup of the primary database and restore it into the secondary database (and create the secondary database if it doesn't exist) Restore Options...

Yes, restore an existing backup of the primary database into the secondary database (and create the secondary database if it doesn't exist)

Specify a network path to the backup file that is accessible by the secondary server instance.

Backup file:

Restore Options...

No, the secondary database is initialized.

Help OK Cancel

Secondary Database Settings X

Secondary server instance: RAM\mansoura Connect...

Secondary database: DataReplication ▼
Select an existing database or enter the name to create a new database.

Initialize Secondary Database Copy Files Restore Transaction Log ▼

Files are copied from the backup folder to a destination folder by a SQL Server Agent job running on the secondary server instance.

Destination folder for copied files: (This folder is usually located on the secondary server.)
G:\Local2

Note: you must grant read and write permission on this folder to the proxy account for the copy job (usually the SQL Server Agent service account on the secondary server instance).

Delete copied files after: 72 ▼ Hours ▼

Copy job

Job name: DataReplication_copy Schedule...

Schedule: Occurs every day every 15 minute(s) between 12:00:00 AM and 11:59:00 PM. Schedule will be used starting on 6/9/2024. Disable this job

Help OK Cancel

New Job Schedule

Name: DefaultCopyJobSchedule Jobs in Schedule

Schedule type: Recurring Enabled

One-time occurrence

Date: 6/ 9/2024 Time: 2:35:37 PM

Frequency

Occurs: Daily

Recurs every: 1 day(s)

Daily frequency

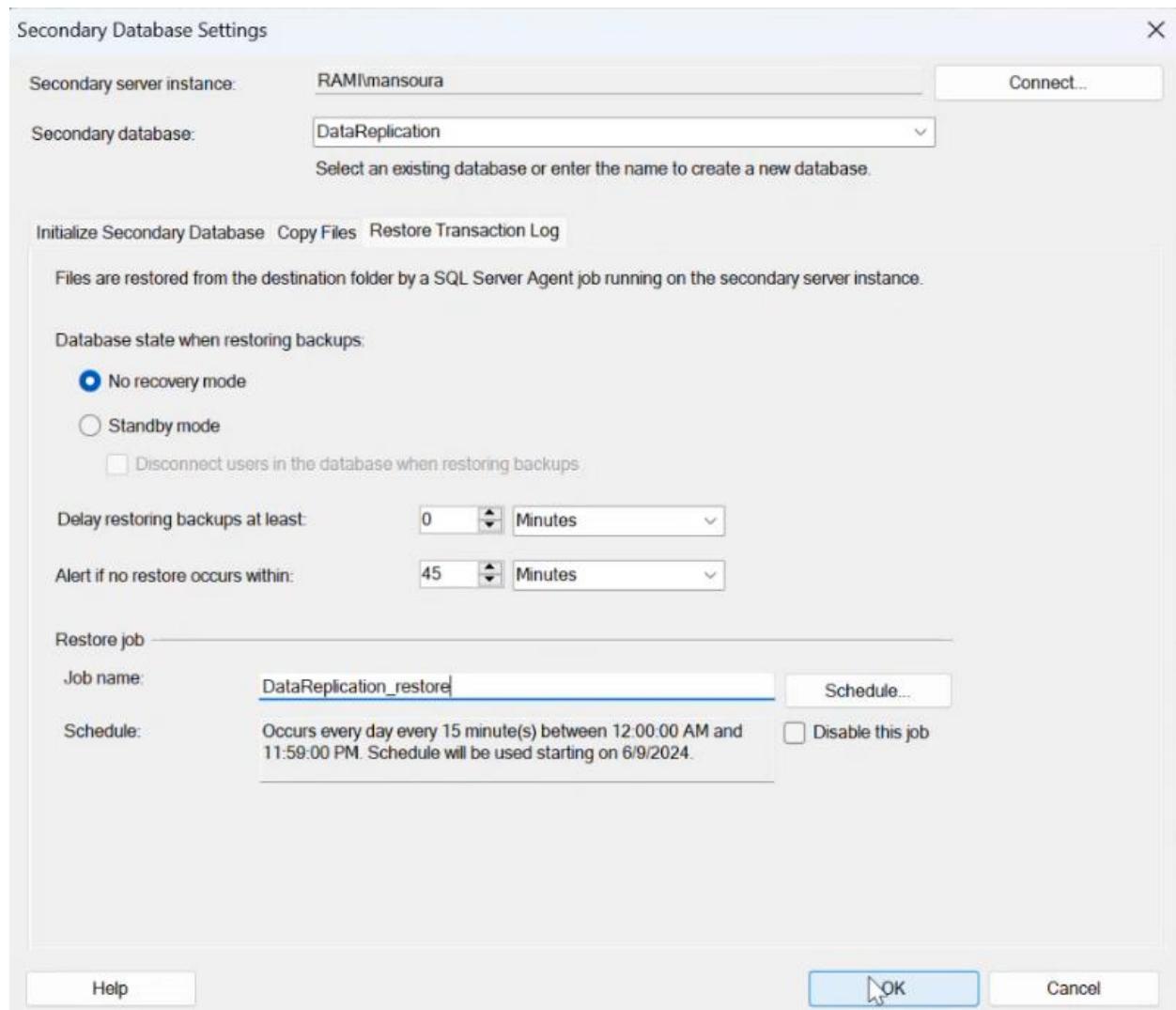
Occurs once at: 12:00:00 AM
 Occurs every: 15 minute(s) Starting at: 12:00:00 AM Ending at: 11:59:00 PM

Duration

Start date: 6/ 9/2024 End date: 6/ 9/2024 No end date:

Summary

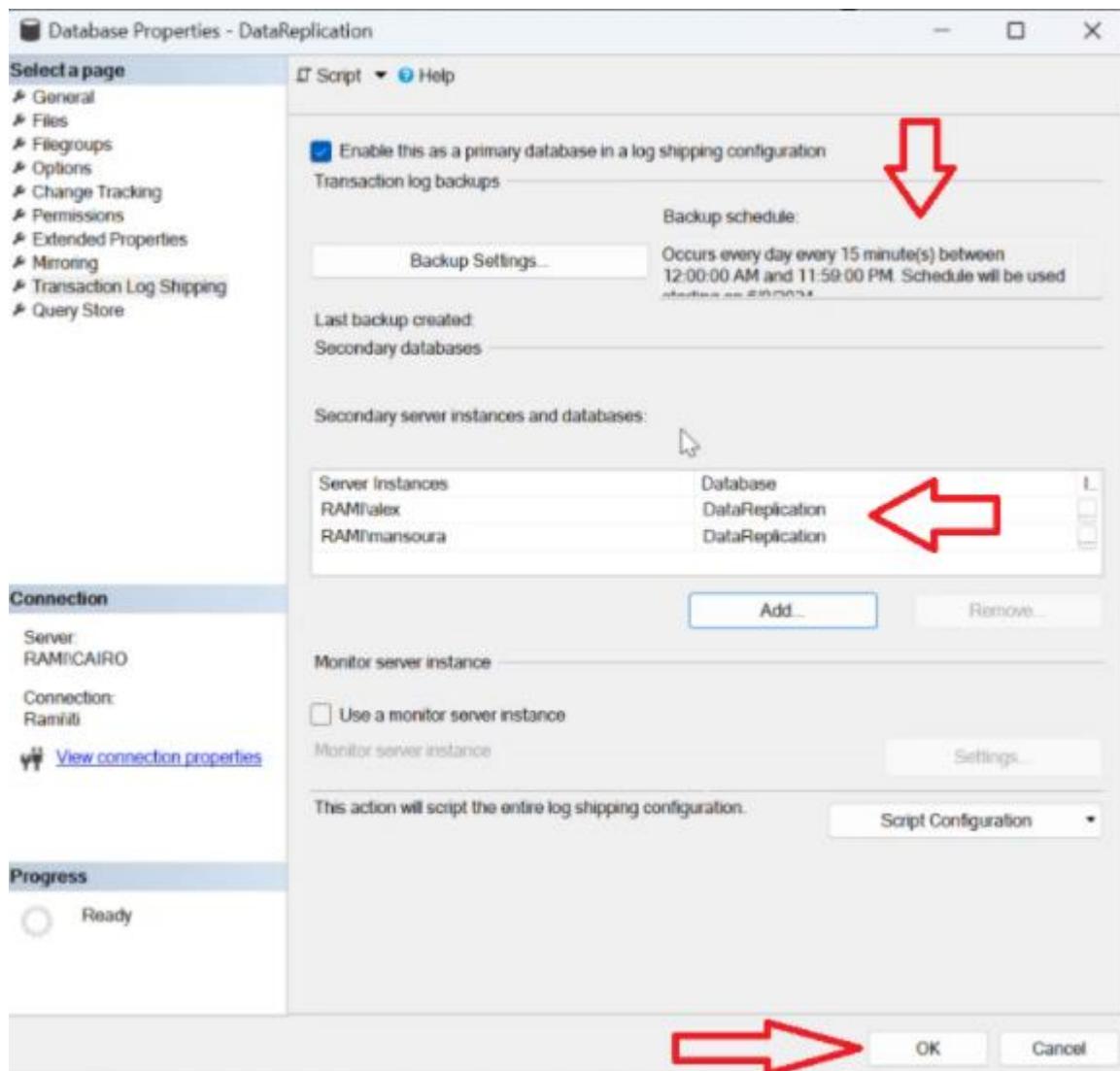
Description: Occurs every day every 15 minute(s) between 12:00:00 AM and 11:59:00 PM. Schedule will be used starting on 6/9/2024.

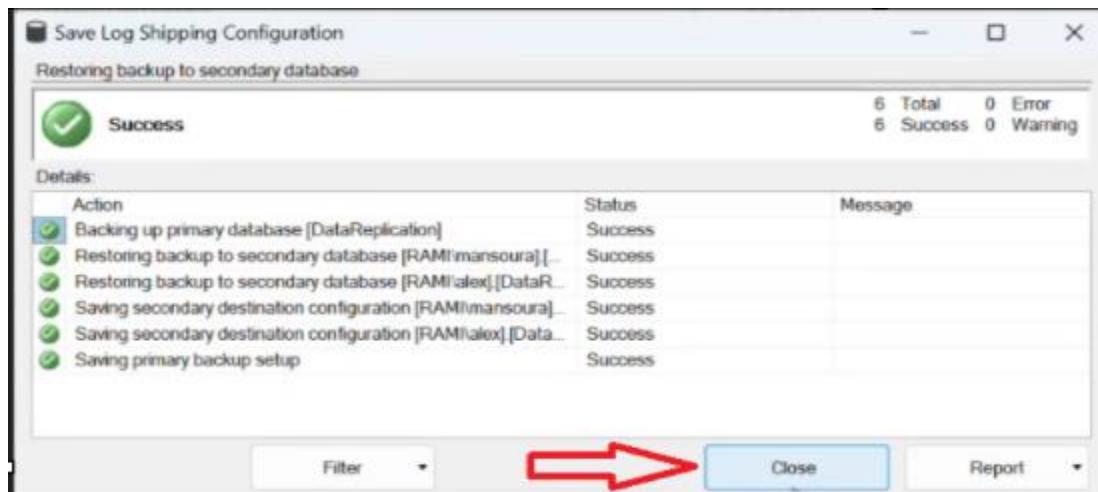


بس خلیت دی مثلا **No recovery mode**

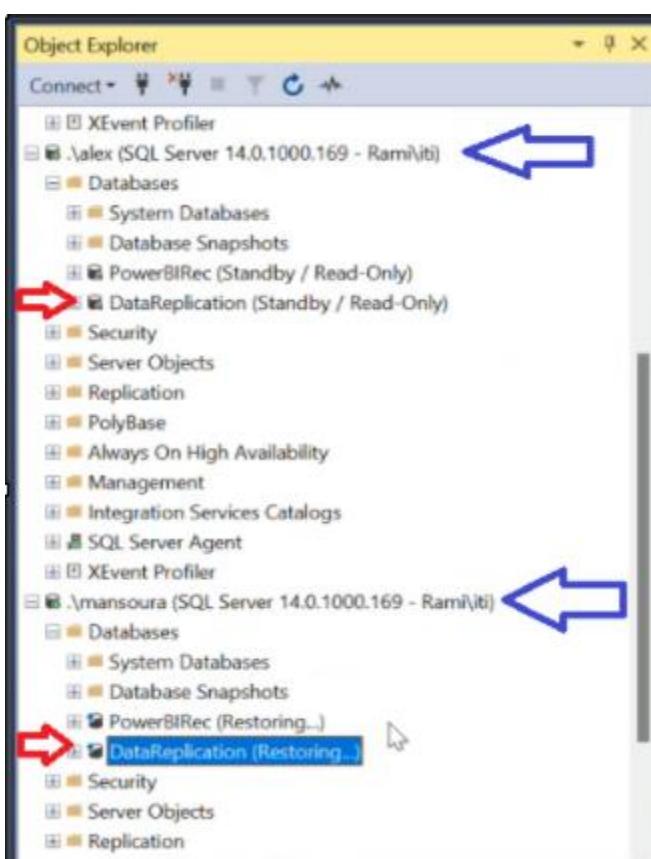
وکده خلاص بقی عندي واحد Primary

واتنين Secondary





ايه بقى تأثير اللي احنا عملناه



هلاقى حصل ف Create

ل Database Replication اسمها Database

طبعاً واحدة Standby زى م عملناهم No recovery mode

ف انا لو حبيت افتح ال Database من Alex Server

The screenshot shows the SSMS interface. The Object Explorer on the left lists various database objects under the database '.\alex'. The 'Tables' node is expanded, showing 'System Tables', 'FileTables', 'External Tables', 'Graph Tables', and 'dbo.employee'. The 'dbo.employee' table is selected. On the right, the 'dbo.employee' table is displayed in a grid. The columns are 'ID' and 'name'. The data rows are:

ID	name
1	NULL
2	NULL
3	NULL
4	NULL
5	NULL
*	NULL

هلاقي ال Data بشكل طبيعي

طيب نو عدلت ف ال Database الأصلية اللي ف ال Primary Server

The screenshot shows the SSMS interface. On the left, the Object Explorer tree view is expanded to show the database structure under 'Δcairo'. Under 'Tables', the 'dbo.employee' table is selected. On the right, the 'dbo.employee' table is displayed in a grid format with the following data:

ID	name
1	NULL
2	NULL
3	NULL
4	NULL
5	NULL
6	NULL
7	NULL
**	NULL

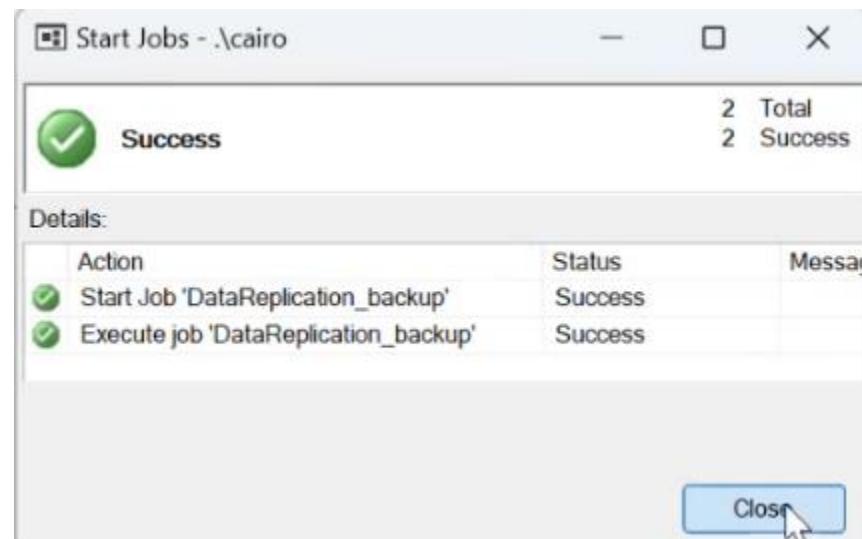
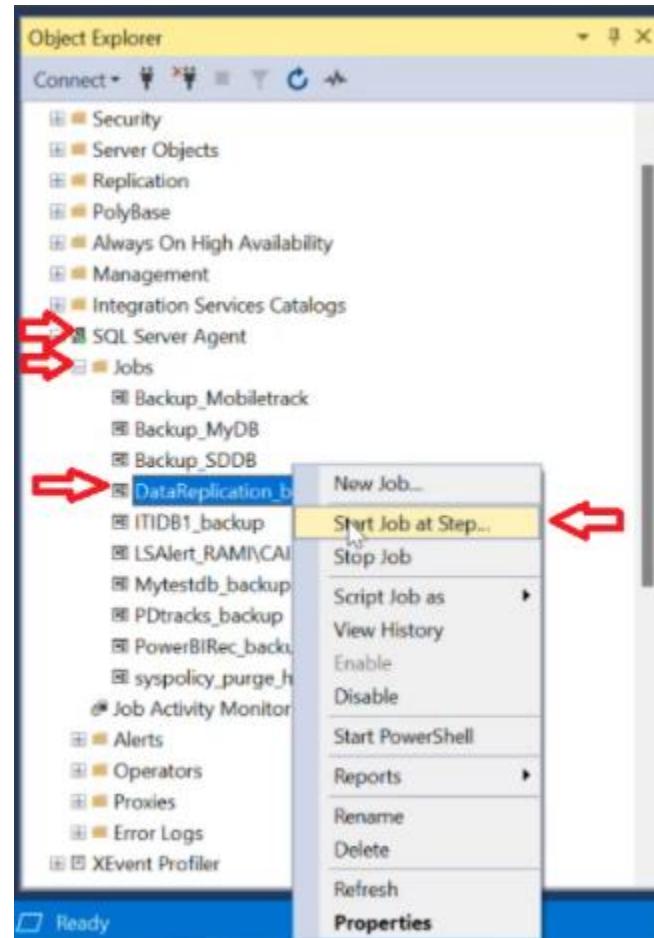
وزودت ال 2 rows دول

هل هتسمع ف ال 2 Secondary Servers الثانيين ؟

لأ لما ال job ت Run الأول (كمان ربع ساعة)

طيب خلينا احنا هنا نـ Run ال job (Manually) عشان نشوف النتيجة دلوقتني

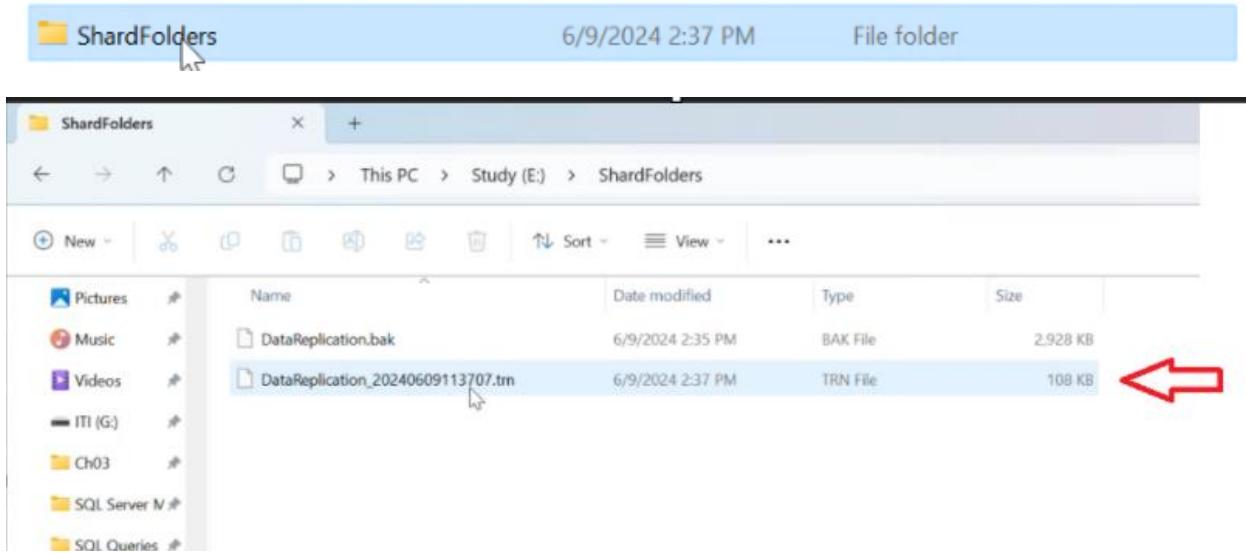
ف هنروح لل Primary Server job اللي عملناها ف ال Run ونعملها



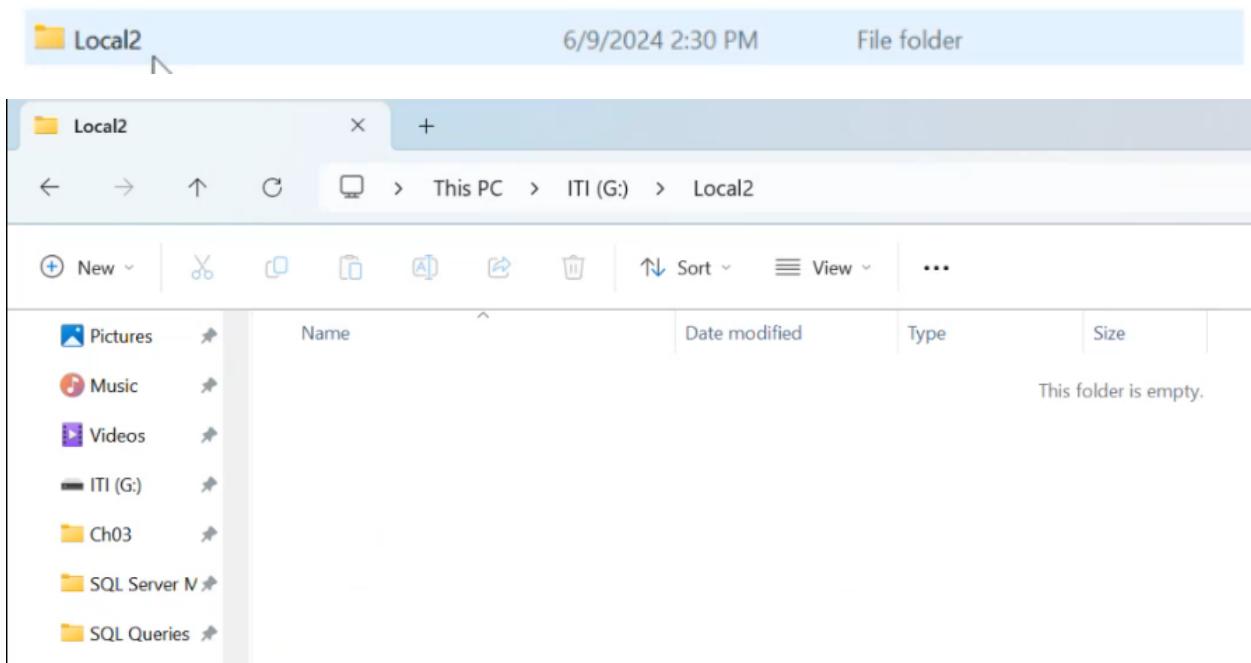
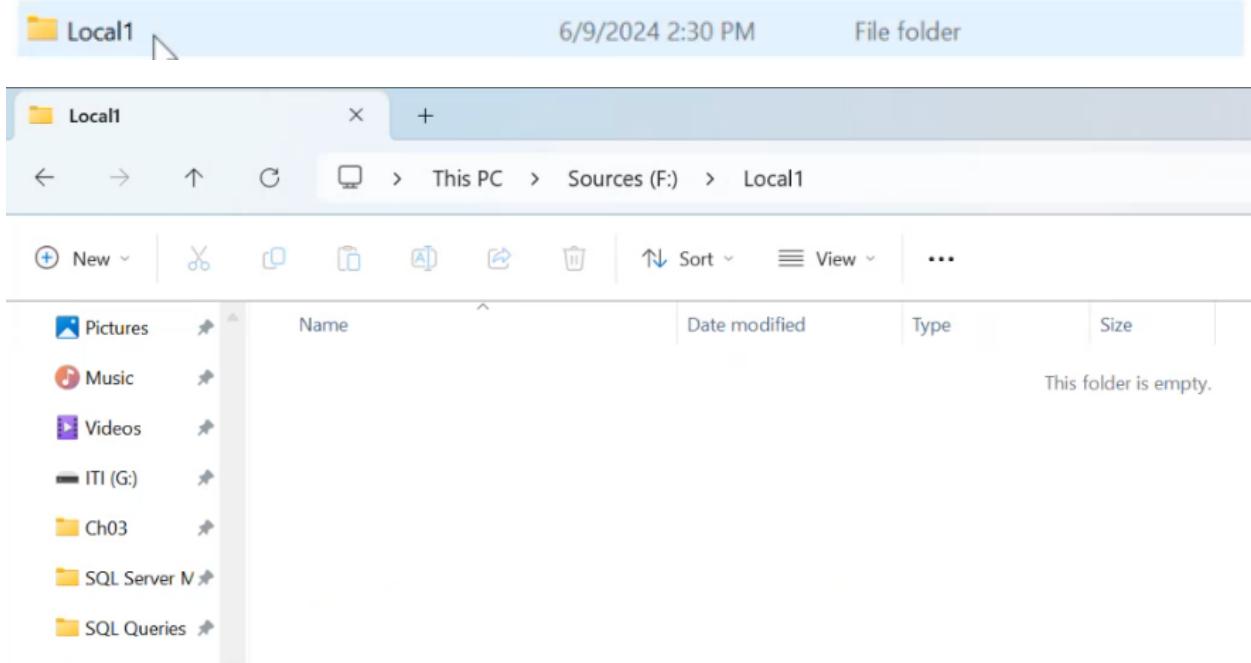
ف المفروض ال job

هتاخد ال 2 rows الجداد وتعمل File جوا ال Shared Folder

ف لو بصيت علي ال Shared Folder هلاقيه كده



وطبعاً ال 2 بقى 2 Secondary servers Folders نسه فاضيين



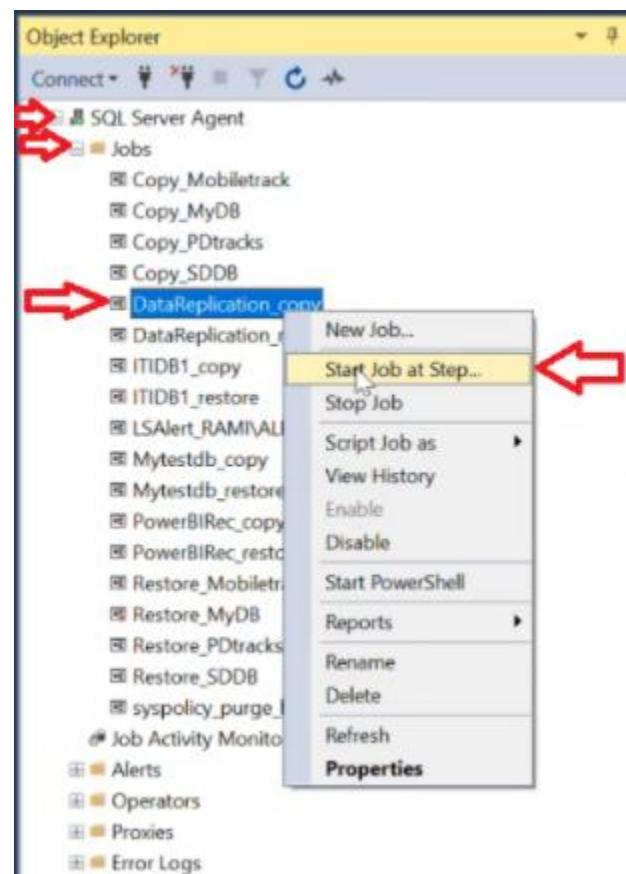
طيب بعد كده هروح علي اول (Alex) Secondary Server

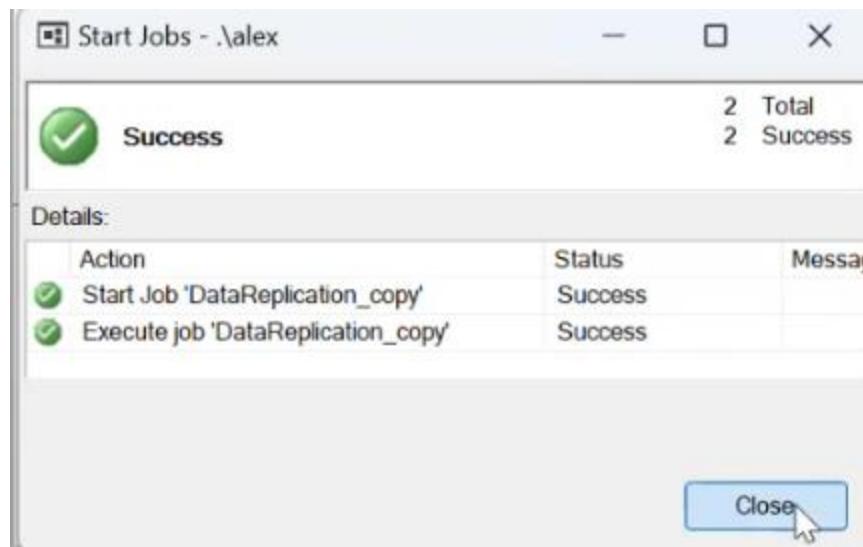
واعمل ال 2 jobs

الأول هعمل ال Copy job

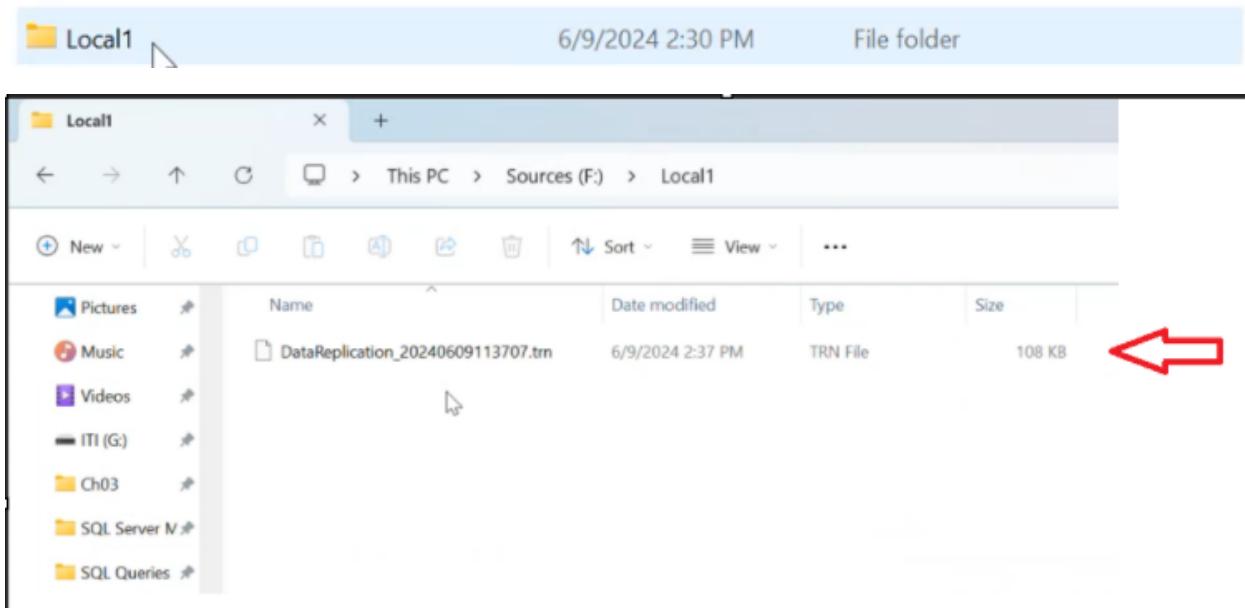
بعد كده هعمل ال Restore job

ف دي اول (Copy job) job

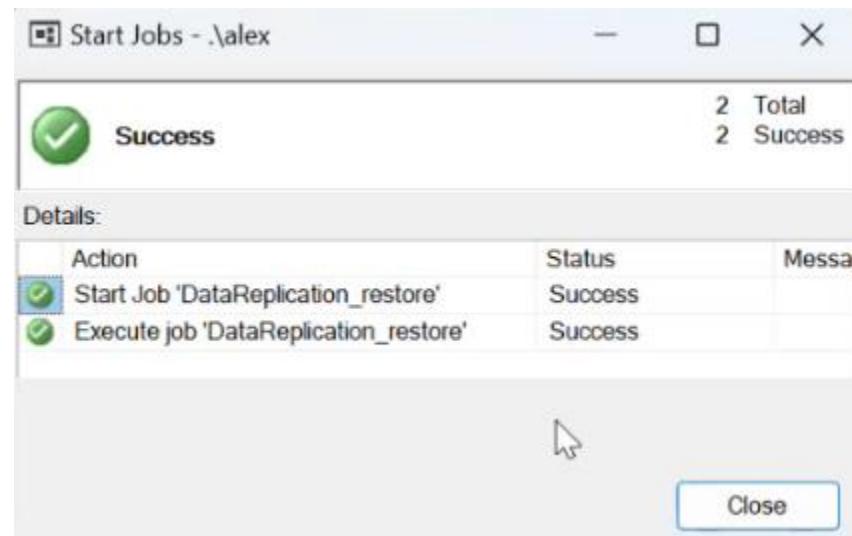
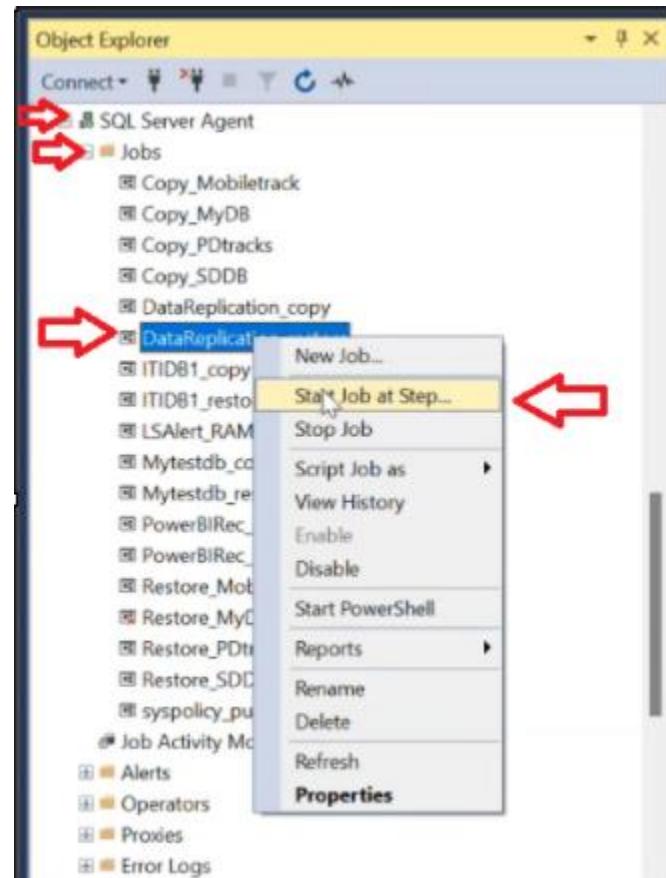




ف ده هيُنقال ال File اللي اتعمل فوق ف ال Shared Folder ل local1 Folder

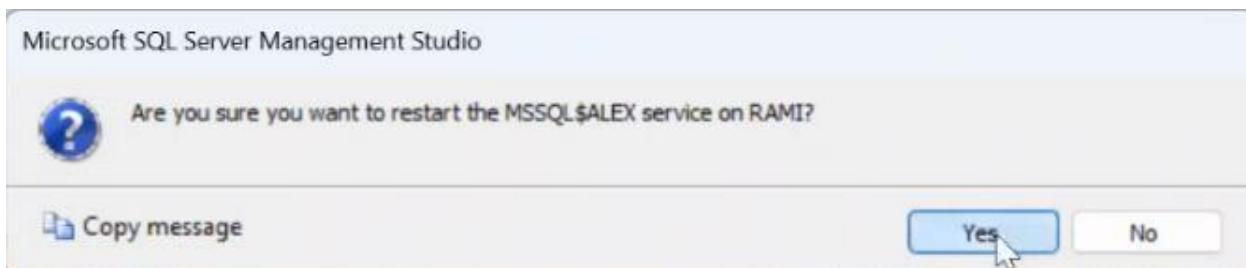
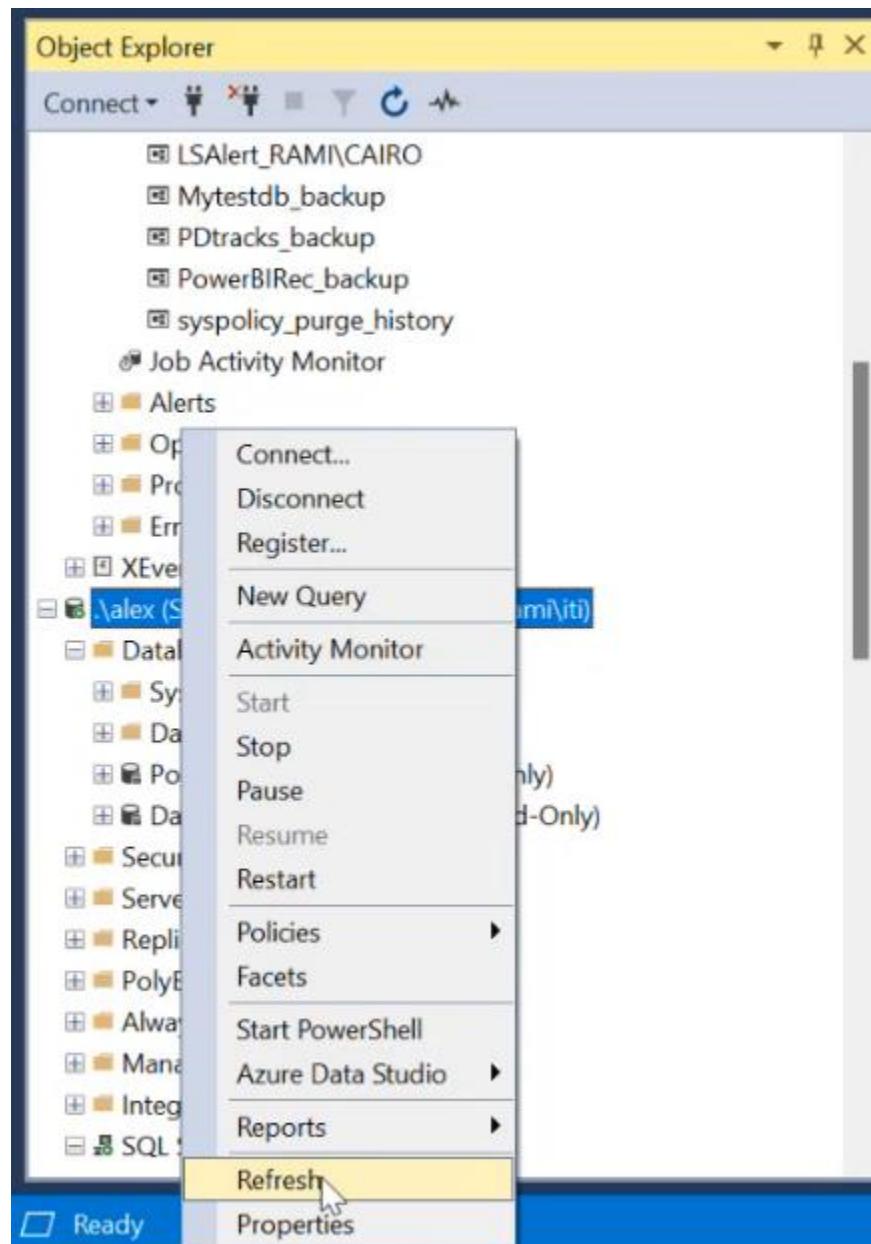


بعد كده نعمل تاني (Restore job) job

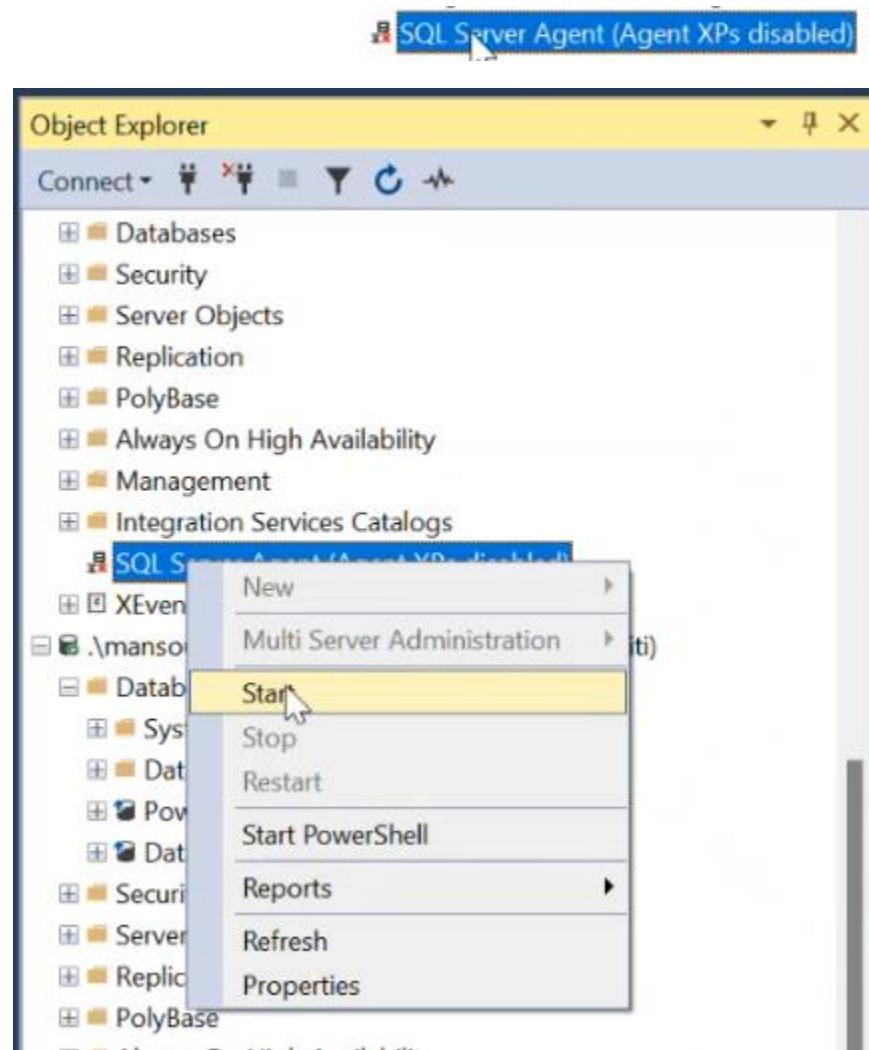


ال job دی هتاخد ال File اللي لسه منقول علي local1 Folder وتعمله Restore علي ال Database اللي ف (Alex Server)

واديه واحدة Refresh لـ Server



واعمل لـ Enable



ف لو حبيت دلوقتي ابص على Database من جوا ال Table اللي ف (Alex)
هلاقيها ظهرت بال 2 rows الجداد

The screenshot shows the SSMS interface. On the left, the Object Explorer pane displays various databases and objects. In the center-right, a table named 'dbo.employee' is shown in the 'RAMI\ALEX.DataRe...on' database. The table has two rows:

ID	name
1	NULL
2	NULL

وهذا برضو على ال Secondary Server الثاني (Mansoura)

واسلا ال jobs هتعمل كل ده (Automatic)

بعد الوقت اللي انا حددته (ربع ساعة)

بس انا حبيت اطلع النتائج دلوقتي واشوف اللي حصل

ف عملت job Run لـ (Manually)

ف انا كده معايا ال Primary Server و 2 Replicate Servers