



LAB 2 - PHÂN QUYỀN TRUY CẬP CÁC ĐỐI TƯỢNG TRONG CSDL

BỘ MÔN: BẢO MẬT CƠ SỞ DỮ LIỆU

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TP. Hồ Chí Minh, tháng 4/2024

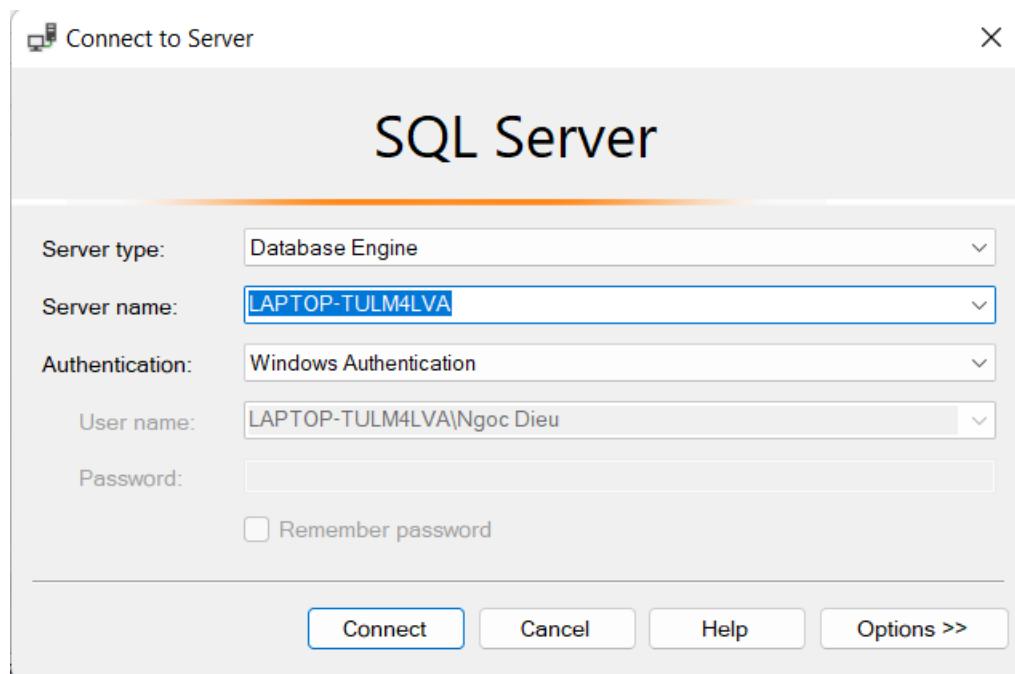
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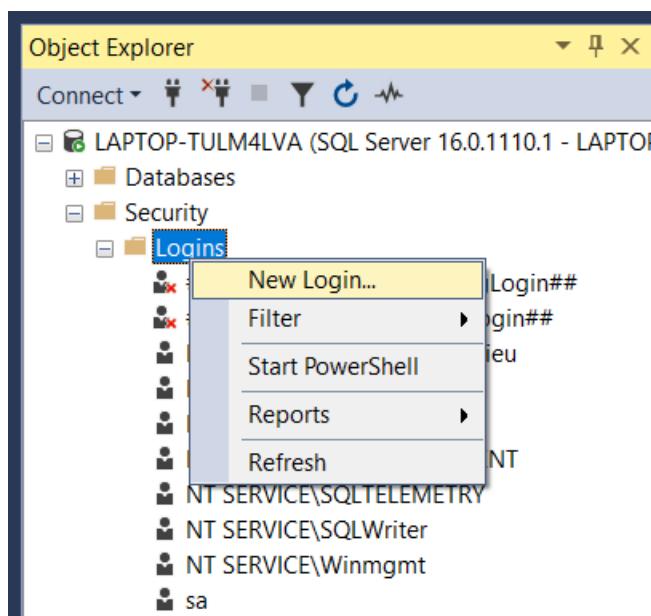
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I. Câu d

Trước hết, cần Login bằng tài khoản Windows Authentication hoặc SQL Server Authentication (nhưng phải có toàn quyền như Windows Authentication)



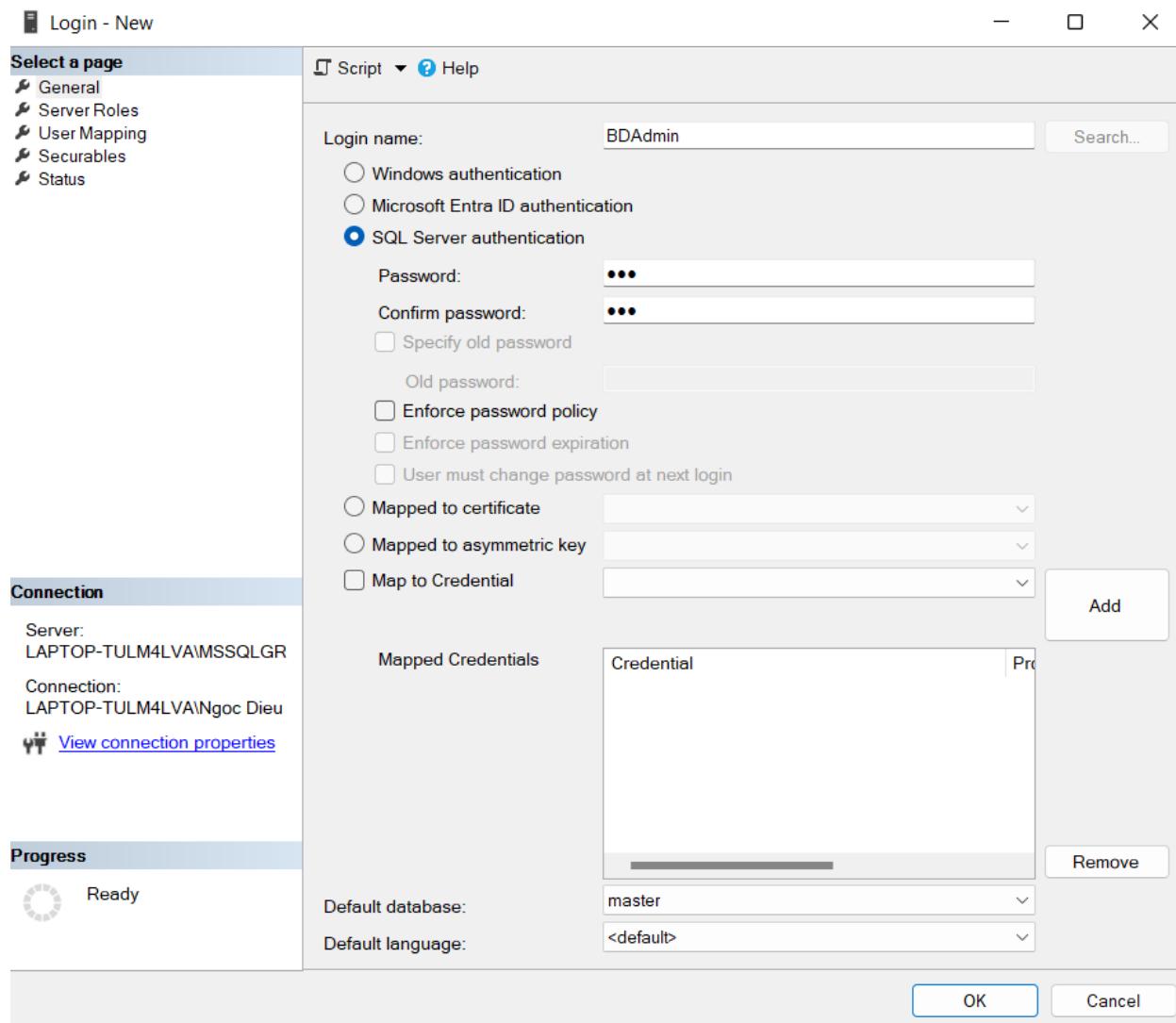
Vào **Security** => **Logins** => **New users** để bắt đầu thêm các user mới.



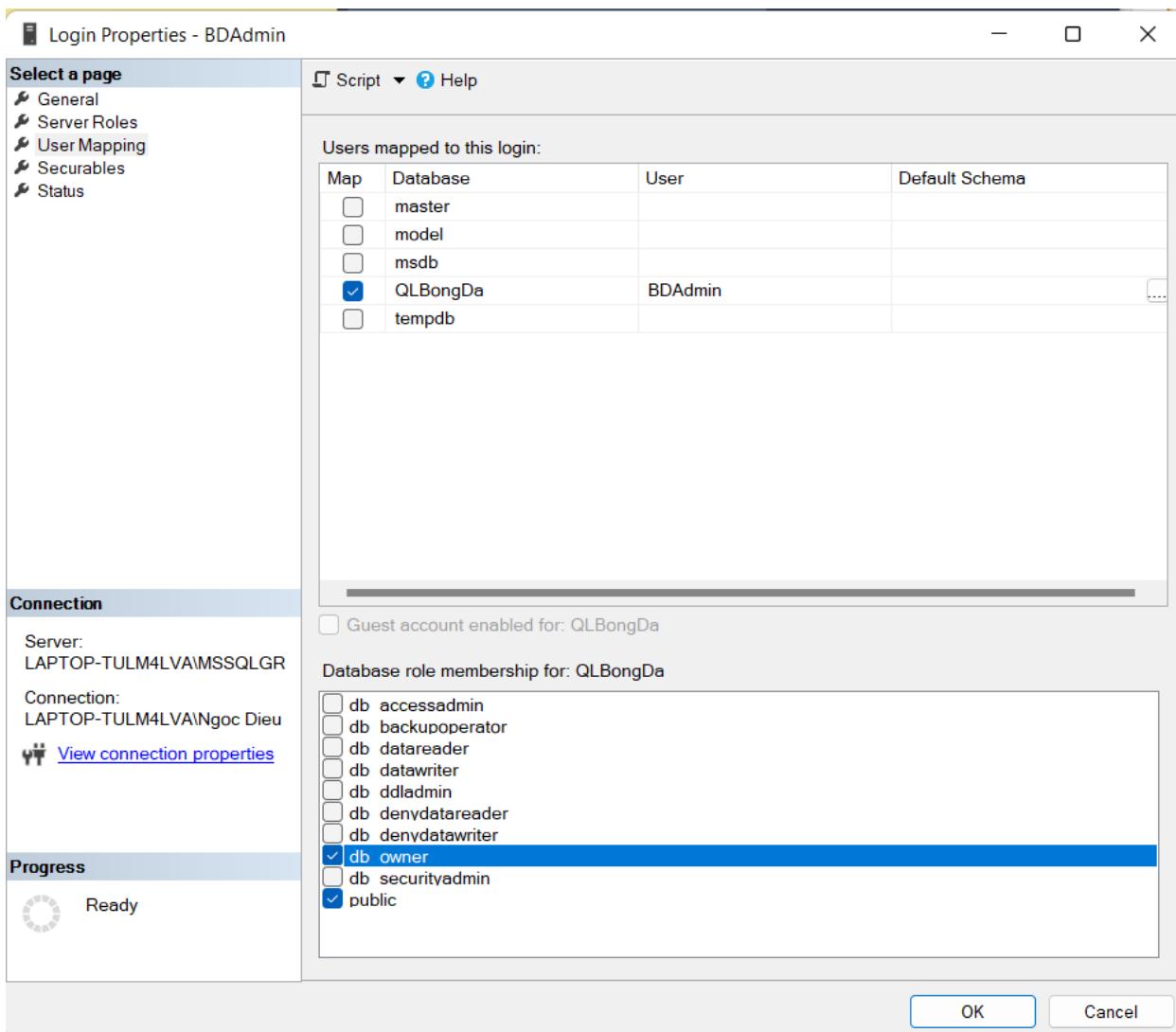
1. BDAdmin

1.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là SQL Server Authentication



B2: Nháy đúp vô phần user BDAdmin, chọn User Mapping, map với database QLBongDa với role db owner và public



1.2. Kiểm tra

SQL Server Management Studio window showing a successful query execution:

```

USE QLBongDa
--Test BDAdmin-
select* from CAUTHU
select* from TINH
insert into TINH(MATINH, TENTINH)
values
('LD', 'Lam Dong')

```

The Results pane displays the following data:

MACT	HOTEN	VITRI	NGAYSINH	DIACHI	MACLB	MAQG	SO
1	Nguyễn Vũ Phong	Tân rô	1990-02-20 00:00:00.000	NULL	BBD	VN	17
2	Nguyễn Công Vinh	Tân rô	1992-03-10 00:00:00.000	NULL	HAGL	VN	9
3	Trần Tân Tài	Tân rô	1989-11-10 00:00:00.000	NULL	BBD	VN	8
4	Phạm Hồng Sơn	Thủ môn	1991-06-10 00:00:00.000	NULL	HAGL	VN	1
5	Ronaldo	Tân rô	1989-12-12 00:00:00.000	NULL	SDR	BRA	7
6	Robinho	Tân rô	1989-10-12 00:00:00.000	NULL	SDR	BRA	8
7	Vidic	Hỗn vệ	1987-10-15 00:00:00.000	NULL	HAGL	ANH	3
8	Trần Văn Santos	Thủ môn	1990-10-21 00:00:00.000	NULL	BBD	BRA	1

Message bar: Query executed successfully.

SQL Server Management Studio window showing a successful query execution:

```

USE QLBongDa
--Test BDAdmin-
select* from CAUTHU
select* from TINH
insert into TINH(MATINH, TENTINH)
values
('LD', 'Lam Dong')

```

The Results pane displays the following message:

(1 row affected)

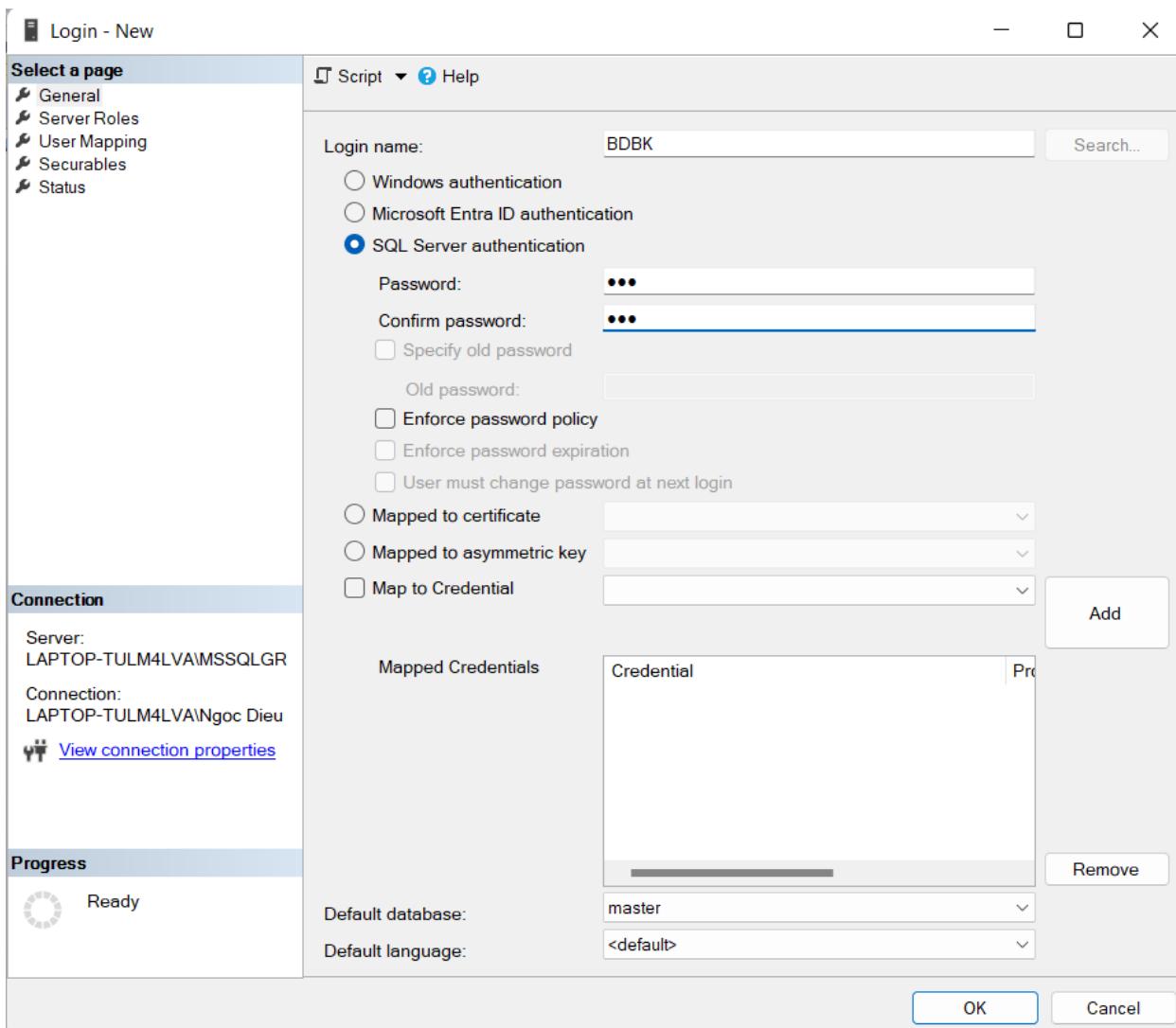
Completion time: 2024-04-12T22:16:30.4636851+07:00

Message bar: Query executed successfully.

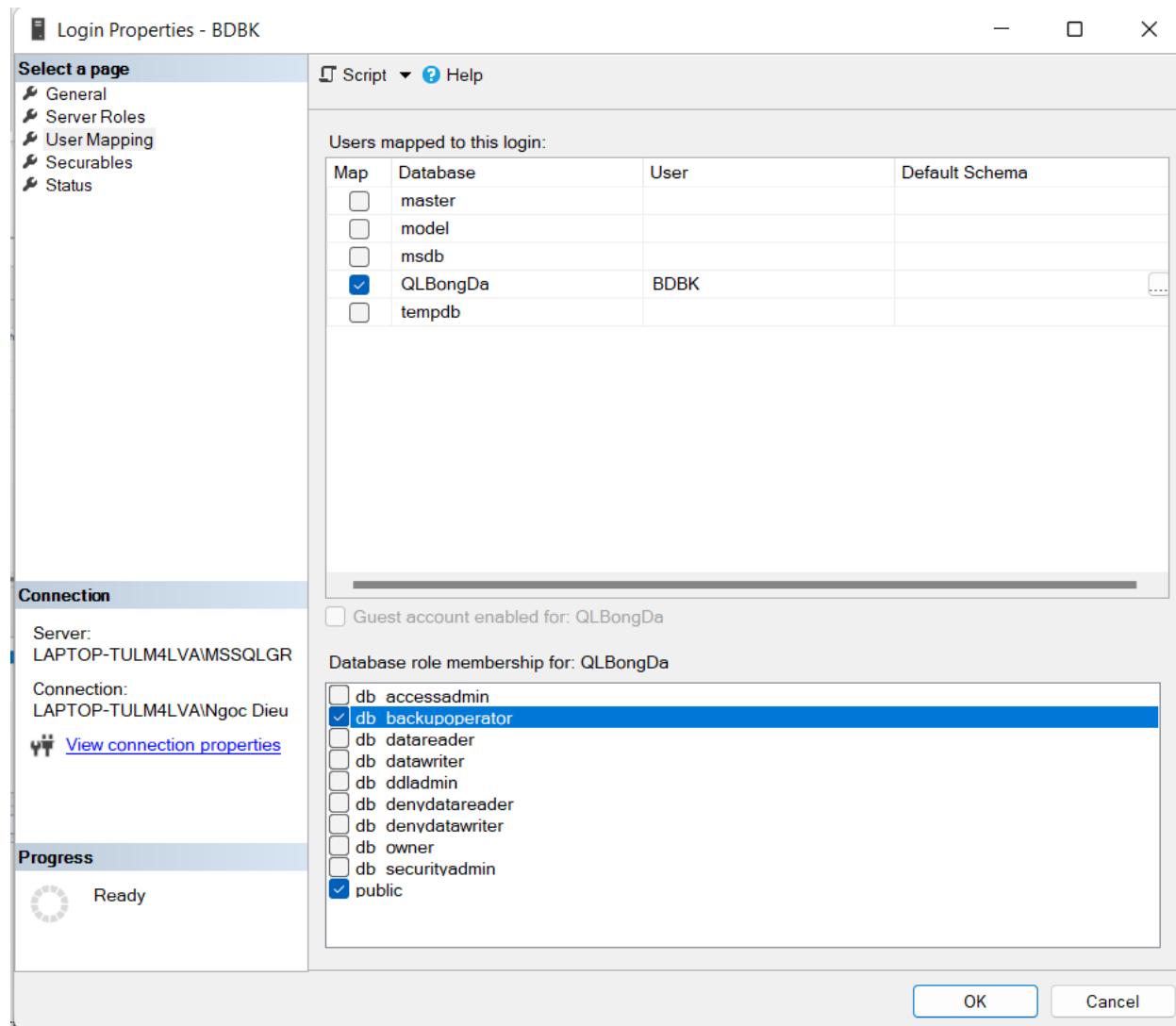
2. BDBK

2.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là **SQL Server Authentication**



B2: Nháy đúp vô phần **user BDBK**, chọn **User Mapping**, map với database **QLBongDa** với role **db backupoperator** và **public**



2.2. Kiểm tra

```

5
6 select* from TINH
7
8 insert into TINH(MATINH, TENTINH)
9 values
10 ('LD', 'Lam Dong')
11
12 --Test BDBK--
13 backup database QLBongDa
14 to disk = 'C:\LAB2\QLBongDa.bak'
15 with noformat, noinit, name=N'QLBongDa-Full Database Backup', skip, norewind, nounload, stats = 10
16 go
17

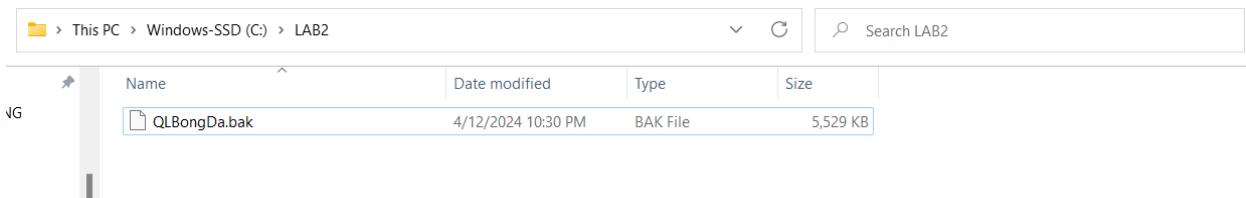
```

Messages

10 percent processed.
20 percent processed.
30 percent processed.
40 percent processed.
50 percent processed.
60 percent processed.
70 percent processed.
80 percent processed.
90 percent processed.
100 percent processed.
Processed 480 pages for database 'QLBongDa', file 'QLBongDa' on file 1.
Processed 1 pages for database 'QLBongDa', file 'QLBongDa_log' on file 1.
BACKUP DATABASE successfully processed 481 pages in 0.050 Seconds (177.132 MB/sec).

Completion time: 2024-04-12T22:30:51.1734869+07:00

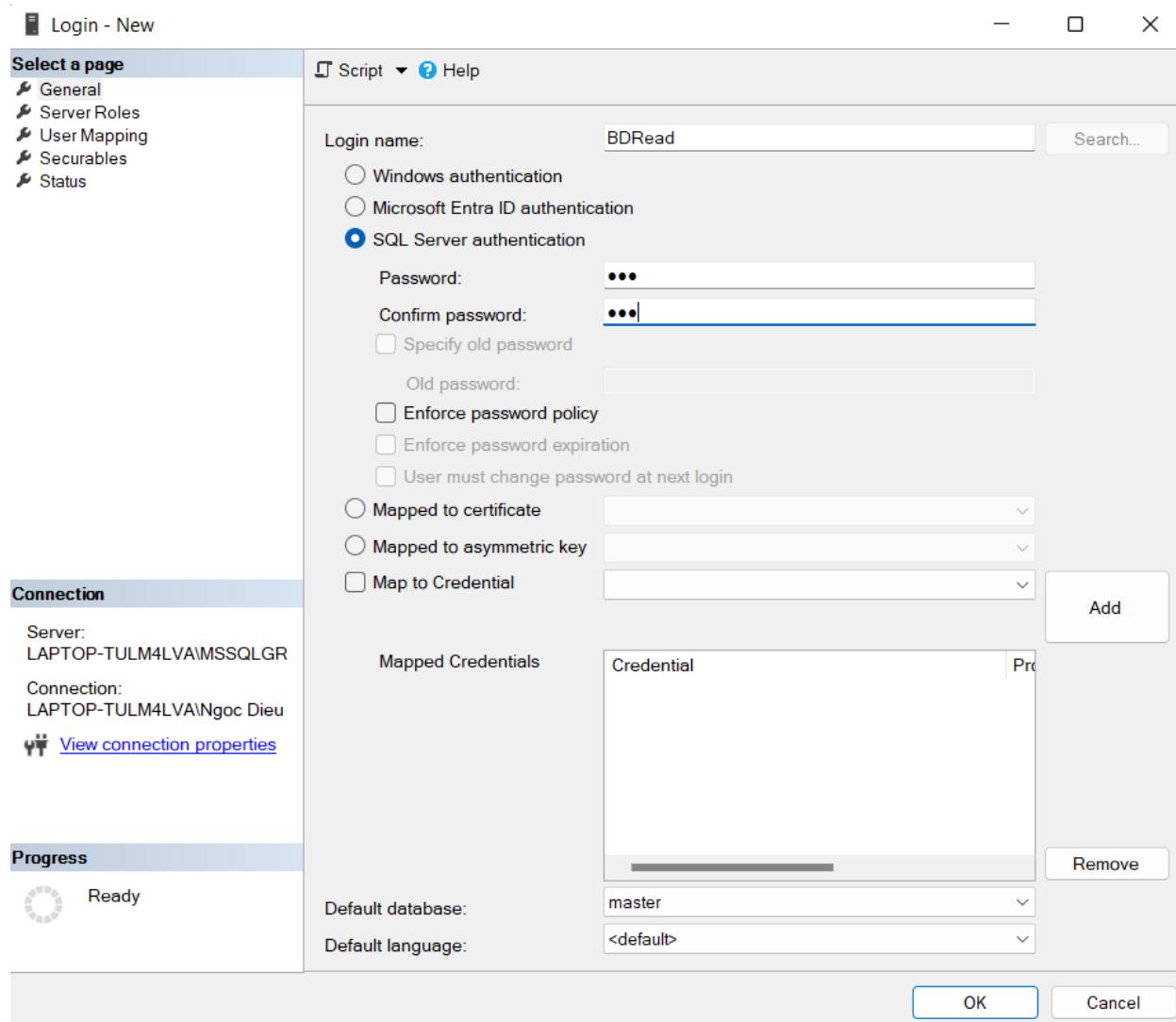
Query executed successfully.



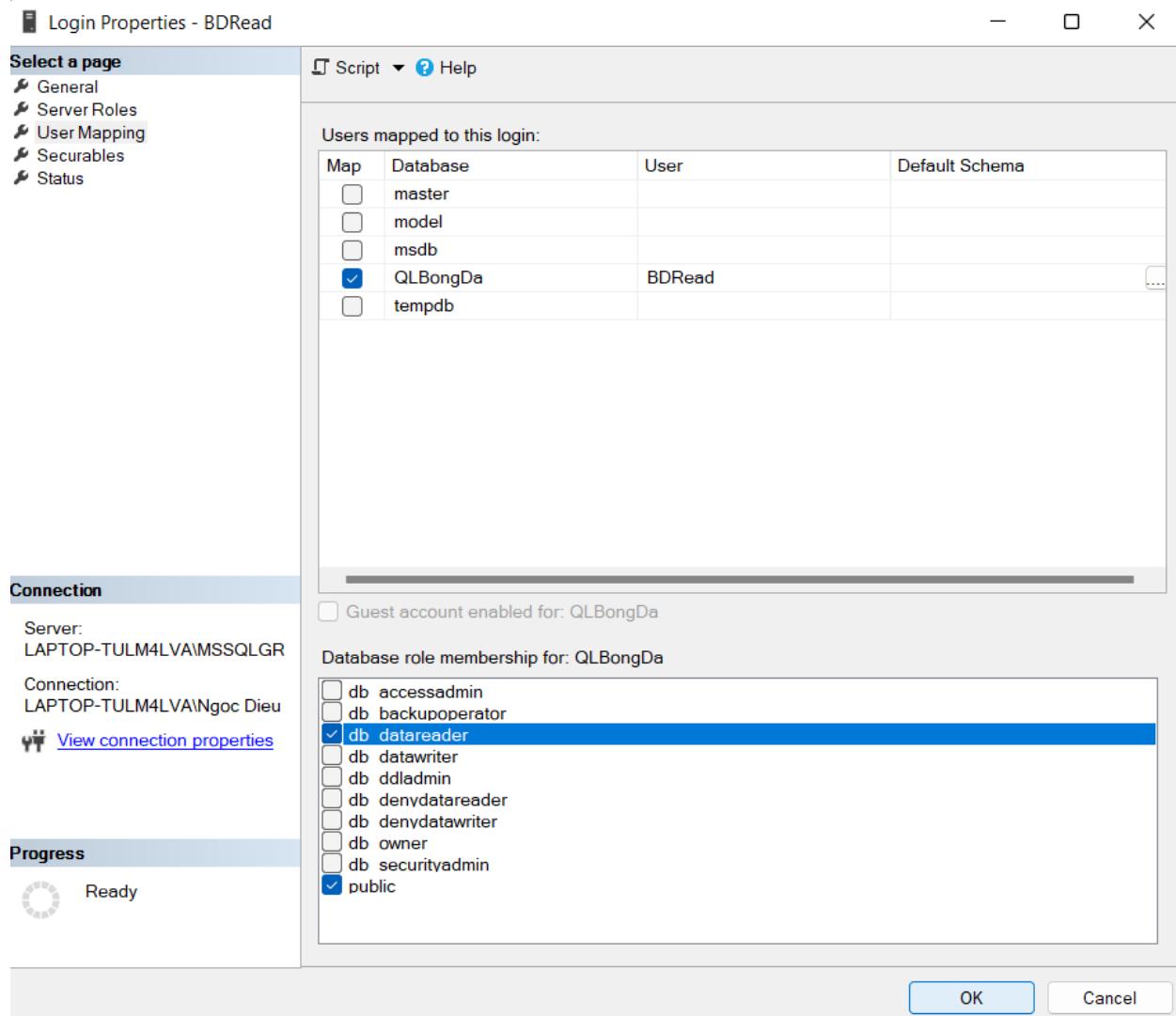
3. BDRead

3.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là SQL Server Authentication



B2: Nháy đúp vô phần user BDRead, chọn User Mapping, map với database QLBongDa với role db datareader và public



3.2. Kiểm tra

```

13  --Backup database QLBongDa
14  to disk = 'C:\LAB2\QLBongDa.bak'
15  with noformat, noinit, name='N'QLBongDa-Full Database Backup', skip, norewind, nounload, stats = 10
16  go
17
18  --Test BDRead--
19  select* from CAULACBO
20
21  select* from QUOCGIA
22
23  insert into TINH(MATINH, TENTINH)
24  values
25  ('NT', 'Nha Trang')
26
27  update CAULACBO set MACLB = 'HAGL'

```

Results grid: Messages

MACLB	TENTINH	MASAN	MATINH
BBD	BECAMEX BÌNH DƯƠNG	GD	BD
GDT	GẠCH ĐÔNG TÂM LONG AN	LA	LA
HAGL	HOÀNG ANH GIA LAI	PL	GL
KHH	KHATOCO KHÁNH HÒA	NT	KH
SDN	SHB SÀ NẴNG	CL	DN
TPY	THÉP PHÚ YÊN	TH	PY

Query executed successfully.

```

13  --Backup database QLBongDa
14  to disk = 'C:\LAB2\QLBongDa.bak'
15  with noformat, noinit, name='N'QLBongDa-Full Database Backup', skip, norewind, nounload, stats = 10
16  go
17
18  --Test BDRead--
19  select* from CAULACBO
20
21  select* from QUOCGIA
22
23  insert into TINH(MATINH, TENTINH)
24  values
25  ('NT', 'Nha Trang')
26
27  update CAULACBO set MACLB = 'HAGL'

```

Results grid: Messages

MAQD	TENDQ
ANH	Anh Quốc
BDN	Bồ Đào Nha
BRA	Brazil
ITA	Ý
TBN	Tây Ban Nha
THA	Thái Lan
VN	Việt Nam

Query executed successfully.

SQLQuery1.sql - ...ngDa (BDRead (66))

```

13  --backup database QLBongDa
14  to disk = 'C:\LAB2\QLBongDa.bak'
15  with noformat, noinit, name=N'QLBongDa-Full Database Backup', skip, norewind, nounload, stats = 10
16  go
17
18  --Test BDRead--
19  select* from CAULACBO
20
21  select* from QUOCGIA
22
23  insert into TINH(MATINH, TENTINH)
24  values
25  ('NT', 'Nha Trang')
26
27  update CAULACBO set MACLB = 'HAGL'

```

Messages

Msg 219, Level 14, State 5, Line 23
The INSERT permission was denied on the object 'TINH', database 'QLBongDa', schema 'dbo'.

Completion time: 2024-04-13T20:23:26.0324930+07:00

119 %

Query completed with errors.

SQLQuery3.sql - ...ngDa (BDRead (66))

```

19  select* from CAULACBO
20
21  select* from QUOCGIA
22
23  insert into TINH(MATINH, TENTINH)
24  values
25  ('NT', 'Nha Trang')
26
27  update CAULACBO set MACLB = 'HAGL'
28  where MASAN = 'PL' and MATINH = 'GL'
29

```

Messages

Msg 229, Level 14, State 5, Line 27
The UPDATE permission was denied on the object 'CAULACBO', database 'QLBongDa', schema 'dbo'.

Completion time: 2024-04-13T20:23:52.7449424+07:00

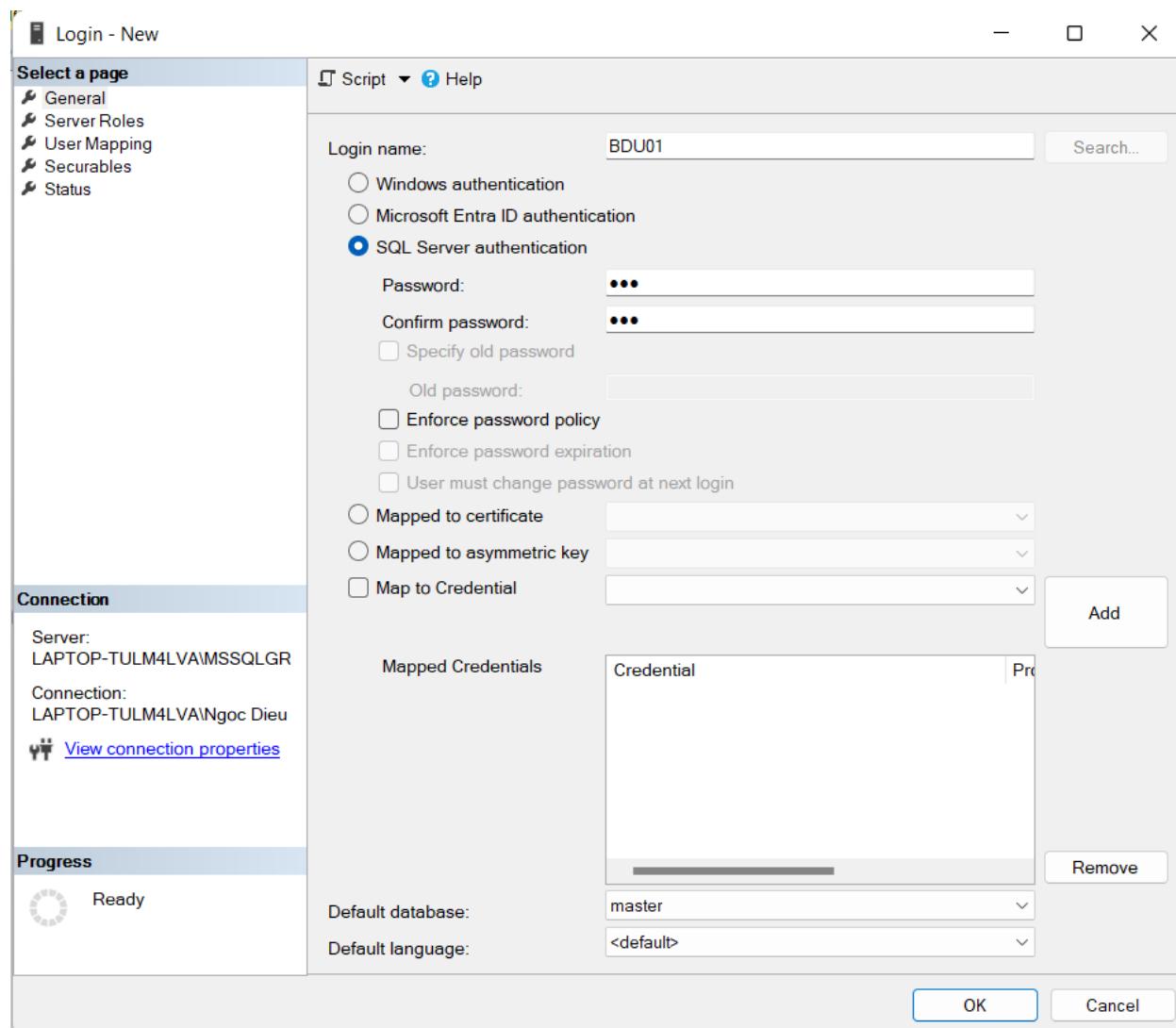
119 %

Query completed with errors.

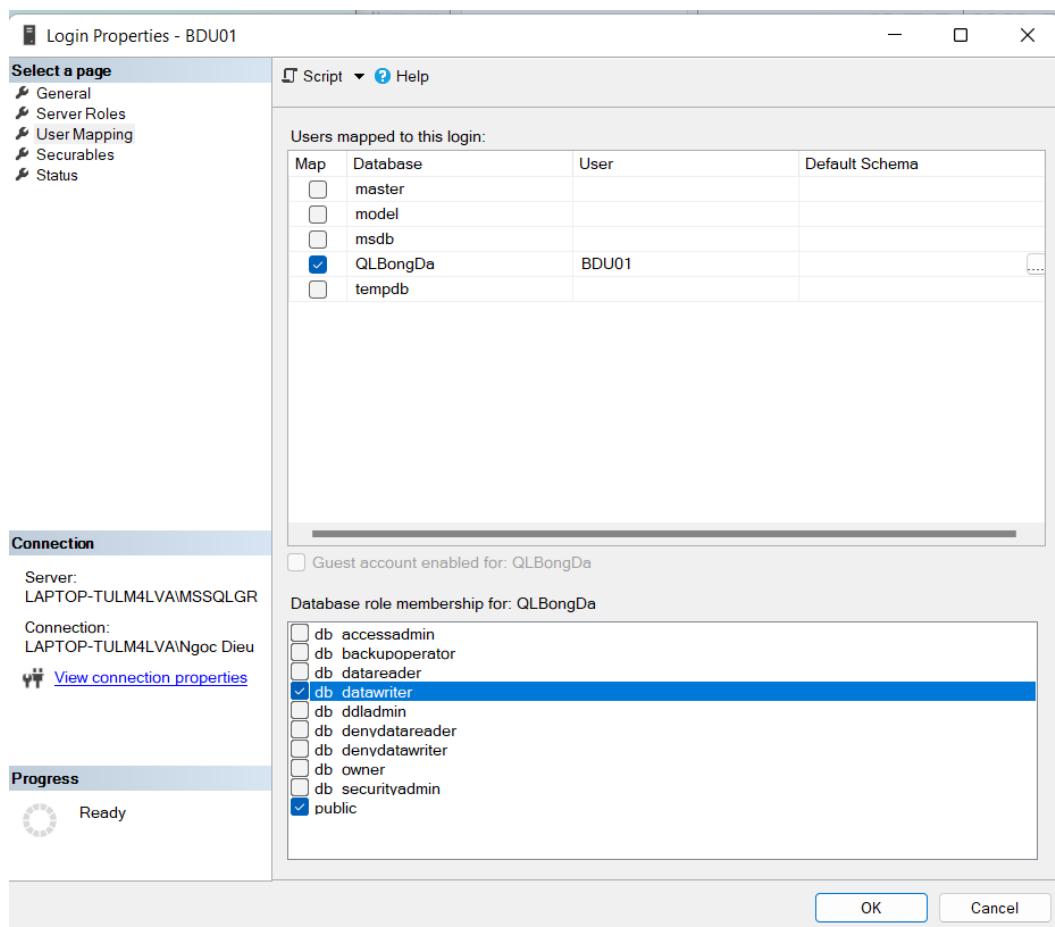
4. BDU01

4.1. Cài đặt

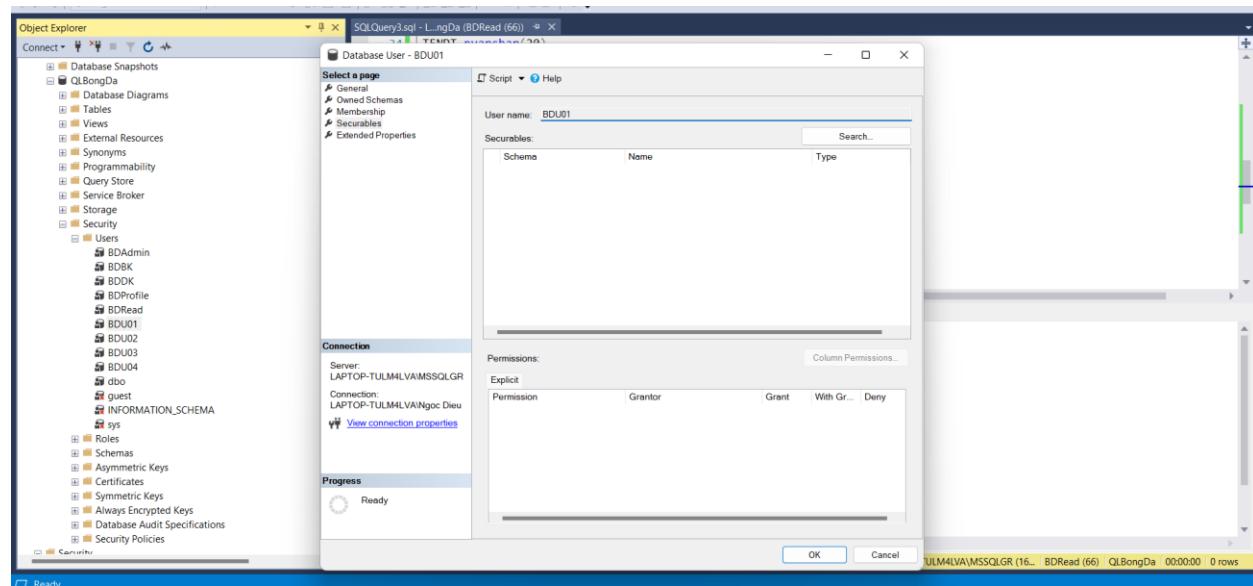
B1: Tạo user mới với loại ủy quyền là SQL Server Authentication



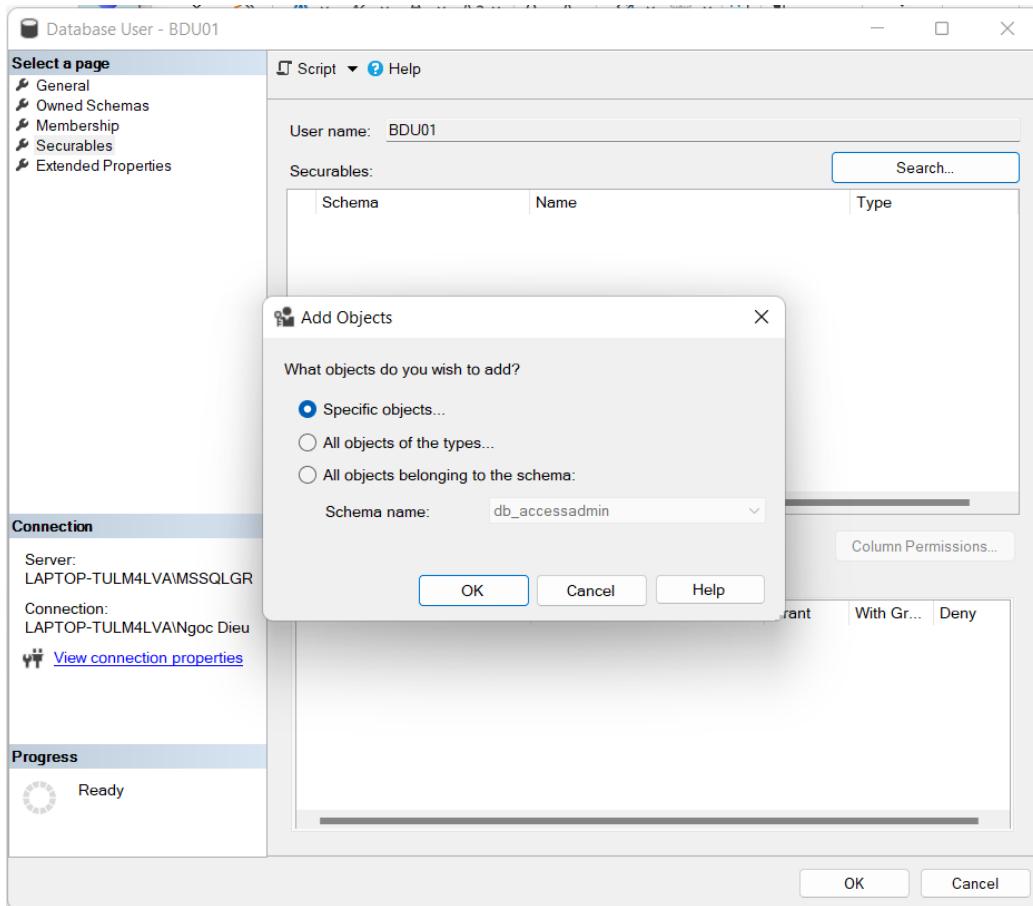
B2: Nháy đúp vô phần user BDU01, chọn User Mapping, map với database QLBongDa với role db datawriter và public



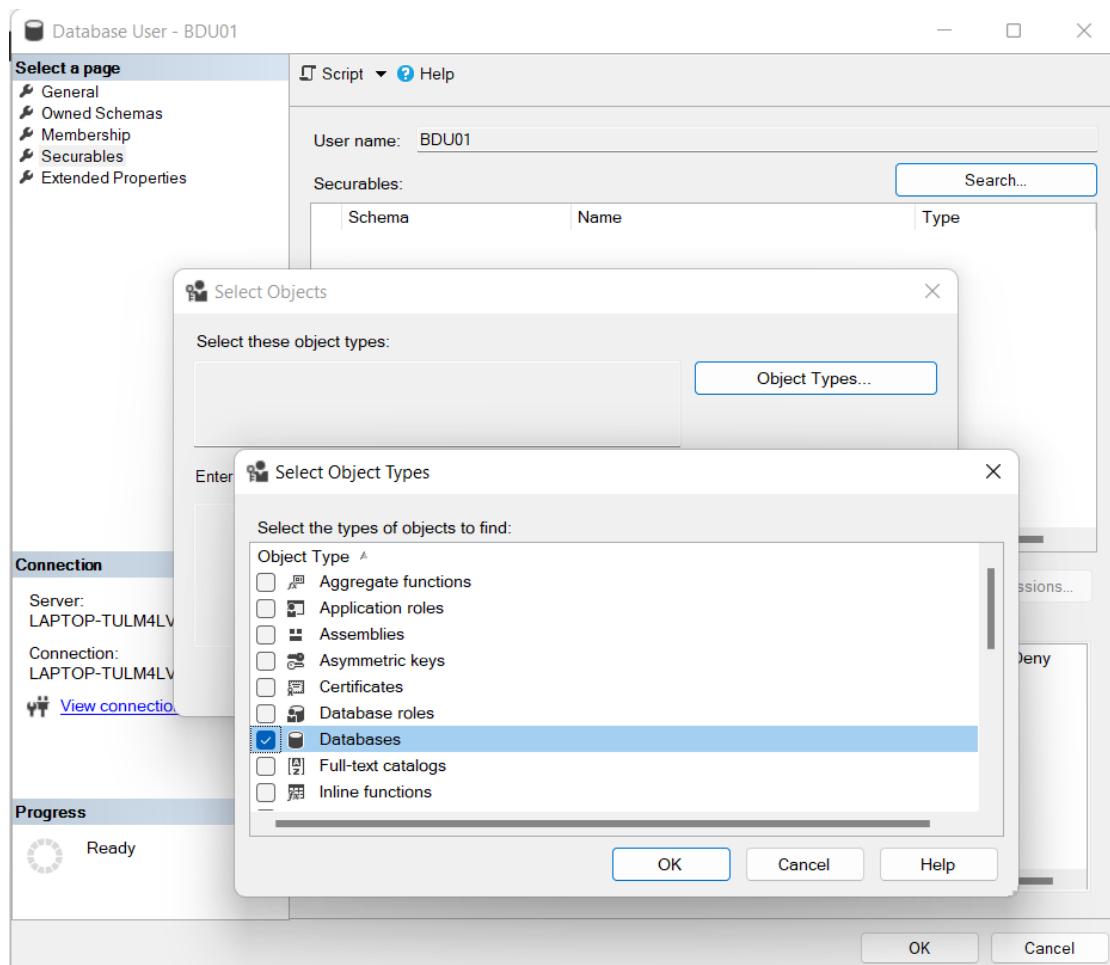
B3: Ở phần Database chọn **QLBongDa => Security => Nháy đúp vào BDU01**



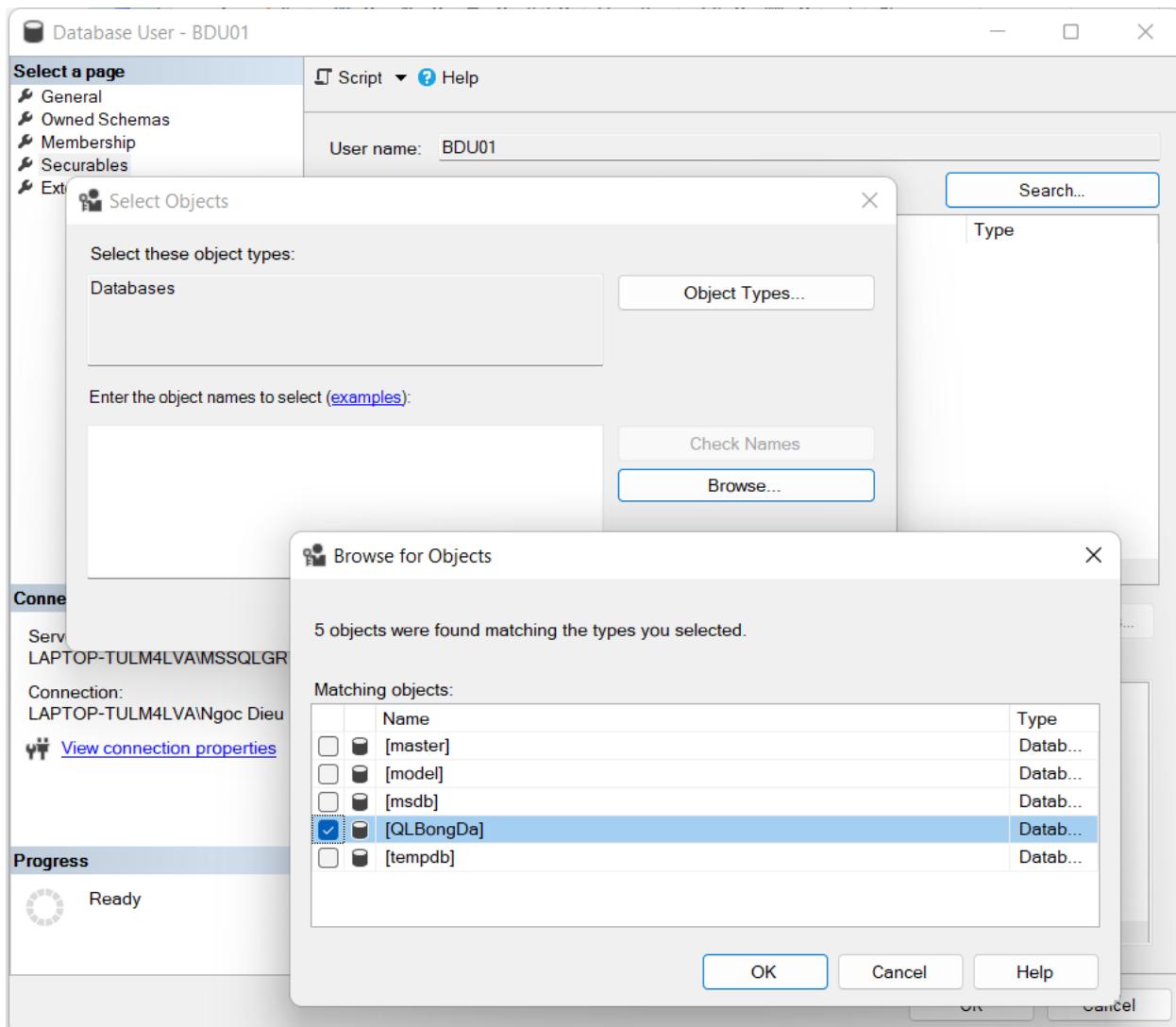
B4: Chọn Search => Specific Objects => OK



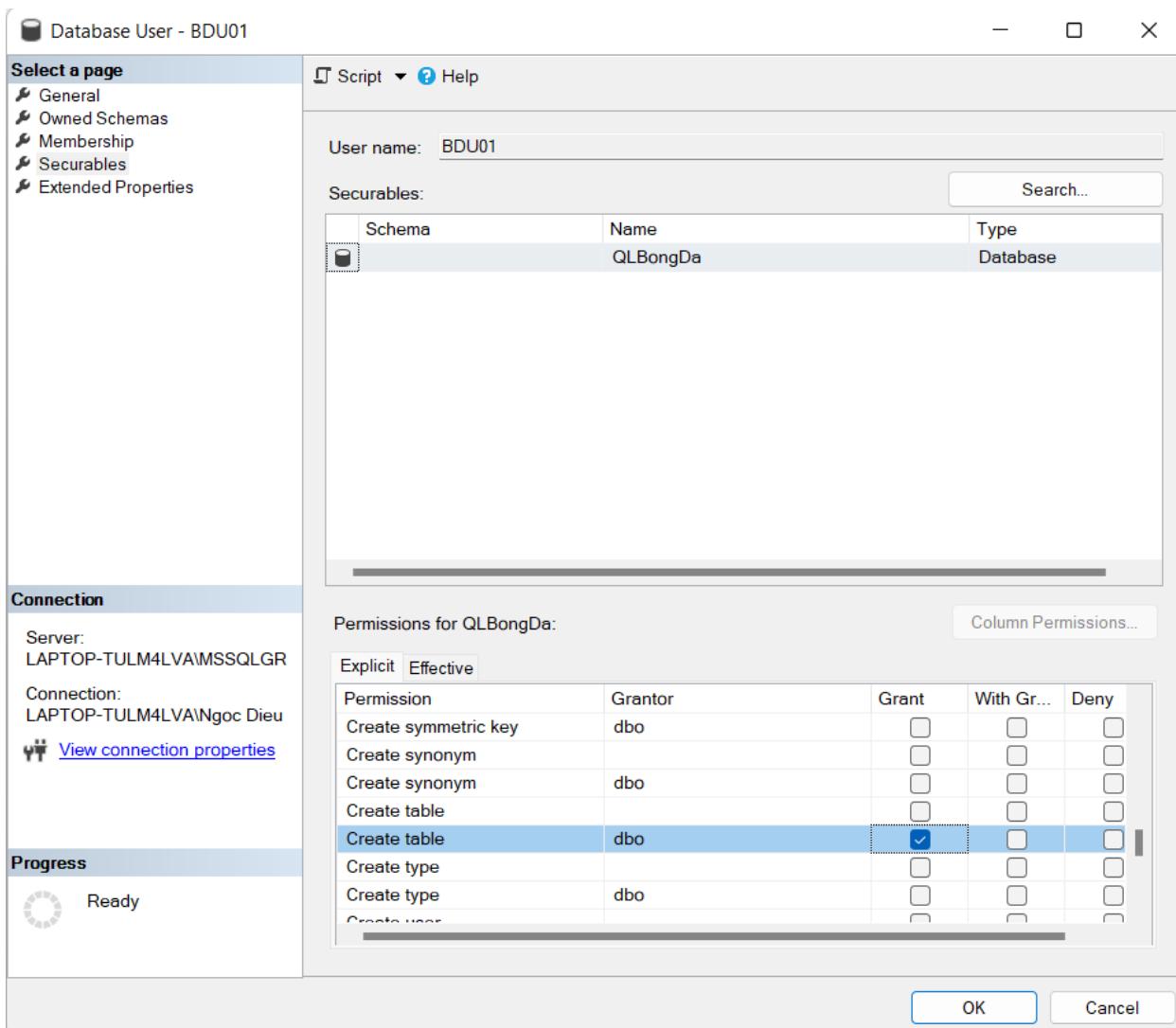
B5: Chọn Object Type => Chọn Database => OK



B6: Chọn Browser => Chọn db QLBongDa => OK => OK

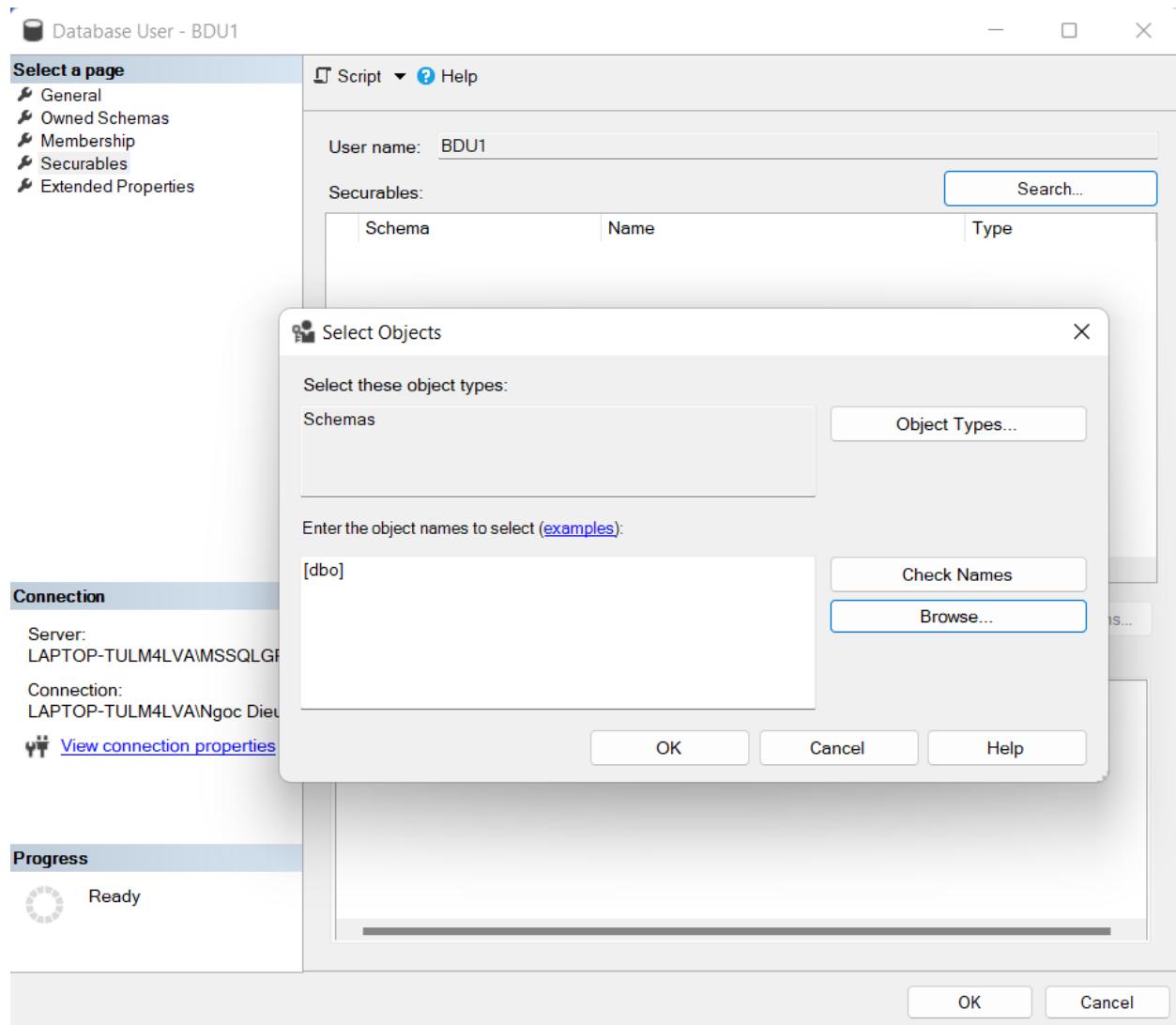


B7: Click Grant cho **Create table** => OK

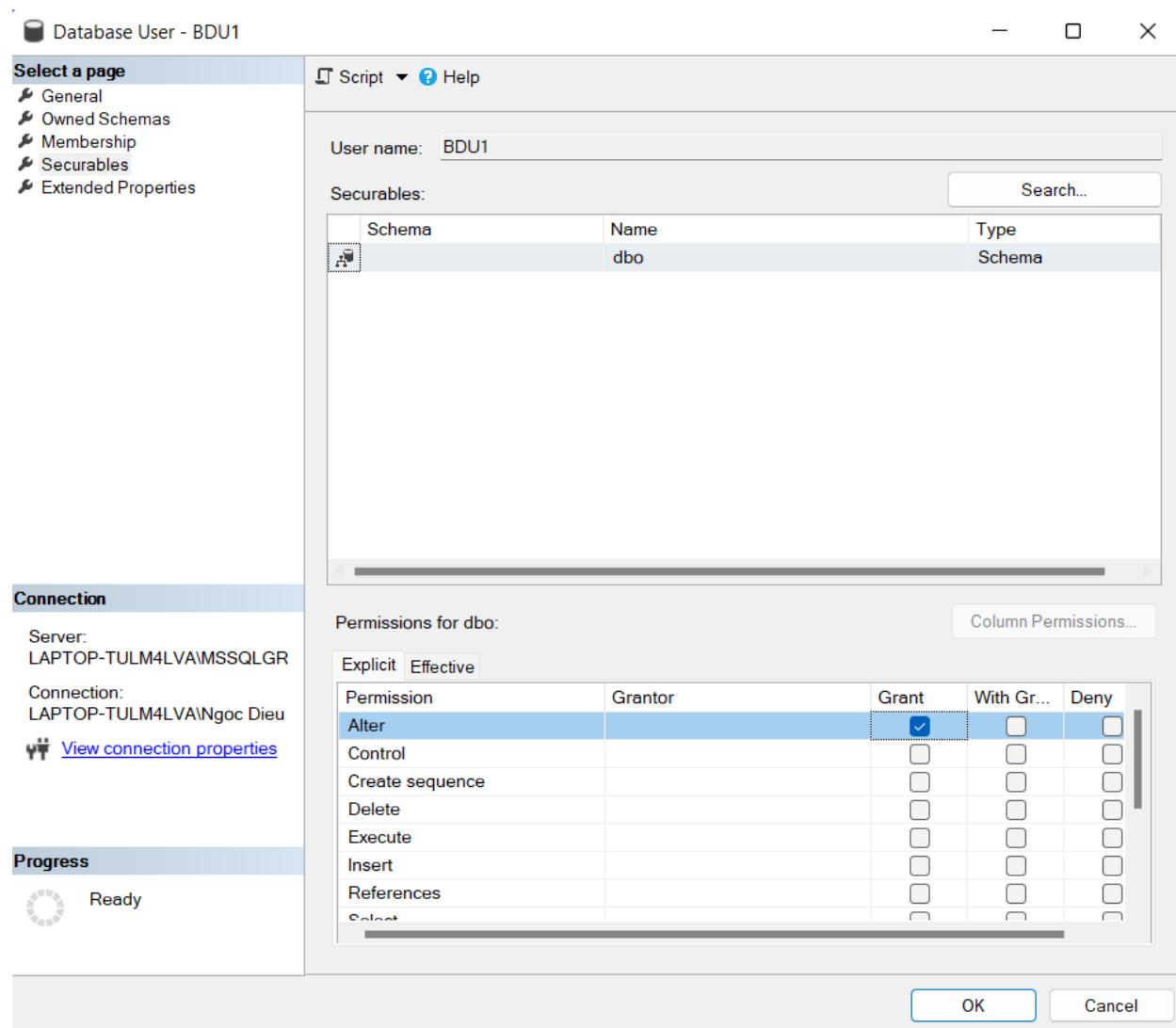


B8: Do user vẫn chưa thể tạo bảng, SQL server báo lỗi phải có quyền sở hữu. Vì để BDU01 không có quá nhiều quyền, em gán quyền Alter trên Schemas dbo, với quyền này thì DBU01 có thể tạo bảng, có thể xóa.

(vì một số lí do, nên khúc này em xin phép đổi user name sang BDU1 thay vì BDU01)



B9: Grant quyền Alter trên dbo cho BDU01



4.2. Kiểm tra

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the following T-SQL code:

```
25 ('NT', 'Nha Trang')
26
27 update CAULACBO set MACLB = 'HAGL'
28 where MASAN = 'PL' and MATINH = 'GL'
29
30 --Test BDU01-
31 create table dbo.DOIDTRUONG
32 (
33 MADT char(4) primary key,
34 TENDT nvarchar(20)
35 )
36
37
38
39
```

Messages pane:

Commands completed successfully.

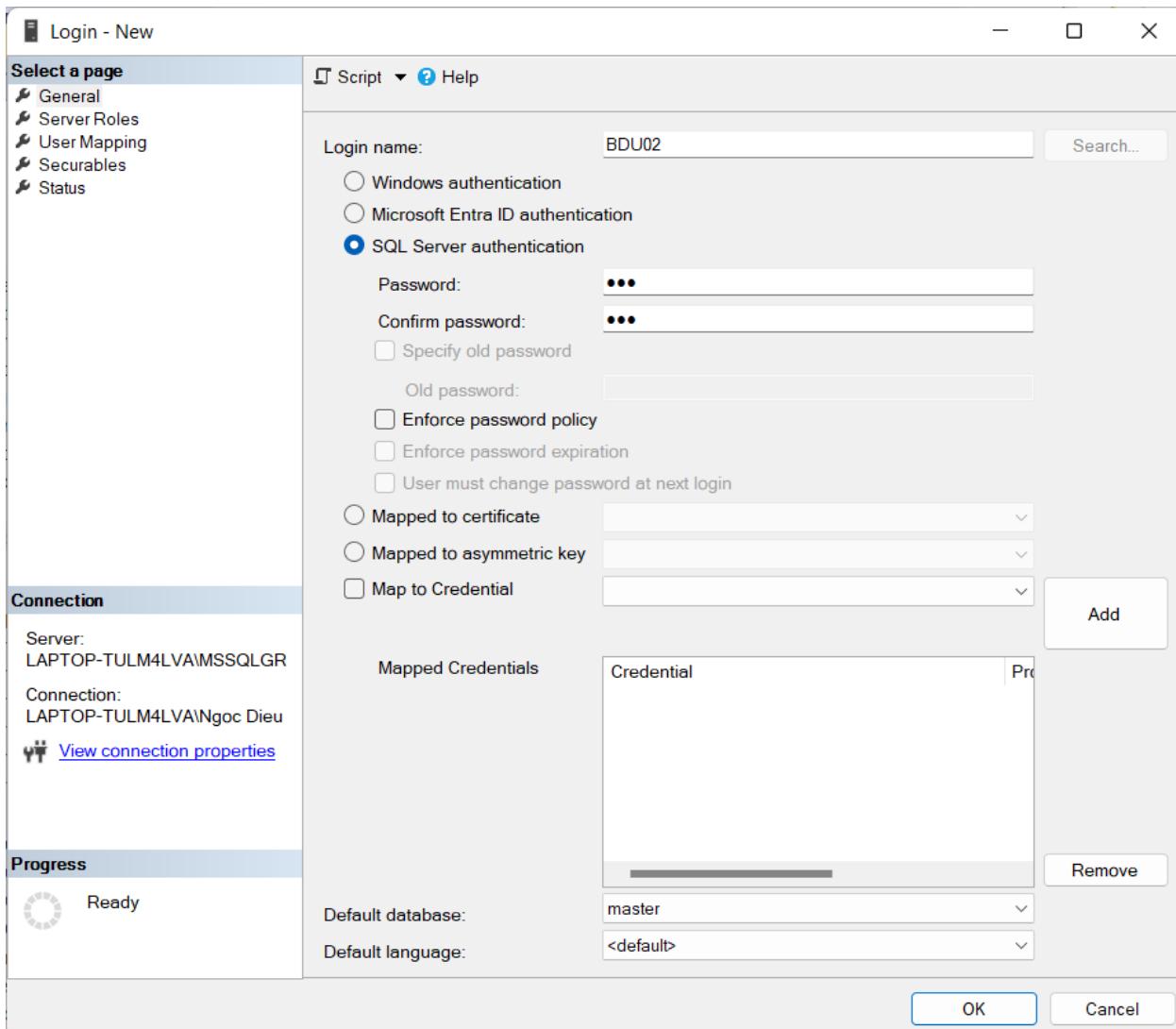
Completion time: 2024-04-13T22:11:42.9823910+07:00

Query executed successfully.

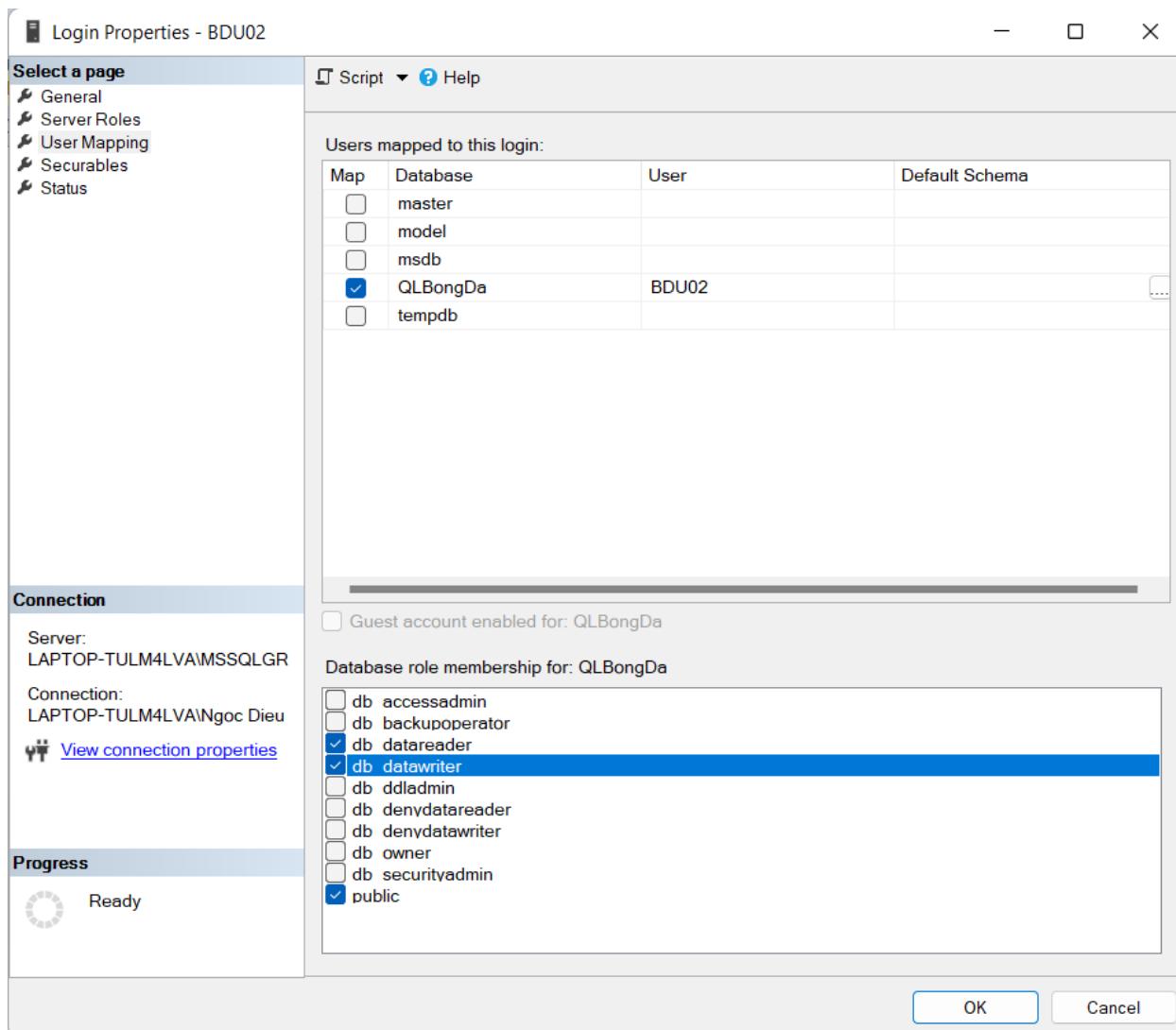
5. BDU02

5.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là **SQL Server Authentication**



B2: Nháy đúp vô phần user BDU02, chọn User Mapping, map với database QLBongDa với role db datareader, db datawriter và public



5.2. Kiểm tra

The screenshot shows the Object Explorer on the left and a SQL Query window on the right. The query window contains the following code:

```

40
41
42
43 --Test BDU02--
44 insert into SANVD(MASAN, TENSAN, DIACHI)
45 values
46 ('GG', 'N'Hoang Gia', N'13/4 Xa Lộ Hà Nội')
47
48 delete SANVD where MASAN = 'GG'
49
50 drop table CAUTHU
51
52 create table DOITRUONG1
53 (
54 MADT char(4) primary key,
55 TENDT nvarchar(20)

```

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

The screenshot shows the Object Explorer on the left and a SQL Query window on the right. The query window contains the same code as the previous screenshot:

```

40
41
42
43 --Test BDU02--
44 insert into SANVD(MASAN, TENSAN, DIACHI)
45 values
46 ('GG', 'N'Hoang Gia', N'13/4 Xa Lộ Hà Nội')
47
48 delete SANVD where MASAN = 'GG'
49
50 drop table CAUTHU
51
52 create table DOITRUONG1
53 (
54 MADT char(4) primary key,
55 TENDT nvarchar(20)

```

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

```

40
41
42
43 --Test BDU02--
44 insert into SANVD(MASAN, TENSAN, DIACHI)
45 values
46 ('GG', N'Hoang Gia', N'13/4 Xa Lộ Hà Nội')
47
48 delete SANVD where MASAN = 'GG'
49
50 drop table CAUTHU
51
52 create table DOITRUONG1
53 (
54 MADM char(4) primary key,
55 TENDT nvarchar(20)

```

Completion time: 2024-04-13T21:35:37.9181738+07:00

Query completed with errors.

```

46 ('GG', N'Hoang Gia', N'13/4 Xa Lộ Hà Nội')
47
48 delete SANVD where MASAN = 'GG'
49
50 drop table CAUTHU
51
52 create table DOITRUONG1
53 (
54 MADM char(4) primary key,
55 TENDT nvarchar(20)
56 )
57
58 --Test BDU03--
59 select* from dbo.CAULACBO
60

```

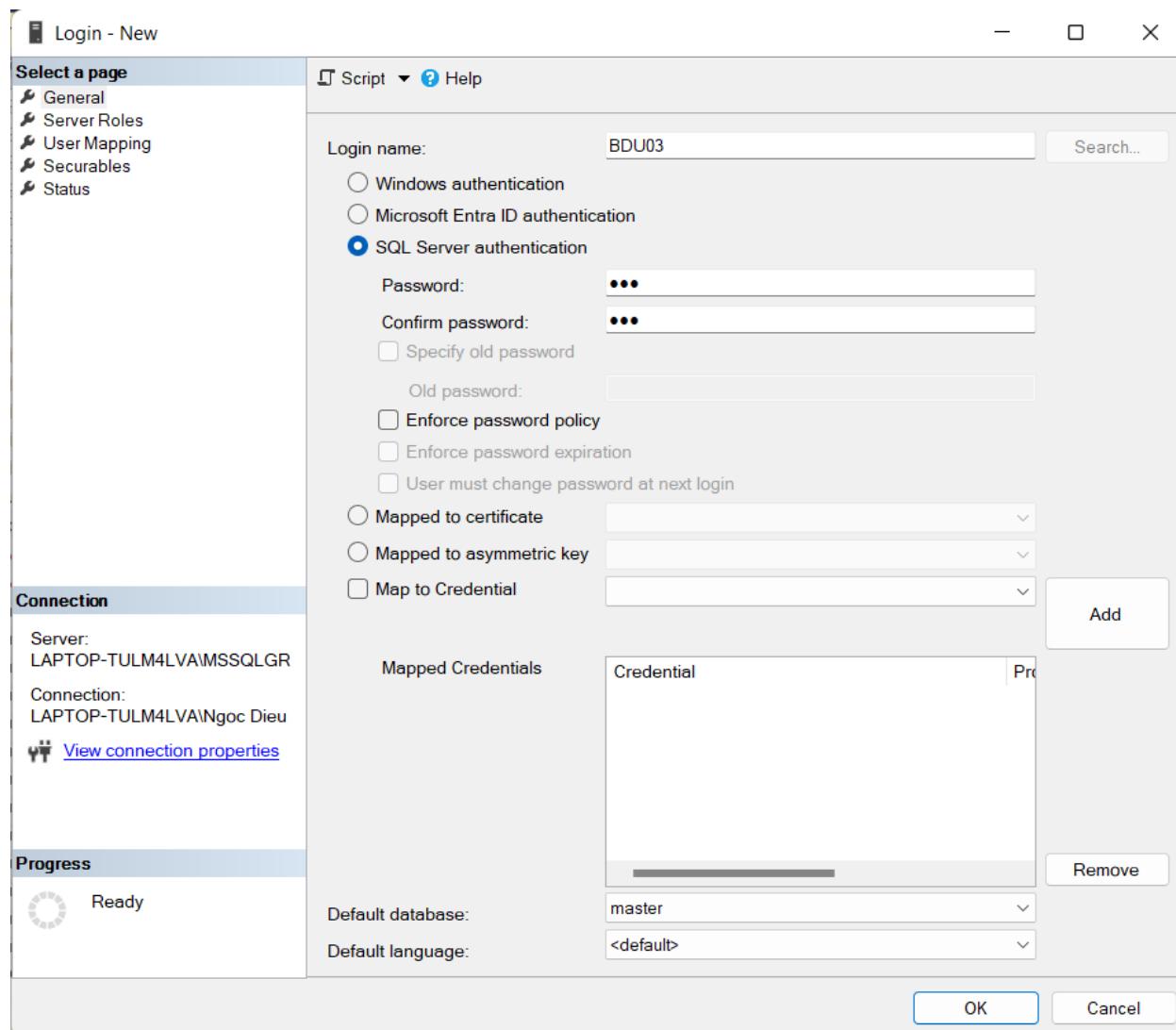
Completion time: 2024-04-13T21:35:52.153404+07:00

Query completed with errors.

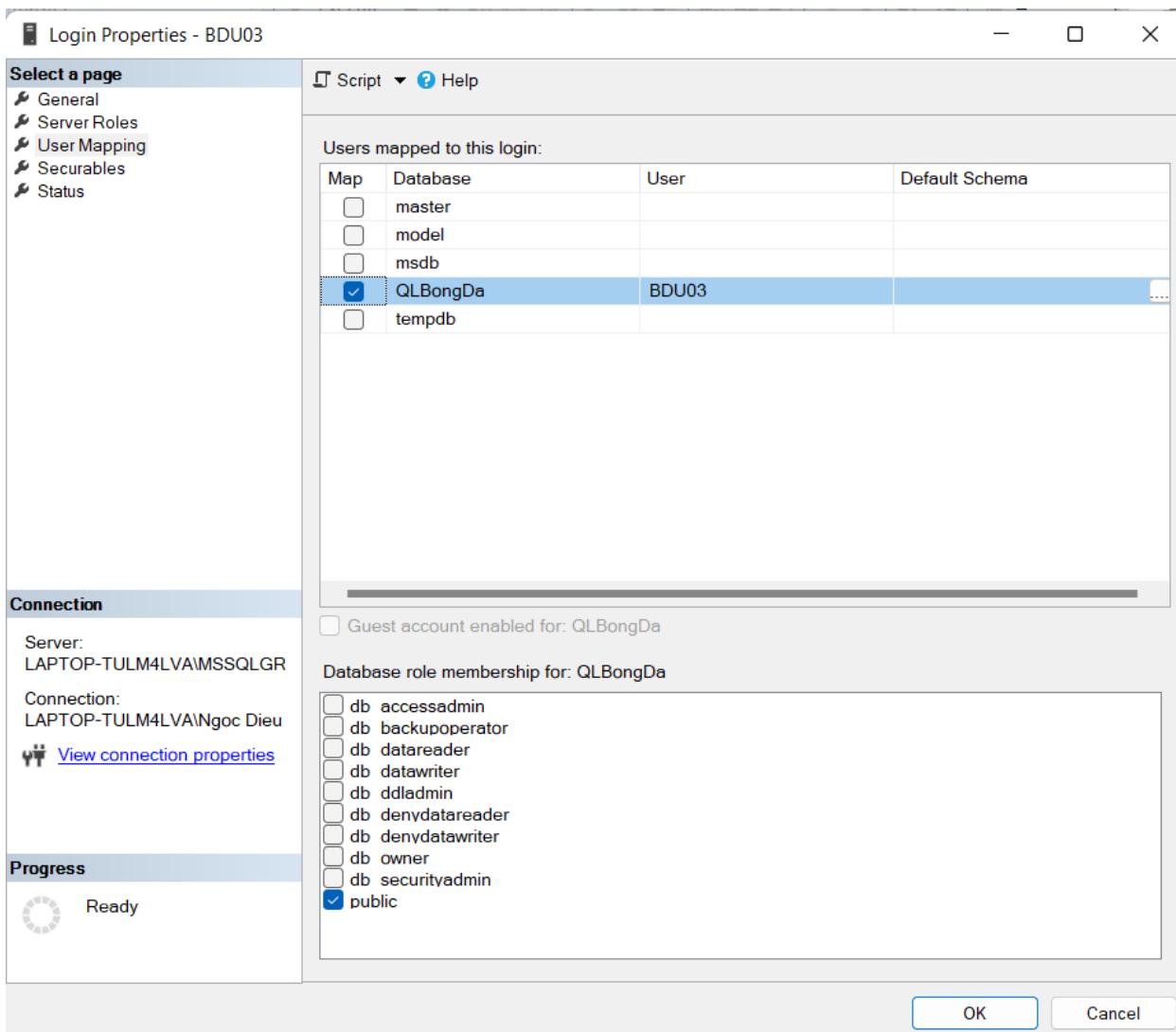
6. BDU03

6.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là **SQL Server Authentication**

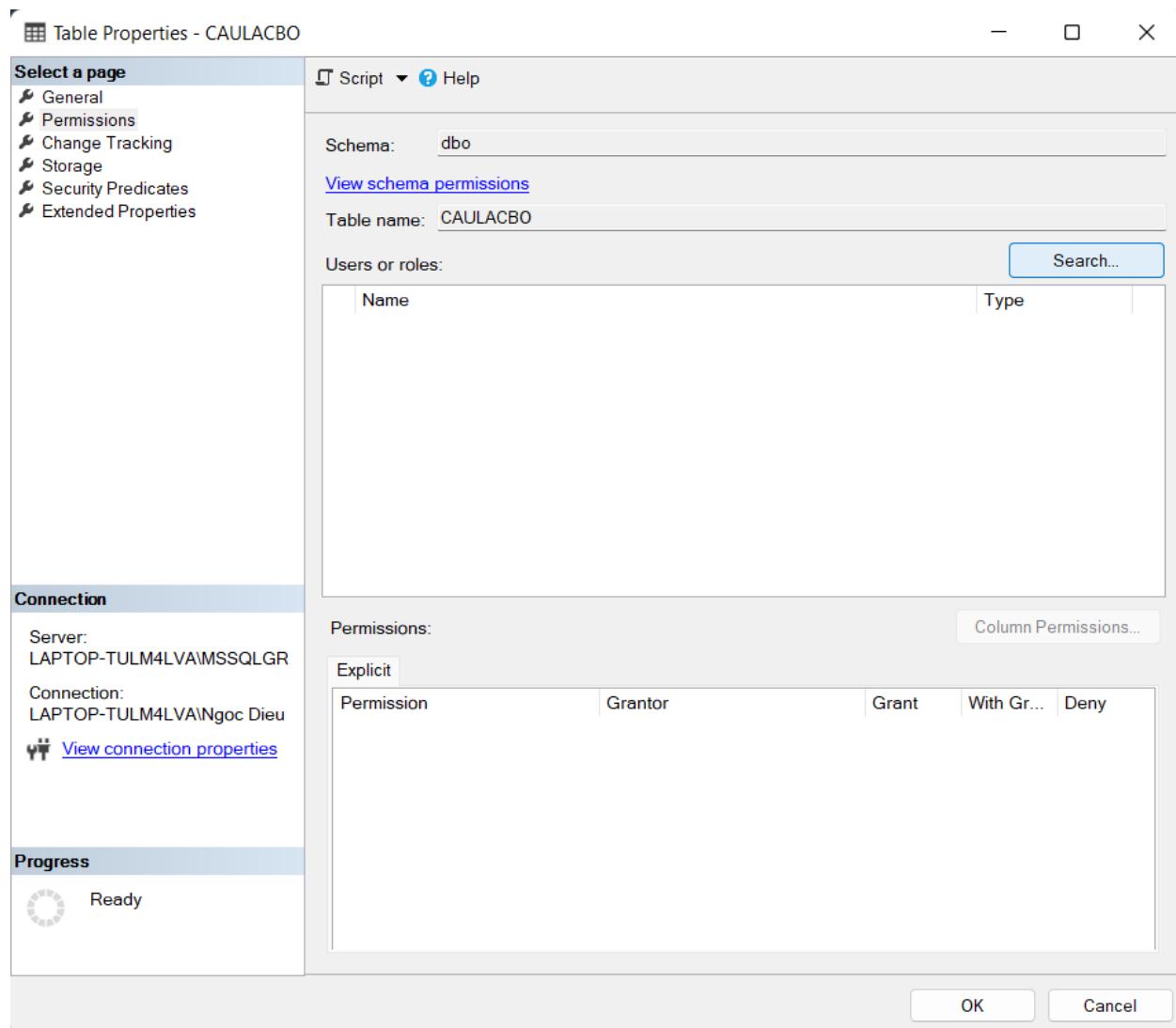


B2: Nháy đúp vô phần user BDU03, chọn User Mapping, map với database QLBongDa với role public

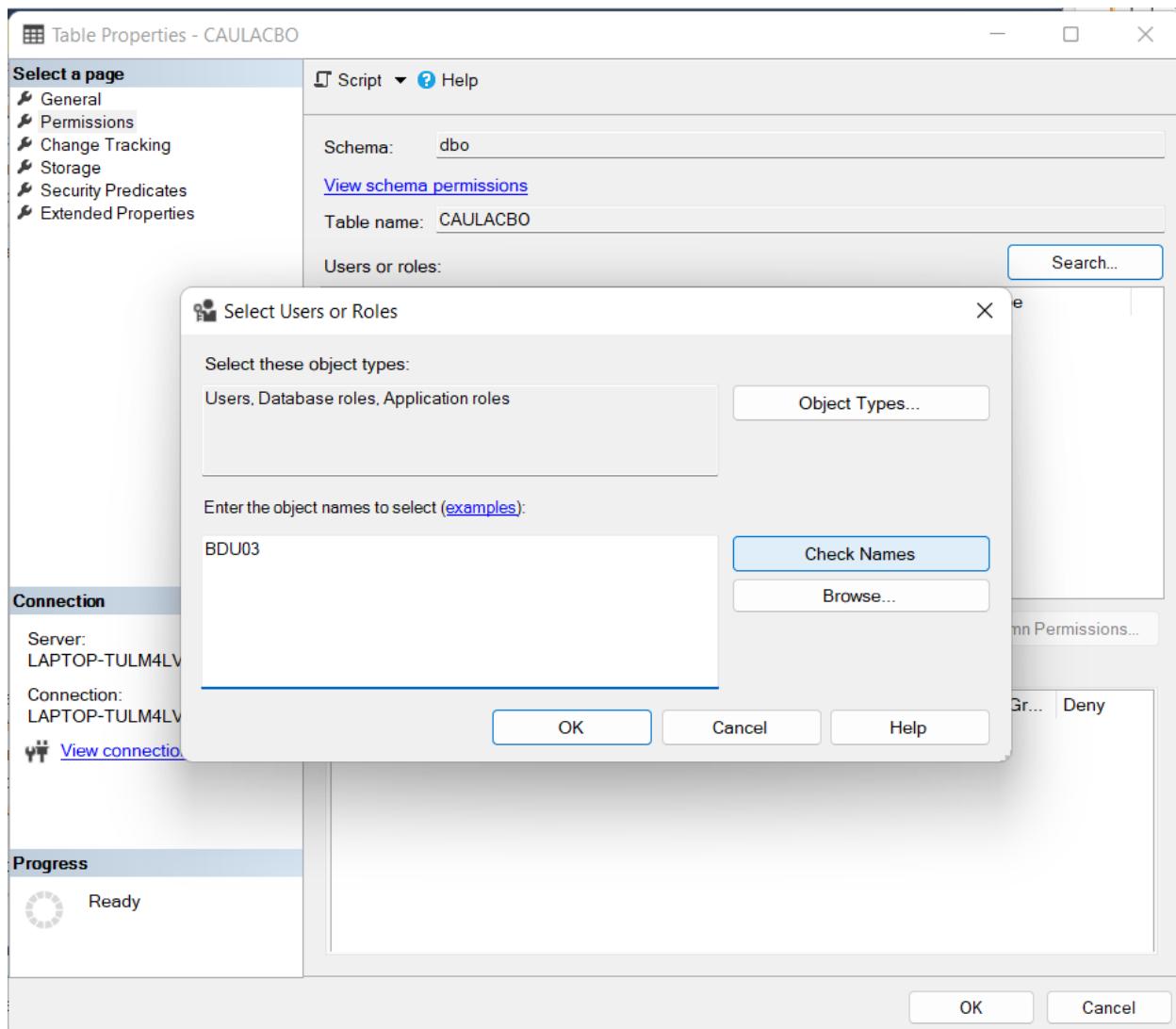


B3: Ở phần Database chọn

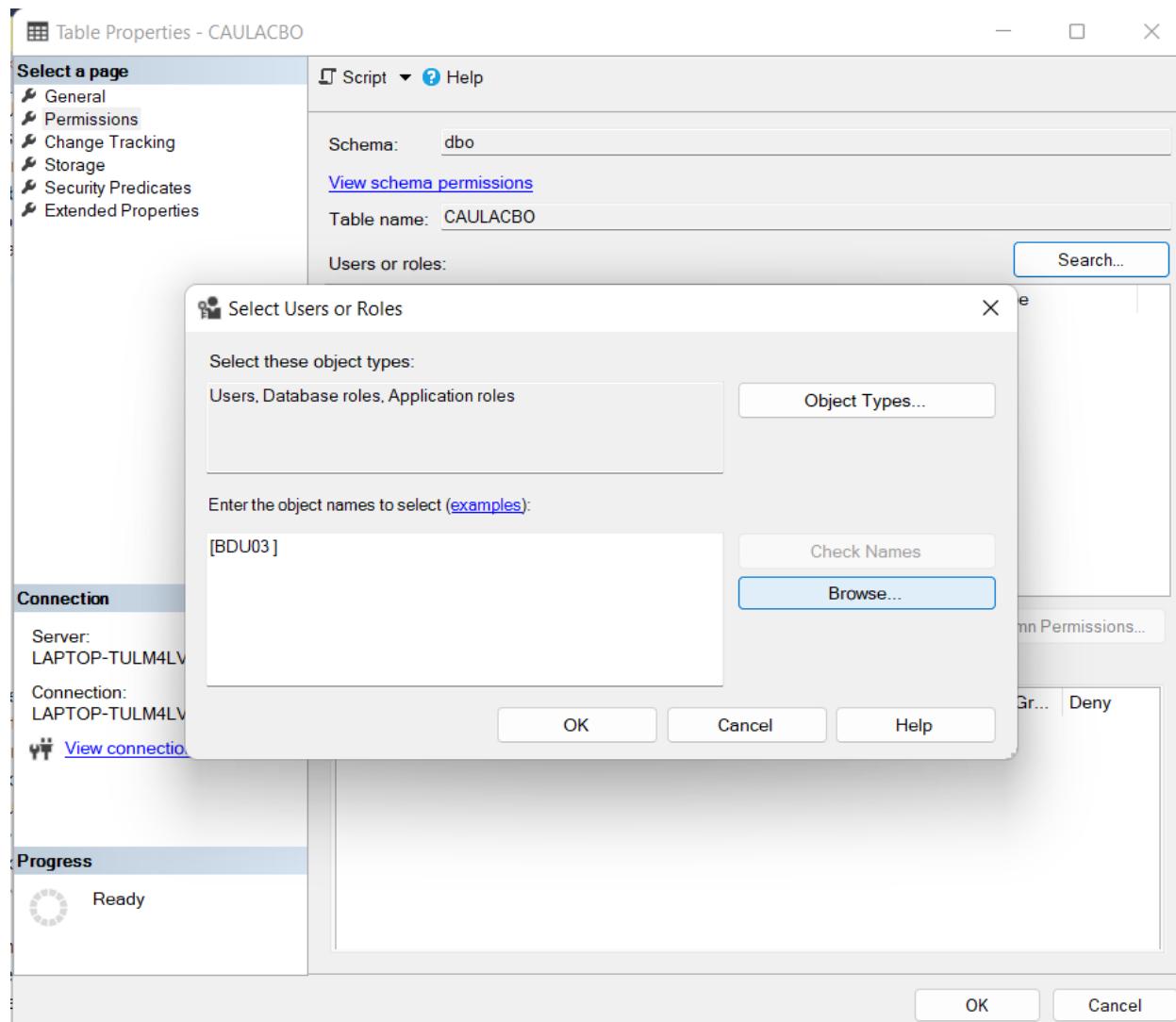
QLBongDa => Tables => dbo.CAULACBO => Properties => Permissions => Search



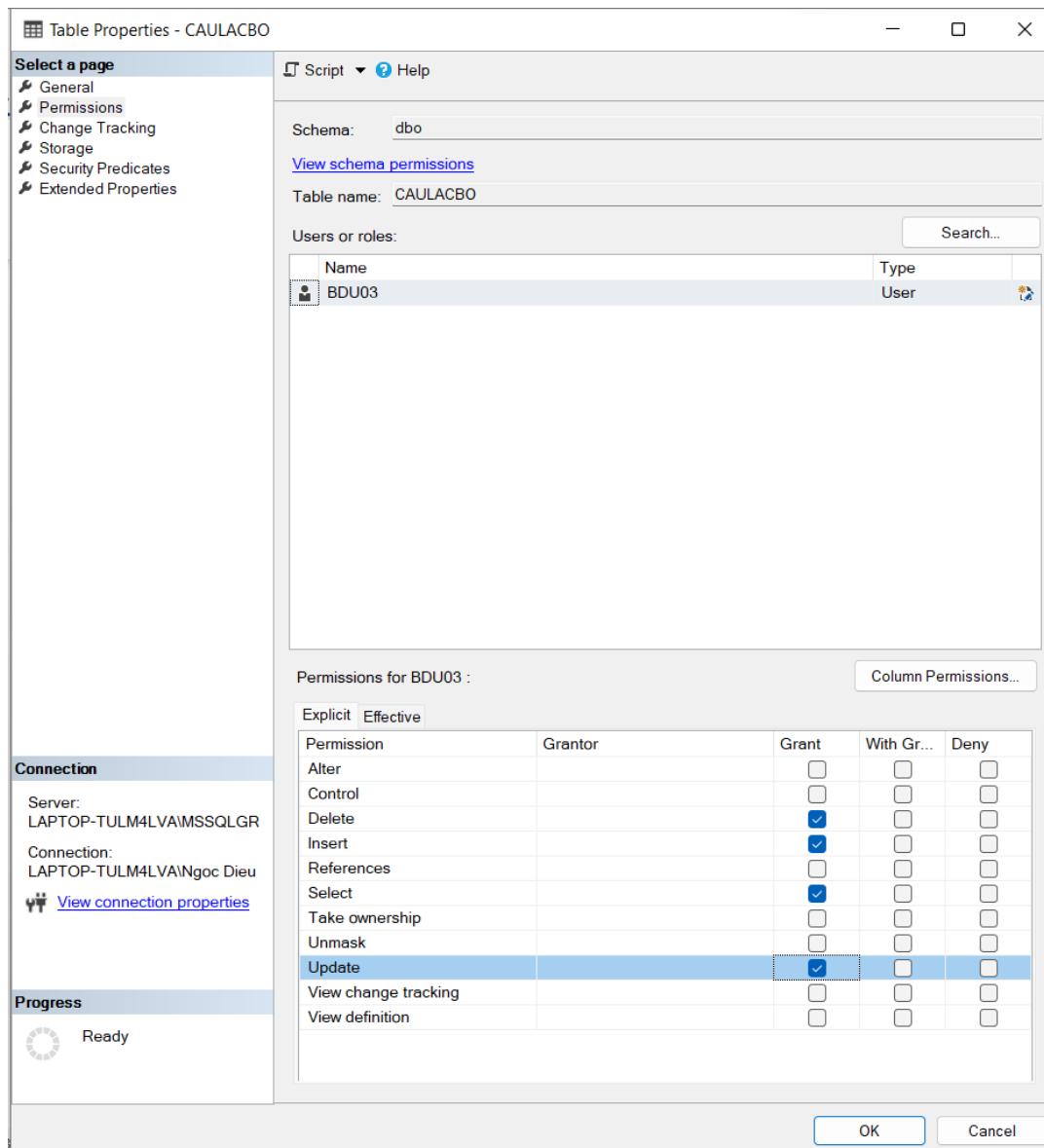
B4: Nhập tên user BDU03 và chọn **Check Name**



B5: Tìm user **BDU03** => **OK**



B6: Grant Permission – chọn **Delete, Insert, Select, Update**



6.2. Kiểm tra

```

54 MADC char(4) primary key,
55 TENDT nvarchar(20)
56 )
57
58 --Test BDU03--
59 select* from dbo.CAULACBO
60
61 insert into CAULACBO(MACLB, TENCLB, MASAN, MATINH)
62 values
63 ('HV', N'Hang Vuong', 'GD', 'BD')
64
65 delete CAULACBO where MACLB = 'HV'
66
67 select* from QUOCGIA
68

```

Results

	MACLB	TENCLB	MASAN	MATINH
1	BDD	BECAMEX BÌNH DƯƠNG	GD	BD
2	GDT	GẠCH ĐÓNG TÂM LONG AN	LA	LA
3	HAGL	HOÀNG ANH GIA LAI	PL	GL
4	HV	Hang Vuong	GD	BD
5	KKH	KHATOCO KHÁNH HÒA	NT	KH
6	SON	SHB ĐÀ NẴNG	CL	DN
7	TPY	THÉP PHÚ YÊN	TH	PY

Query executed successfully.

```

56 )
57
58 --Test BDU03--
59 select* from dbo.CAULACBO
60
61 insert into CAULACBO(MACLB, TENCLB, MASAN, MATINH)
62 values
63 ('HV', N'Hang Vuong', 'GD', 'BD')
64
65 delete CAULACBO where MACLB = 'HV'
66
67 select* from QUOCGIA
68
69 insert into TINH(MATINH, TENTINH)
70 values

```

Results

(1 row affected)

Completion time: 2024-04-13T21:27:08.7308656+07:00

Query executed successfully.

The screenshot shows the SSMS interface with the Object Explorer on the left and a query window on the right. The query window contains the following T-SQL code:

```

54  MACID char(4) primary key,
55  TENDT nvarchar(20)
56  )
57
58 --Test BDU03--
59 select* from dbo.CAULACBO
60
61 insert into CAULACBO(MACLB, TENCLB, MASAN, MATINH)
62 values
63 ('HV', N'Hang Vuong', 'GD', 'BD')
64
65 delete CAULACBO where MACLB = 'HV'
66
67 select* from QUOCGIA
68

```

The status bar at the bottom indicates "Query executed successfully." and "Completion time: 2024-04-13T21:30:33.0347281+07:00".

The screenshot shows the SSMS interface with the Object Explorer on the left and a query window on the right. The query window contains the same T-SQL code as the first screenshot, but with additional statements:

```

69 insert into TIINH(MATINH, TENTINH)
70 values
71 ('CT', 'Can Tho')
72
73 delete SANVD where MASAN='GD'

```

The status bar at the bottom indicates "Query completed with errors." and "Completion time: 2024-04-13T21:30:37.2266181+07:00". A message in the status bar states: "Msg 229, Level 14, State 5, Line 67 The SELECT permission was denied on the object 'QUOCGIA', database 'QLBongDa', schema 'dbo'."

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the following SQL code:

```

60 insert into CAULACBO(MACLB, TENCLB, MASAN, MATINH)
61 values
62 ('HV', N'Hang Vuong', 'GD', 'BD')
63
64 delete CAULACBO where MACLB = 'HV'
65
66 select* from QUOCGIA
67
68 insert into TINH(MATINH, TENTINH)
69 values
70 ('CT', 'Can Tho')
71
72 delete SANVD where MASAN='GD'
73

```

In the Messages pane, it shows:

```

Msg 229, Level 14, State 5, Line 69
The INSERT permission was denied on the object 'TINH', database 'QLBongDa', schema 'dbo'.

```

Completion time: 2024-04-13T21:30:52.2728870+07:00

Query completed with errors.

This screenshot is identical to the one above, showing the same SQL code and error message in the Messages pane:

```

Msg 229, Level 14, State 5, Line 69
The INSERT permission was denied on the object 'TINH', database 'QLBongDa', schema 'dbo'.

```

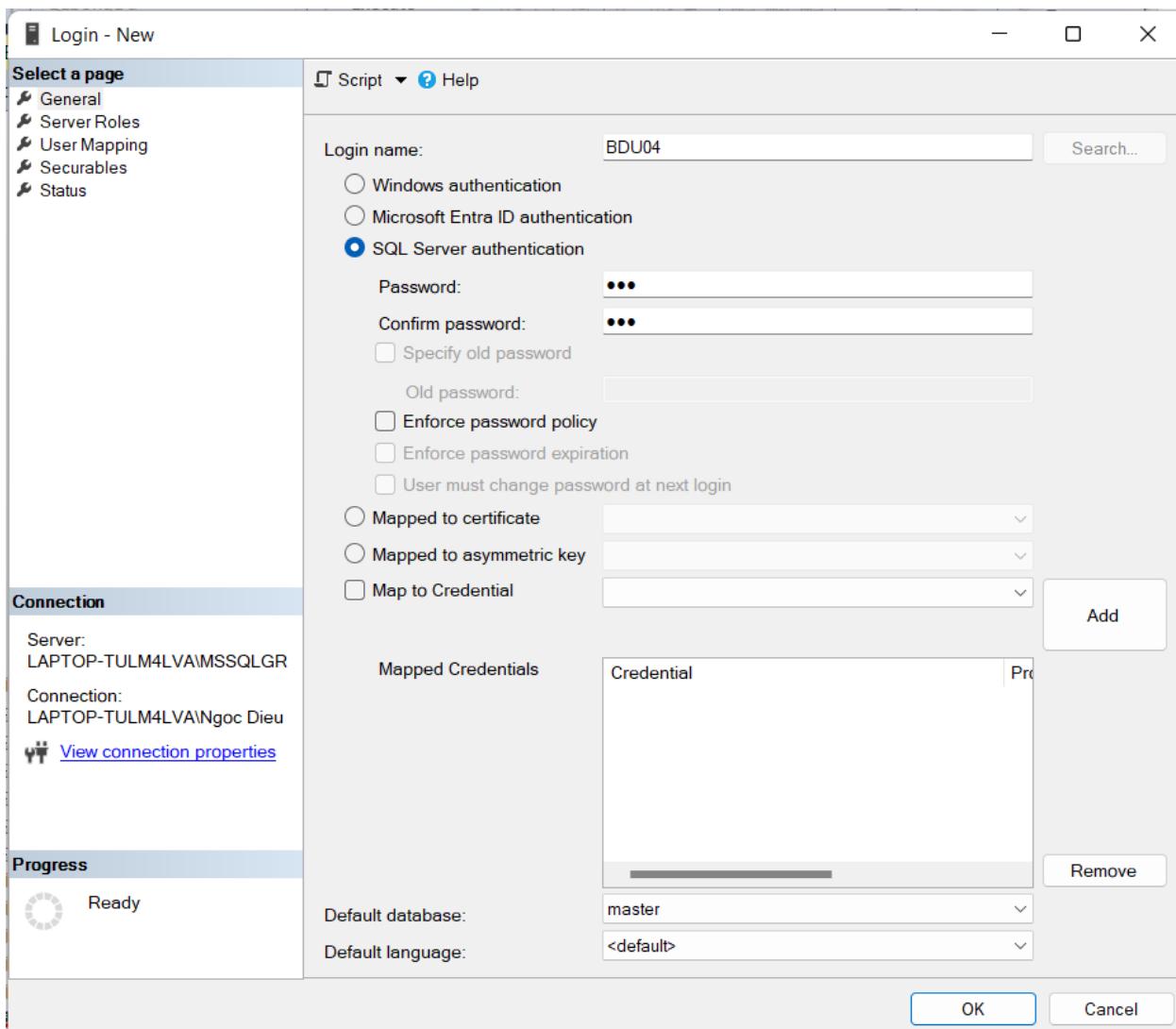
Completion time: 2024-04-13T21:30:52.2728870+07:00

Query completed with errors.

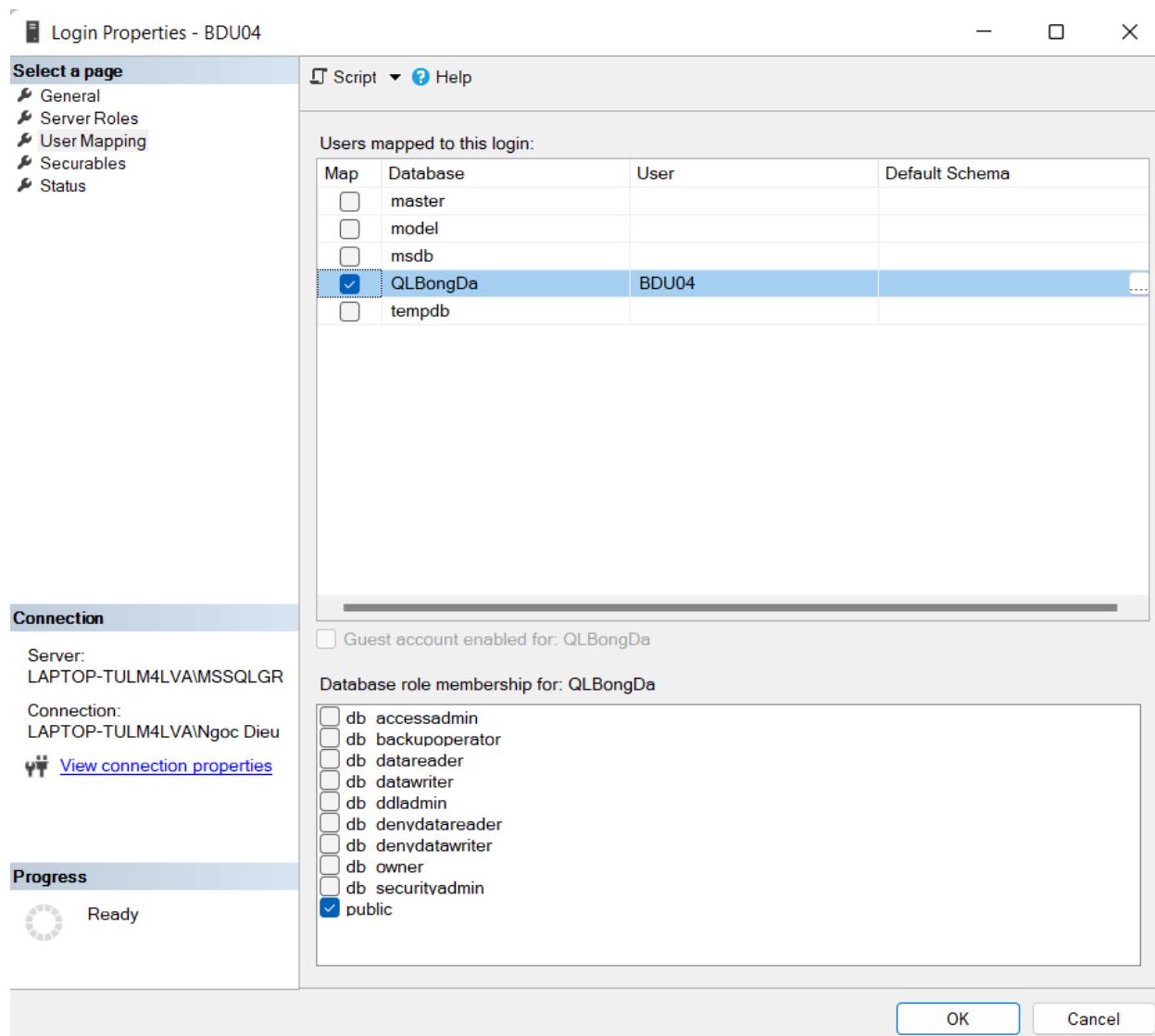
7. BDU04

7.1. Cài đặt

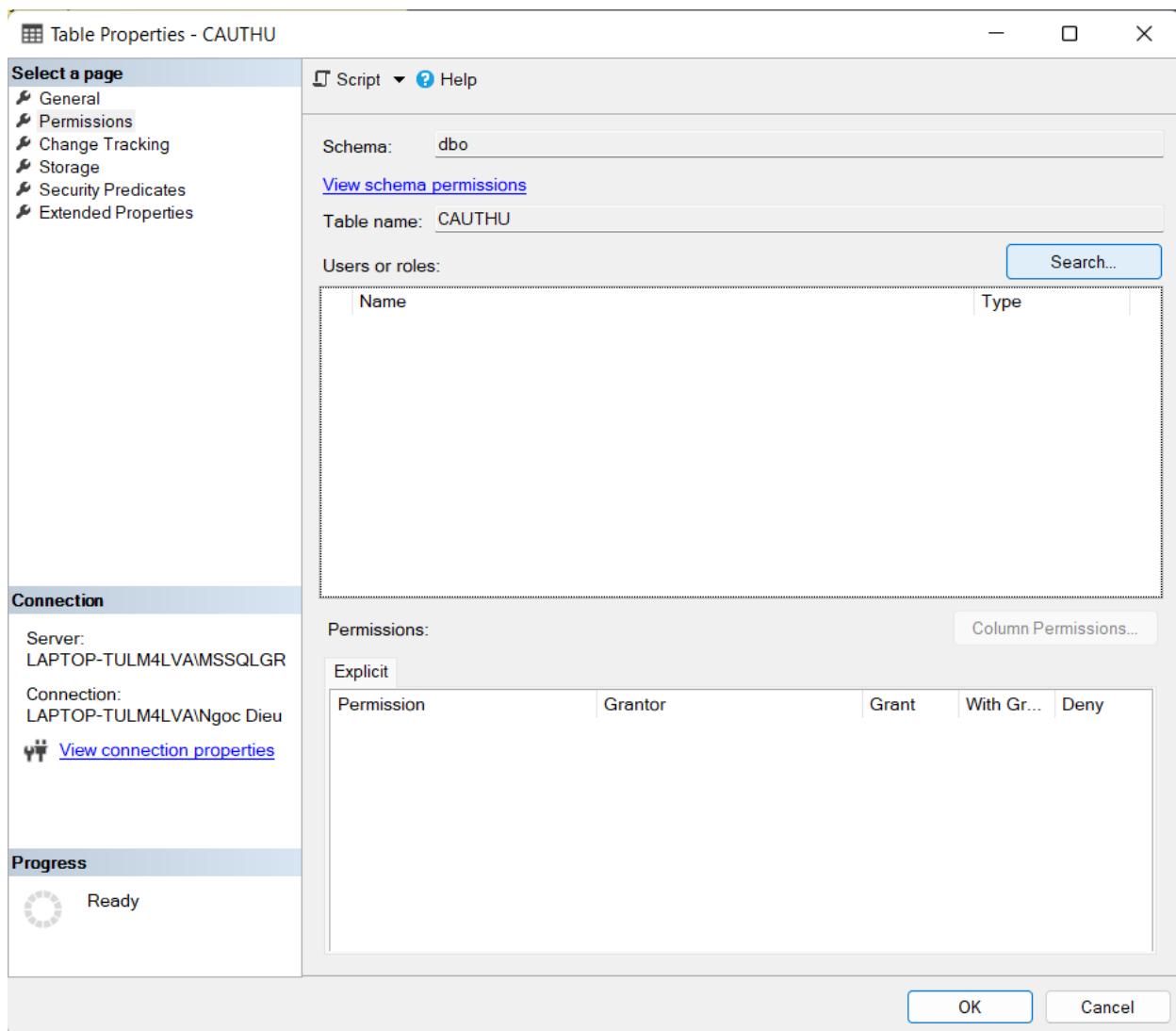
B1: Tạo user mới với loại ủy quyền là SQL Server Authentication



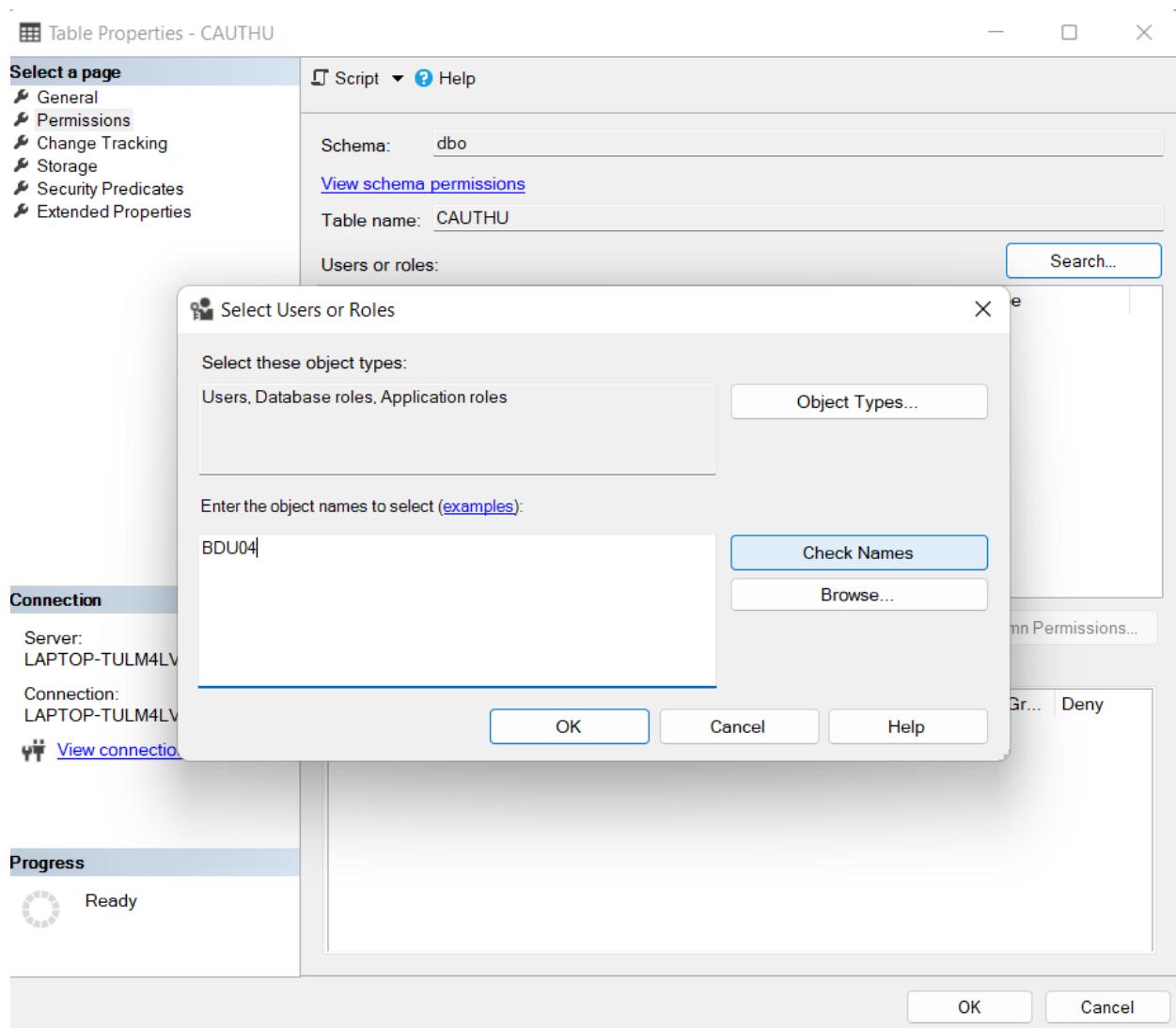
B2: Nháy đúp vô phần user BDU04, chọn User Mapping, map với database **QLBongDa** với public



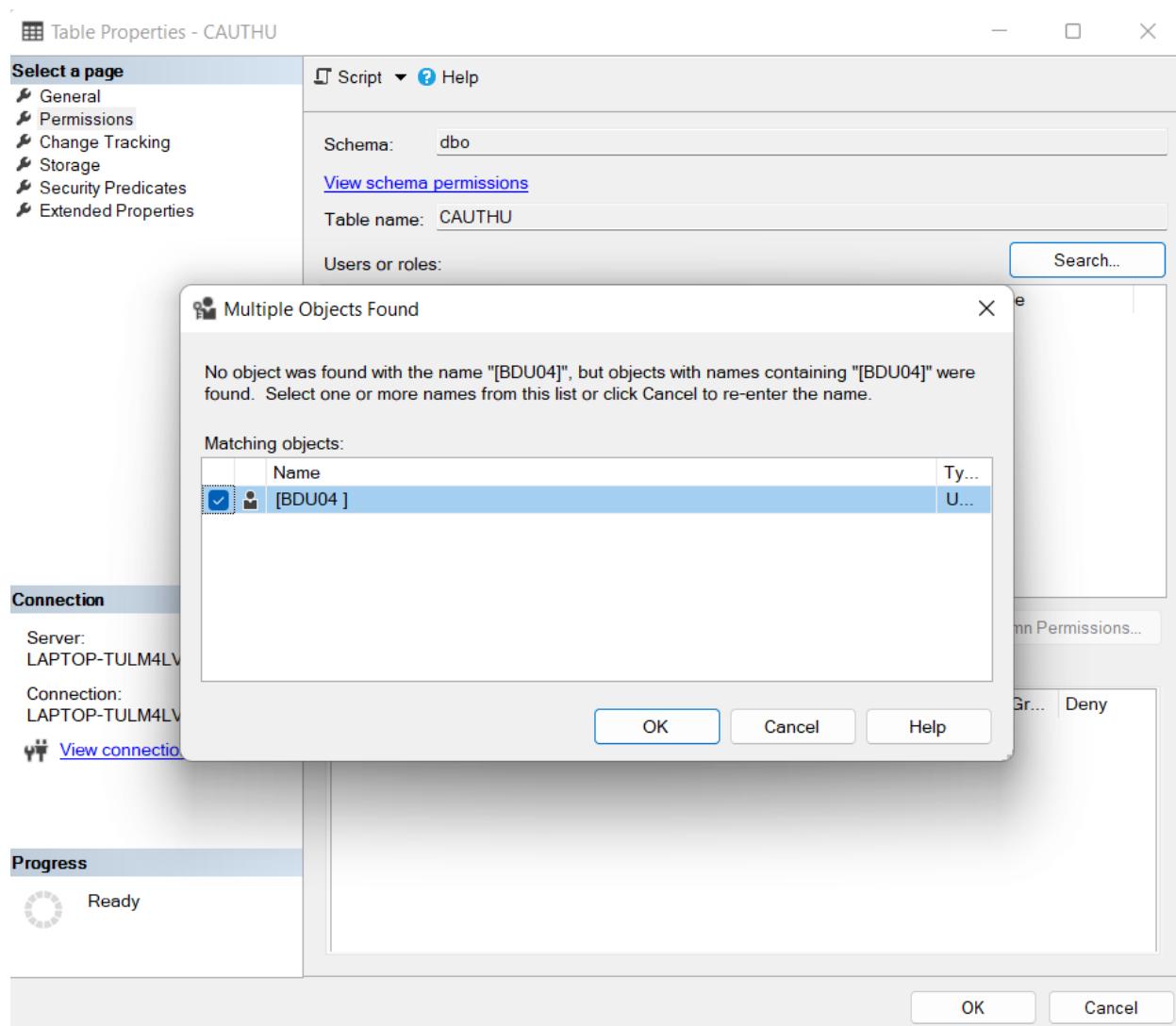
B3: Ở phần Database chọn **QLBongDa** => **Tables** => **dbo.CAUTHU** => **Properties** => **Permissions** => **Search**



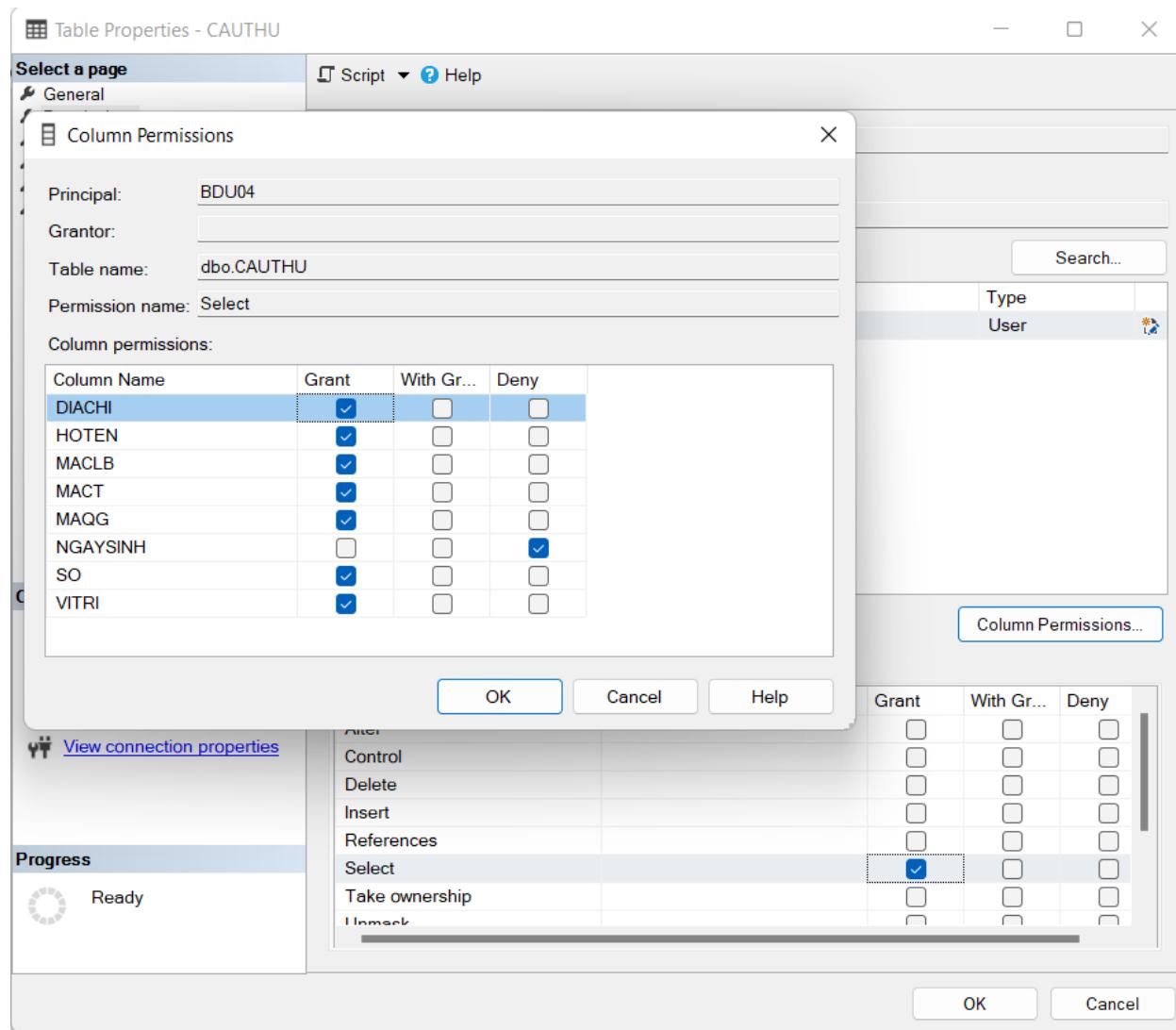
B4: Nhập tên user BDU04 và chọn **Check Name**



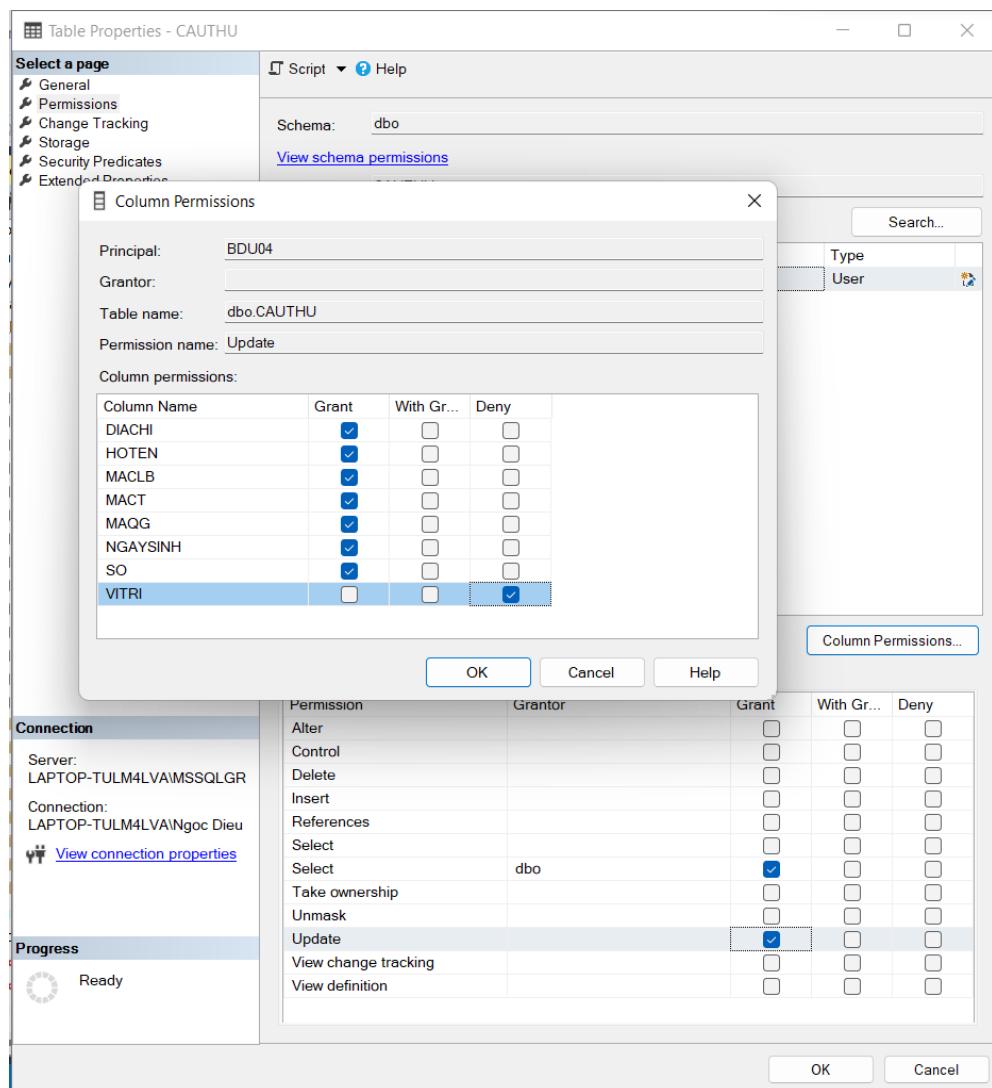
B5: Tìm user **BDU04** => **OK**



B6: Tích chọn **Select** và chọn **Column Permission**. Grant tất cả (trừ cột NGAYSINH được deny)



B7: Sau đó tích chọn **Update** và chọn **Column Permission**. Grant tất cả các cột (trừ cột VITRI được deny)



7.2. Kiểm tra

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the following code:

```

73 delete SANVD where MASAN='GD'
74
75 --Test BDU04 --
76 select MACT, HOTEN, VITRI, DIACHI, MACLB, MAQG, SO from CAUTHU
77
78 select CAUTHU.NGAYSINH from CAUTHU
79
80 update CAUTHU set VITRI = N'Lum banh'
81 where MACT = 01
82
83 select* from HLV_CLB
84
85 select* from TINH

```

The results pane shows a table with 8 rows of data:

MACT	HOTEN	VITRI	DIACHI	MACLB	MAQG	SO
1	Nguyễn Vũ Phong	Tienda	NULL	BBD	VN	17
2	Nguyễn Công Vinh	Tienda	NULL	HAGL	VN	9
3	Trần Tân Tài	Tienda	NULL	BBD	VN	8
4	Phạm Hồng Sơn	Thủ môn	NULL	HAGL	VN	1
5	Ronaldo	Tienda	NULL	SON	BRA	7
6	Robinho	Tienda	NULL	SON	BRA	8
7	Vidic	Hậu vệ	NULL	HAGL	ANH	3
8	Trần Văn Santos	Thủ môn	NULL	BBD	BRA	1

At the bottom, a message says "Query executed successfully."

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the same code as the previous screenshot.

The results pane shows a table with 8 rows of data, identical to the first screenshot.

The messages pane at the bottom displays an error message:

```

Msg 230, Level 14, State 1, Line 78
The SELECT permission was denied on the column 'NGAYSINH' of the object 'CAUTHU', database 'QLBongDa', schema 'dbo'.
Completion time: 2024-04-13T21:42:33.8483460+07:00

```

At the bottom, a message says "Query completed with errors."

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the following SQL code:

```

73 delete SANVD where MASAN='GD'
74
75 --Test BDU04--
76 select MACT, HOTEN, VITRI, DIACHI, MACLB, MAQG, SO from CAUTHU
77
78 select CAUTHU.NGAYSINH from CAUTHU
79
80 update CAUTHU set VITRI = N'Lum banh'
81 where MACT = 01
82
83 select* from HLV_CLB
84
85 select* from TINH

```

In the Messages pane, it shows:

```

Msg 230, Level 14, State 1, Line 80
The UPDATE permission was denied on the column 'VITRI' of the object 'CAUTHU', database 'QLBongDa', schema 'dbo'.
Completion time: 2024-04-13T21:42:48.4984679+07:00

```

The status bar at the bottom indicates "Query completed with errors."

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the same SQL code as the previous screenshot:

```

73 delete SANVD where MASAN='GD'
74
75 --Test BDU04--
76 select MACT, HOTEN, VITRI, DIACHI, MACLB, MAQG, SO from CAUTHU
77
78 select CAUTHU.NGAYSINH from CAUTHU
79
80 update CAUTHU set VITRI = N'Lum banh'
81 where MACT = 01
82
83 select* from HLV_CLB
84
85 select* from TINH

```

In the Messages pane, it shows:

```

Msg 229, Level 14, State 5, Line 83
The SELECT permission was denied on the object 'HLV_CLB', database 'QLBongDa', schema 'dbo'.
Completion time: 2024-04-13T21:43:01.6487107+07:00

```

The status bar at the bottom indicates "Query completed with errors."

The screenshot shows the Object Explorer on the left and a query window on the right. The query window contains the following T-SQL code:

```
73 delete SANVO where MASAN='GD'
74
75 --Test BDU04--
76 select MACT, HOTEN, VITRI, DIACHI, MACLB, MAQG, SO from CAUTHU
77
78 select CAUTHU.NGAYSINH from CAUTHU
79
80 update CAUTHU set VITRI = N'Lum banh'
81 where MACT = 01
82
83 select* from HLV_CLB
84
85 select* from TINH
```

Messages pane:

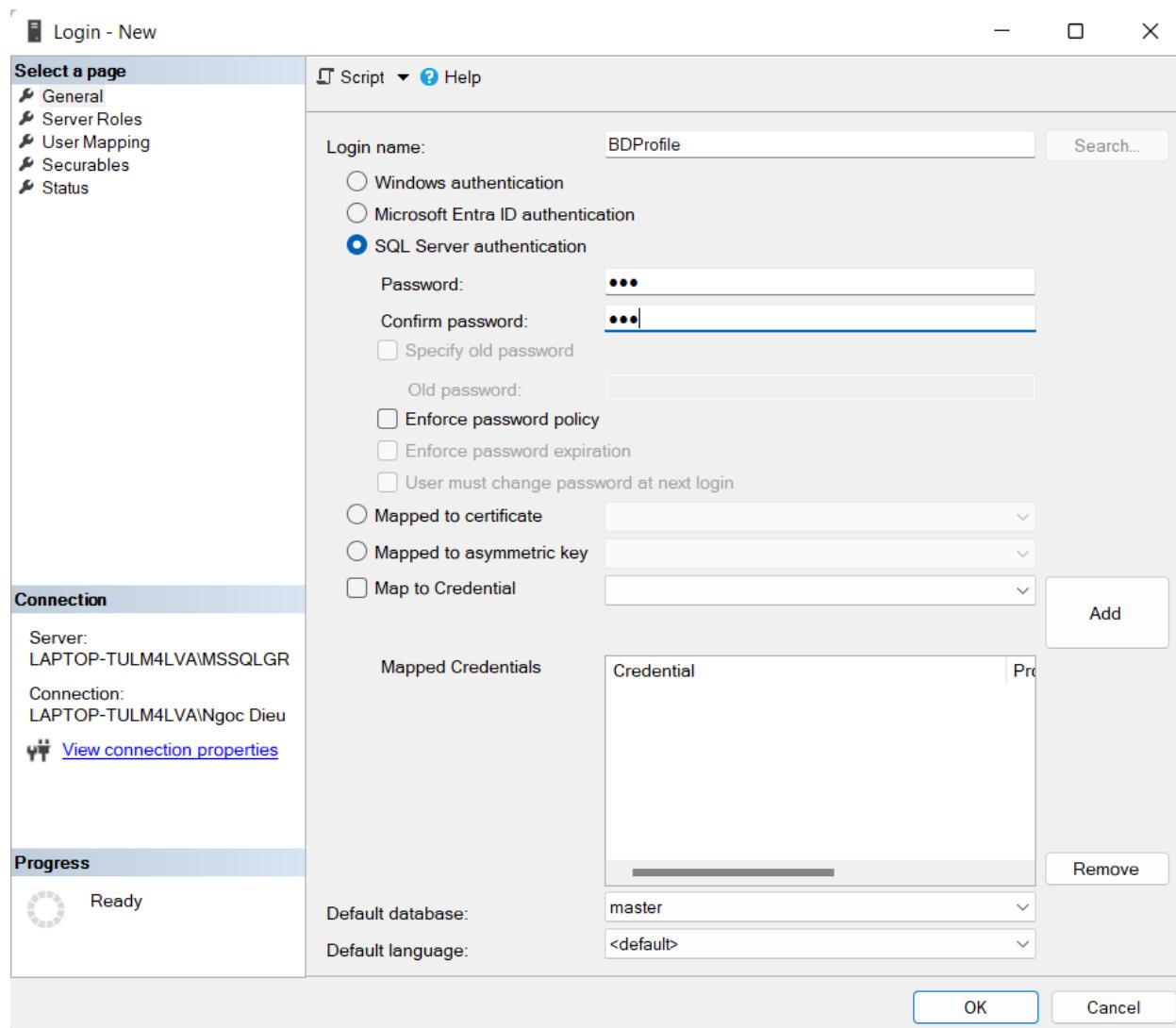
Msg 229, Level 14, State 5, Line 85
The SELECT permission was denied on the object 'TINH', database 'QLBongDa', schema 'dbo'.
Completion time: 2024-04-13T21:49:13.1166001+07:00

Query completed with errors.

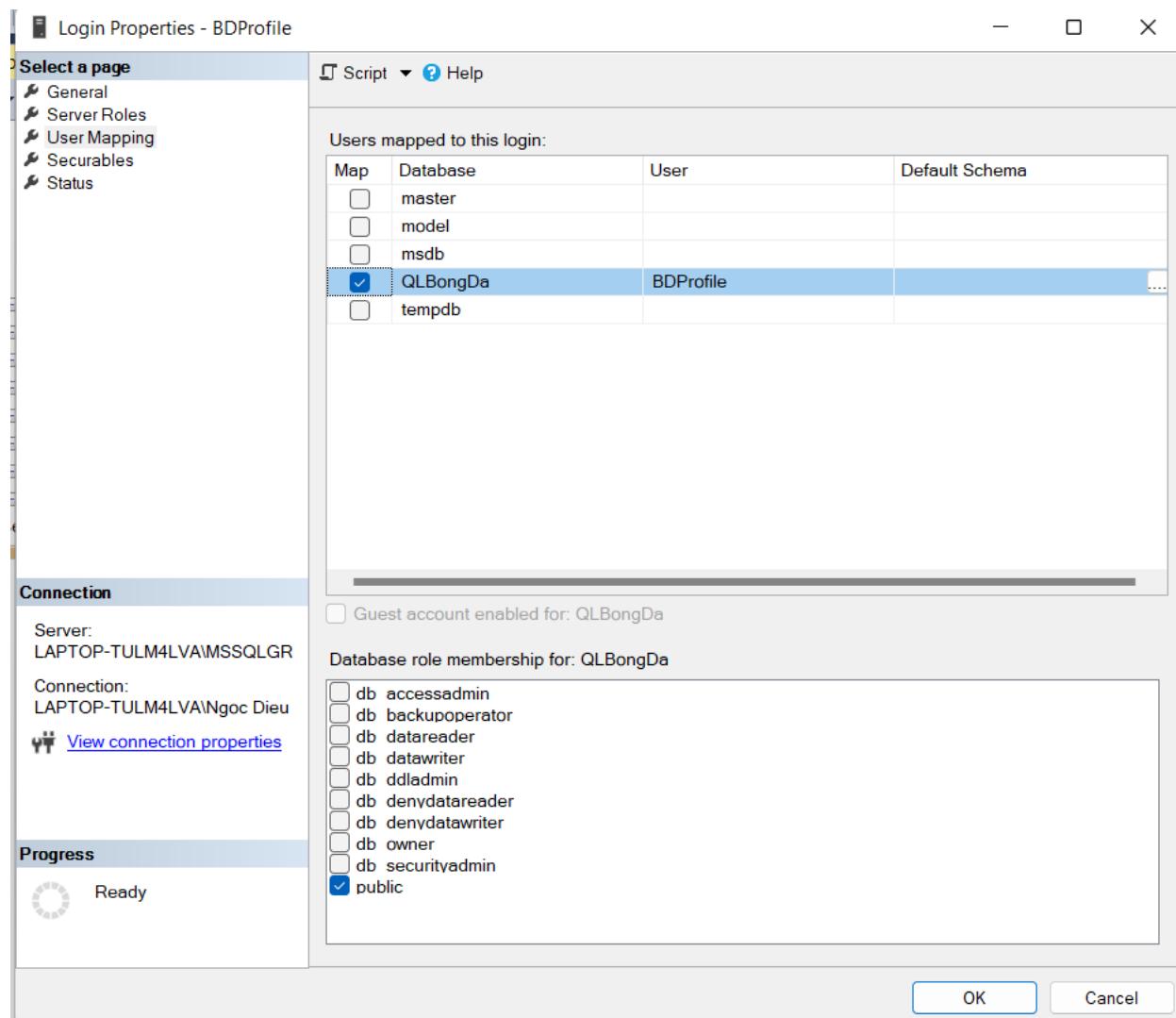
8. BDProfile

8.1. Cài đặt

B1: Tạo user mới với loại ủy quyền là **SQL Server Authentication**



B2: Nháy đúp vô phần **user** BDProfile, chọn **User Mapping**, map với database **QLBongDa** với role **public**



B3: Chạy lệnh với mục đích grant alter **trace** cho user **BDProfile**

The screenshot shows the Object Explorer and SQL Query panes in SSMS. In the Object Explorer, the Security\Logins node is expanded, showing various logins including BDAdmin, BDDK, BDRead, BDU01, BDU02, BDU03, BDU04, and several service accounts. In the SQL Query pane, the following T-SQL code is run:

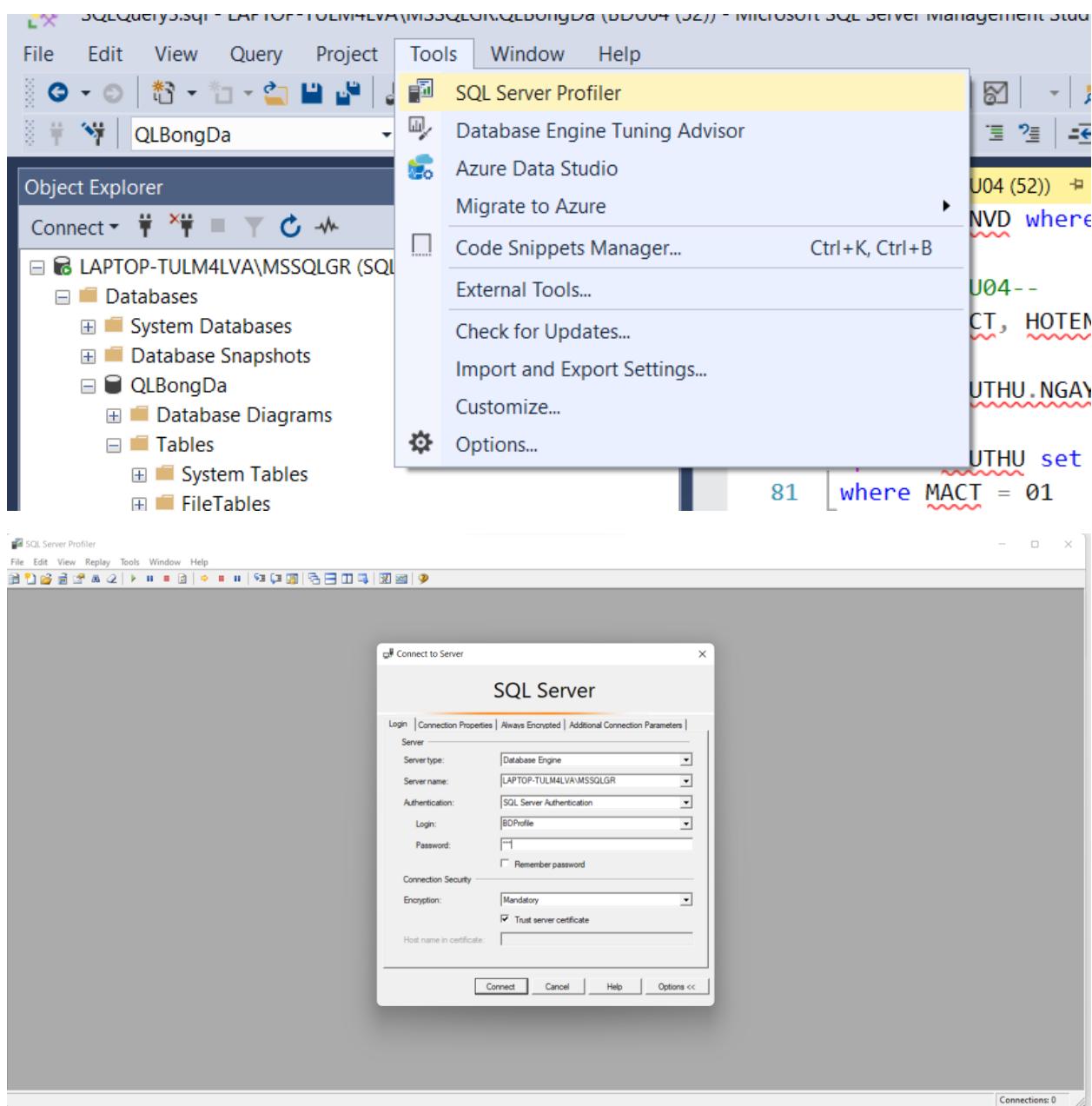
```
use master;
grant alter trace to BDProfile;
go
```

The execution results show:

- Messages: Commands completed successfully.
- Completion time: 2024-04-12T22:04:31.7633519+07:00

The status bar at the bottom indicates the session details: TULM4LVA\MSSQLGR (16... | LAPTOP-TULM4LVA\Ngoc D... | master | 00:00:00 | 0 rows).

8.2. Kiểm tra



The screenshot shows the SQL Server Profiler application. The top window is titled "Trace Properties" and contains settings for a trace named "Untitled - 1". It specifies the trace provider name as "LAPTOP-TULM4LVA\MSSQLGR" and provider type as "Microsoft SQL Server 2022" (version 16.0.1000). The "Use the template" dropdown is set to "Standard (default)". The "Save to file" section includes options for "Set maximum file size (MB)" (5 MB), "Enable file rollover", and "Server processes trace data". The "Save to table" section includes "Set maximum rows (in thousands)" (1). The "Enable trace stop time" section shows a start date of 4/13/2024 at 10:45:11 PM, with a duration of 60 minutes. The bottom window is titled "Untitled - 1 (LAPTOP-TULM4LVA\MSSQLGR)" and displays a results grid with columns: EventClass, TextData, ApplicationName, NTUserName, LoginName, CPU, Reads, Writes, Duration, ClientProcessID, SPID, and StartTime. The results show various system events like "Audit Logout", "Audit Login", and "SQL:BatchStarting". Below the grid is a script pane containing T-SQL code for creating an event session named "telemetry_xevents" to capture telemetry events. The script includes conditions for severity level 16 and specific error numbers. The status bar at the bottom right indicates "Ln 22, Col 1 Rows: 22".

```

if exists(select * from sys.server_event_sessions where name='telemetry_xevents')
    drop event session telemetry_xevents on server
create event session telemetry_xevents on server
    ADD EVENT [sqlserver].[error_reported]
        WHERE severity = 16
        OR (error_number = 18456
            OR error_number = 17893 OR error_number = 701 OR error_number = 802 OR error_number = 8645 OR error_number = 8651
            OR error_number = 8927 OR error_number = 8902 OR error_number = 41354 OR error_number = 41359 OR error_number = 41367
            OR error_number = 41384 OR error_number = 41336 OR error_number = 41309 OR error_number = 41312 OR error_number = 41313
            OR error_number = 33065 OR error_number = 33066)
        )
ADD EVENT [sqlserver].[missing_column_statistics],
ADD EVENT [sqlserver].[missing_join_predicate],

```

Trace is running.

II. Câu g

- Kết quả chạy câu e:

```

24
25  --g--
26  EXEC SP_SEL_NO_ENCRYPT @TenCLB = N'SHB Đà Nẵng', @TenQG = N'Brazil'
27  EXEC SP_SEL_ENCRYPT @TenCLB = N'SHB Đà Nẵng', @TenQG = N'Brazil'
28  --> Nhận xét: cả 2 đều có cùng 1 kết quả
29
30  --h--

```

121 %

	mact	hoten	ngaysinh	diachi	vitri
1	5	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
2	6	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ

- Kết quả chạy câu f:

```

25
26  --g--
27  EXEC SP_SEL_NO_ENCRYPT @TenCLB = N'SHB Đà Nẵng', @TenQG = N'Brazil'
28  EXEC SP_SEL_ENCRYPT @TenCLB = N'SHB Đà Nẵng', @TenQG = N'Brazil'
29  --> Nhận xét: cả 2 đều có cùng 1 kết quả
30  --h--

```

121 %

	mact	hoten	ngaysinh	diachi	vitri
1	5	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
2	6	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ

Nhận xét: Cả 2 câu đều chạy ra cùng 1 kết quả, việc mã hóa stored procedure giúp bảo mật về nội dung của procedure (không thể thay đổi trên procedure đã được mã hóa) nhưng không làm thay đổi kết quả thực thi.

III. Câu h

Có 2 cách để encrypt 100 stored procedure trước khi cài đặt:

- Một là viết 1 procedure enter thêm phần encryption vào
- Hai là enter 100 procedure vào rồi thêm phần encryption

Nhóm em là theo cách một, theo đó:

```
1 CREATE PROCEDURE EncryptAllStoredProcedures
2 AS
3 BEGIN
4     DECLARE @ProcedureName NVARCHAR(500)
5     DECLARE @EncryptStatement NVARCHAR(MAX)
6     DECLARE ProcedureCursor CURSOR FOR
7     SELECT name
8     FROM sys.procedures
9
10    OPEN ProcedureCursor
11
12    FETCH NEXT FROM ProcedureCursor INTO @ProcedureName
13
14    WHILE @@FETCH_STATUS = 0
15    BEGIN
16        SET @EncryptStatement = 'ALTER PROCEDURE ' + @ProcedureName + ' WITH ENCRYPTION'
17        EXEC sp_executesql @EncryptStatement
18
19        FETCH NEXT FROM ProcedureCursor INTO @ProcedureName
20    END
21
22    CLOSE ProcedureCursor
23    DEALLOCATE ProcedureCursor
24
```

- Stored procedure trên được đặt tên là EncryptAllStoredProcedures.
- Stored procedure này sử dụng một con trỏ (cursor) để lặp qua tất cả các stored procedure trong cơ sở dữ liệu
 - Mỗi lần lặp, nó tạo một câu lệnh ALTER PROCEDURE với câu lệnh WITH ENCRYPTION để mã hóa stored procedure.
 - Sau đó, nó thực thi câu lệnh trên bằng cách sử dụng sp_executesql
 - Quá trình này lặp lại cho tất cả các stored procedure trong cơ sở dữ liệu cho đến khi không còn stored procedure nào nữa.

IV. Câu i

1. BDRead

```
Object Explorer
Connect > QLBongDa > Execute > Script_e_f_g_h_l_4VA(Ngoc Dieu (66)) > X

161
162    -- BDU04
163    grant select,view definition on vCau1 to BDU04
164    grant select,view definition on vCau2 to BDU04
165    grant select,view definition on vCau3 to BDU04
166    grant select,view definition on vCau4 to BDU04
167
168    ----i. Test----
169    -- BDRead --
170    SELECT * FROM vCau1
171    SELECT * FROM vCau5
172    -- BDU01 --
173    SELECT * FROM vCau2
174    SELECT * FROM vCau10
175

121% >
Results > Messages
```

Mã	Tên	National	Giới	Về
1	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
2	Roberto	1989-10-12 00:00:00.000	NULL	Tiền vệ

```
-- BDU04
grant select,view definition on vCau1 to BDU04
grant select,view definition on vCau2 to BDU04
grant select,view definition on vCau3 to BDU04
grant select,view definition on vCau4 to BDU04

-----i. Test-----
--BDRead-
SELECT * FROM vCau1
SELECT * FROM vCau5
--BDU01--
SELECT * FROM vCau2
SELECT * FROM vCau10
--BDU03--
```

2. BDU01

Ở câu lệnh SELECT* FROM vCau2 sẽ không chạy được vì ta chỉ cấp quyền cho BDU01 từ vCau5 đến vCau10, nên vCau2 sẽ không chạy được.

SQL Server Object Explorer and Query Editor windows showing two sessions:

- Session 1 (Top):** Runs `SELECT * FROM vCau2` on database BDU01. Returns the following error message:


```
Msg 229, Level 14, State 5, Line 3
The SELECT permission was denied on the object 'vCau2', database 'QLBongDa', schema 'dbo'.
```
- Session 2 (Bottom):** Runs `SELECT * FROM vCau10` on database BDU01. Returns the following results:

NGAYTD	TENSAN	TENCLB1	TENCLB2	KETQUA
2009-02-07 00:00:00.000	Gó Đáu	BECAMEX BÌNH DƯƠNG	SHB ĐÀ NẴNG	3-0
2009-02-16 00:00:00.000	Chi Lăng	SHB ĐÀ NẴNG	KHATOCO KHÁNH HÒA	2-2

3. BDU03

SQL Server Object Explorer and Script Editor windows showing a script named `Script_e, f, g, h, i...4LVA\Ngoc Dieu (66)`:

```

169  -- -BDread-
170  SELECT * FROM vCau1
171  SELECT * FROM vCau5
172  -- -BDU01-
173  SELECT * FROM vCau2
174  SELECT * FROM vCau10
175  -- -BDU03-
176  SELECT * FROM vCau1
177  SELECT * FROM vCau2
178  SELECT * FROM vCau3
179  SELECT * FROM vCau4
180  -- -BDU04-
181  SELECT * FROM vCau1
182  SELECT * FROM vCau2
183  SELECT * FROM vCau3
  
```

The results grid shows the following data:

macl	hoten	ngaysinh	diachi	vtri
1	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
2	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ

```

169  --BDRead--+
170  SELECT * FROM vCau1
171  SELECT * FROM vCau5
172  --BDU01--+
173  SELECT * FROM vCau2
174  SELECT * FROM vCau0
175  --BDU03--+
176  SELECT * FROM vCau1
177  SELECT * FROM vCau2
178  SELECT * FROM vCau3
179  SELECT * FROM vCau4
180  --BDU04--+
181  SELECT * FROM vCau1
182  SELECT * FROM vCau2
183  SELECT * FROM vCau3
121 % Results
1   MATRAN    NGAYTD      TENSAN      TENCLB1    TENCLB2    KETQUA
2   5          2009-03-01 00:00:00.000  Tuy Hòa    THÉP PHỦ YÊN GẠCH ĐỘNG TÂM LONG AN 0-2
2   6          2009-03-01 00:00:00.000  Nha Trang KHATOCO KHÁNH HÒA BECAMEX BÌNH DƯƠNG 0-1
121 % Messages
169  --BDRead--+
170  SELECT * FROM vCau1
171  SELECT * FROM vCau5
172  --BDU01--+
173  SELECT * FROM vCau2
174  SELECT * FROM vCau0
175  --BDU03--+
176  SELECT * FROM vCau1
177  SELECT * FROM vCau2
178  SELECT * FROM vCau3
179  SELECT * FROM vCau4
180  --BDU04--+
181  SELECT * FROM vCau1
182  SELECT * FROM vCau2
183  SELECT * FROM vCau3
121 % Results
1   MHHLV     TENHLY      NGAYSNH   DIACHI    VATRO    TENCLB
2   HLV02     Lã Huỳnh Đức 1972-05-20 00:00:00.000 NULL     HLV Chính SHB DA NẴNG
2   HLV04     Hoàng Anh Tuấn 1970-01-10 00:00:00.000 NULL     HLV Chính KHATOCO KHÁNH HÒA
3   HLV05     Trần Công Minh 1973-07-07 00:00:00.000 NULL     HLV Chính GẠCH ĐỘNG TÂM LONG AN
4   HLV06     Trần Văn Phúc 1965-03-02 00:00:00.000 NULL     HLV IHC m6n BECAMEX BÌNH DƯƠNG
121 % Messages
169  --BDRead--+
170  SELECT * FROM vCau1
171  SELECT * FROM vCau5
172  --BDU01--+
173  SELECT * FROM vCau2
174  SELECT * FROM vCau0
175  --BDU03--+
176  SELECT * FROM vCau1
177  SELECT * FROM vCau2
178  SELECT * FROM vCau3
179  SELECT * FROM vCau4
180  --BDU04--+
181  SELECT * FROM vCau1
182  SELECT * FROM vCau2
183  SELECT * FROM vCau3
121 % Results
1   MACLB     TENCLB    TENSAN    DIACHI    SOLUONG

```

4. BDU04

```

172 --BU01--  

173 SELECT * FROM vCau2  

174 SELECT * FROM vCau10  

175 --BU03--  

176 SELECT * FROM vCau1  

177 SELECT * FROM vCau2  

178 SELECT * FROM vCau3  

179 SELECT * FROM vCau4  

180 --BU04--  

181 SELECT * FROM vCau1  

182 SELECT * FROM vCau2  

183 SELECT * FROM vCau3  

184 SELECT * FROM vCau4

```

mact	hoten	ngaysinh	diachi	vtri
1	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
2	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ


```

172 --BU01--  

173 SELECT * FROM vCau2  

174 SELECT * FROM vCau10  

175 --BU03--  

176 SELECT * FROM vCau1  

177 SELECT * FROM vCau2  

178 SELECT * FROM vCau3  

179 SELECT * FROM vCau4  

180 --BU04--  

181 SELECT * FROM vCau1  

182 SELECT * FROM vCau2  

183 SELECT * FROM vCau3  

184 SELECT * FROM vCau4

```

MATRAN	NGAYTD	TENSAN	TENCLB1	TENCLB2	KETQUA
5	2009-03-01 00:00:00.000	Tuy Hòa	THẾ PHỦ YÊN	GẠCH ĐÔNG TÂM LONG AN	0-2
6	2009-03-01 00:00:00.000	Nha Trang	KHÁT CO KHÁNH HÒA	BECAMEX BÌNH DƯƠNG	0-1


```

172 --BU01--  

173 SELECT * FROM vCau2  

174 SELECT * FROM vCau10  

175 --BU03--  

176 SELECT * FROM vCau1  

177 SELECT * FROM vCau2  

178 SELECT * FROM vCau3  

179 SELECT * FROM vCau4  

180 --BU04--  

181 SELECT * FROM vCau1  

182 SELECT * FROM vCau2  

183 SELECT * FROM vCau3  

184 SELECT * FROM vCau4

```

MAHVLV	TENHVLV	NGAYSINH	DIACHI	VAITRO	TENCLB
HLV02	Lê Huyền Đức	1972-05-20 00:00:00.000	NULL	HLV Chính	SHB ĐÀ NẴNG
HLV04	Hoàng Anh Tuấn	1970-06-10 00:00:00.000	NULL	HLV Chính	KHÁT CO KHÁNH HÒA
HLV05	Trần Công Minh	1973-07-07 00:00:00.000	NULL	HLV Chính	GẠCH ĐÔNG TÂM LONG AN
HLV06	Trần Văn Phúc	1965-03-02 00:00:00.000	NULL	HLV th? m?n	BECAMEX BÌNH DƯƠNG


```

172 --BU01--  

173 SELECT * FROM vCau2  

174 SELECT * FROM vCau10  

175 --BU03--  

176 SELECT * FROM vCau1  

177 SELECT * FROM vCau2  

178 SELECT * FROM vCau3  

179 SELECT * FROM vCau4  

180 --BU04--  

181 SELECT * FROM vCau1  

182 SELECT * FROM vCau2  

183 SELECT * FROM vCau3  

184 SELECT * FROM vCau4

```

MACLB	TENCLB	TENSAN	DIACHI	SOLUONG
-------	--------	--------	--------	---------

V. Câu j

1. BDRead

```
grant execute on object::SPCau3 to BDU04
grant execute on object::SPCau4 to BDU04
--test SP--
--BDRead--
exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
exec SPCau9 3, 2009
```

MACT	HOTEN	NGAYSINH	DIACHI	VITRI
5	Ronaldo	1989-12-12 00:00:00.000	NULL	Tiền vệ
6	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ

```
grant execute on object::SPCau3 to BDU04
grant execute on object::SPCau4 to BDU04
--test SP--
--BDRead--
exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
exec SPCau9 3, 2009
```

NGAYTD	TENSAN	TENCLB1	TENCLB2	KETQUA
2009-02-07 00:00:00.000	Gò Đậu	BECAMEX BÌNH DƯƠNG	SHB DA NẴNG	3-0
2009-02-16 00:00:00.000	Tuy Hòa	THÉP PHỐ YÊN	BECAMEX BÌNH DƯƠNG	5-0
2009-03-01 00:00:00.000	Nha Trang	KHATOCO KHÁNH HÒA	BECAMEX BÌNH DƯƠNG	0-1

2. BDU01

```

USE QLBongDa
exec SPCau10 3, 2009

```

NGAYTD	TENSAN	TENCLB1	TENCLB2	KETQUA
2009-02-07 00:00:00.000	Gó Đấu	BECAMEX BÌNH DƯƠNG	SHB ĐÀ NẴNG	3-0
2009-02-16 00:00:00.000	Chi Lăng	SHB ĐÀ NẴNG	KHATOCO KHÁNH HÒA	2-2

Query executed successfully.


```

USE QLBongDa
exec SPCau3 N'Việt Nam'

```

Msg 229, Level 14, State 5, Procedure SPCau3, Line 1 [Batch Start Line 0]
The EXECUTE permission was denied on the object 'SPCau3', database 'QLBongDa', schema 'dbo'.

Completion time: 2024-04-14T15:43:01.3214966+07:00

Query completed with errors.

BDU01 được phân quyền thực thi từ SPCau5 đến SPCau10, vì thế nên không thể chạy SPCau3

3. BDU03

```

exec SPCau3 N'Việt Nam'
exec SPCau10 3, 2009
-- BDU03 --
exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
exec SPCau3 N'Việt Nam'
exec SPCau4 N'Việt Nam'
exec SPCau10 3, 2009

```

MACT	HOTEN	NGAYSINH	DIAACHI	VITRI
5	Ronaldo	1985-12-12 00:00:00.000	NULL	Tiền vệ
6	Robinho	1989-10-12 00:00:00.000	NULL	Tiền vệ

```

Script_e_f_g_h_i...LBongDa (BDU03 (64)) -> x
332 exec SPCau1 N'Việt Nam'
333 exec SPCau10 3, 2009
334
335 --BDU03--
336 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
337 exec SPCau3 N'Việt Nam'
338 exec SPCau4 N'Việt Nam'
339 exec SPCau10 3, 2009

Results Messages
MAHLV TENHNV NGAYSINH DIACHI VAITRO TENCLB
1 HLV02 Lê Huyền Đức 1972-05-20 00:00:00.000 NULL HLV Chính SHB Đà Nẵng
2 HLV03 Hoàng Anh Tuấn 1970-05-10 00:00:00.000 NULL HLV Chính KHOA ĐIỂU HÀNH HỘ KHẨU
3 HLV05 Trần Công Minh 1973-07-07 00:00:00.000 NULL HLV Chính GẠCH ĐÔNG TÂM LONG AN
4 HLV06 Trần Văn Phúc 1965-03-02 00:00:00.000 NULL HLV Thiết Mẫu BEGAMEX BÌNH DƯƠNG

Script_e_f_g_h_i...LBongDa (BDU03 (64)) -> x
332 exec SPCau1 N'Việt Nam'
333 exec SPCau10 3, 2009
334
335 --BDU03--
336 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
337 exec SPCau3 N'Việt Nam'
338 exec SPCau4 N'Việt Nam'
339 exec SPCau10 3, 2009

Results Messages
MACLB TENCLB TENSAN DIACHI SOLUONG

Script_e_f_g_h_i...LBongDa (BDU03 (70)) -> x
336 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
337 exec SPCau3 N'Việt Nam'
338 exec SPCau4 N'Việt Nam'
339 exec SPCau10 3, 2009
340
341 --BDU04--
342 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
343 exec SPCau3 N'Việt Nam'
344 exec SPCau4 N'Việt Nam'

Completion time: 2024-04-14T15:33:20.1333730+07:00

```

Msg 229, Level 14, State 5, Procedure SPCau10, Line 1 [Batch Start Line 338]
The EXECUTE permission was denied on the object 'SPCau10', database 'QLBongDa', schema 'dbo'.

SPCau10 không chạy được vì BDU03 không được cấp quyền với store procedure này.

4. BDU04

```

Script_e_f_g_h_i...LBongDa (BDU04 (51)) -> x
339 exec SPCau10 3, 2009
340
341 --BDU04--
342 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
343 exec SPCau3 N'Việt Nam'
344 exec SPCau4 N'Việt Nam'
345 exec SPCau10 3, 2009

Results Messages
MACT HOTEN NGAYSINH DIACHI VITRI
1 5 Rosaldo 1989-12-12 00:00:00.000 NULL Tiên về
2 6 Robinho 1989-10-12 00:00:00.000 NULL Tiên về

```

```

339 exec SPCau10 3, 2009
340
341 --BDU04--
342 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
343 exec SPCau3 N'Việt Nam'
344 exec SPCau4 N'Việt Nam'
345 exec SPCau10 3, 2009

```

Results (Messages)

MAHLY	TENHLY	NGAYSINH	DIACHI	VATLTO	TENCLB
1 HLV02	Lê Huyền Đức	1972-05-20 00:00:00.000	NULL	HLV Chính	SHB ĐÀ NẴNG
2 HLV04	Hoàng Anh Tuấn	1970-05-10 00:00:00.000	NULL	HLV Chính	KHATO CO KHẨN HÒA
3 HLV05	Trần Công Minh	1973-07-07 00:00:00.000	NULL	HLV Chính	GẠO ĐỒNG TÂM LONG AN
4 HLV06	Trần Văn Phúc	1965-03-02 00:00:00.000	NULL	HLV th? m?n	BECAMEX BÌNH DƯƠNG


```

339 exec SPCau10 3, 2009
340
341 --BDU04--
342 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
343 exec SPCau3 N'Việt Nam'
344 exec SPCau4 N'Việt Nam'
345 exec SPCau10 3, 2009

```

Results (Messages)

MACLB	TENCLB	TENSAN	DIACHI	SOLUONG
-------	--------	--------	--------	---------


```

339 exec SPCau10 3, 2009
340
341 --BDU04--
342 exec SPCau1 N'SHB Đà Nẵng', N'Brazil'
343 exec SPCau3 N'Việt Nam'
344 exec SPCau4 N'Việt Nam'
345 exec SPCau10 3, 2009

```

Messages

Msg 229, Level 14, State 5, Procedure SPCau10, Line 1 [Batch Start Line 344]
The EXECUTE permission was denied on the object 'SPCau10', database 'QLBongDa', schema 'dbo'.

Completion time: 2024-04-14T15:41:13.123232+07:00

Tương tự như BDU03, SPCau10 không chạy được vì BDU04 không được cấp quyền với store procedure này.