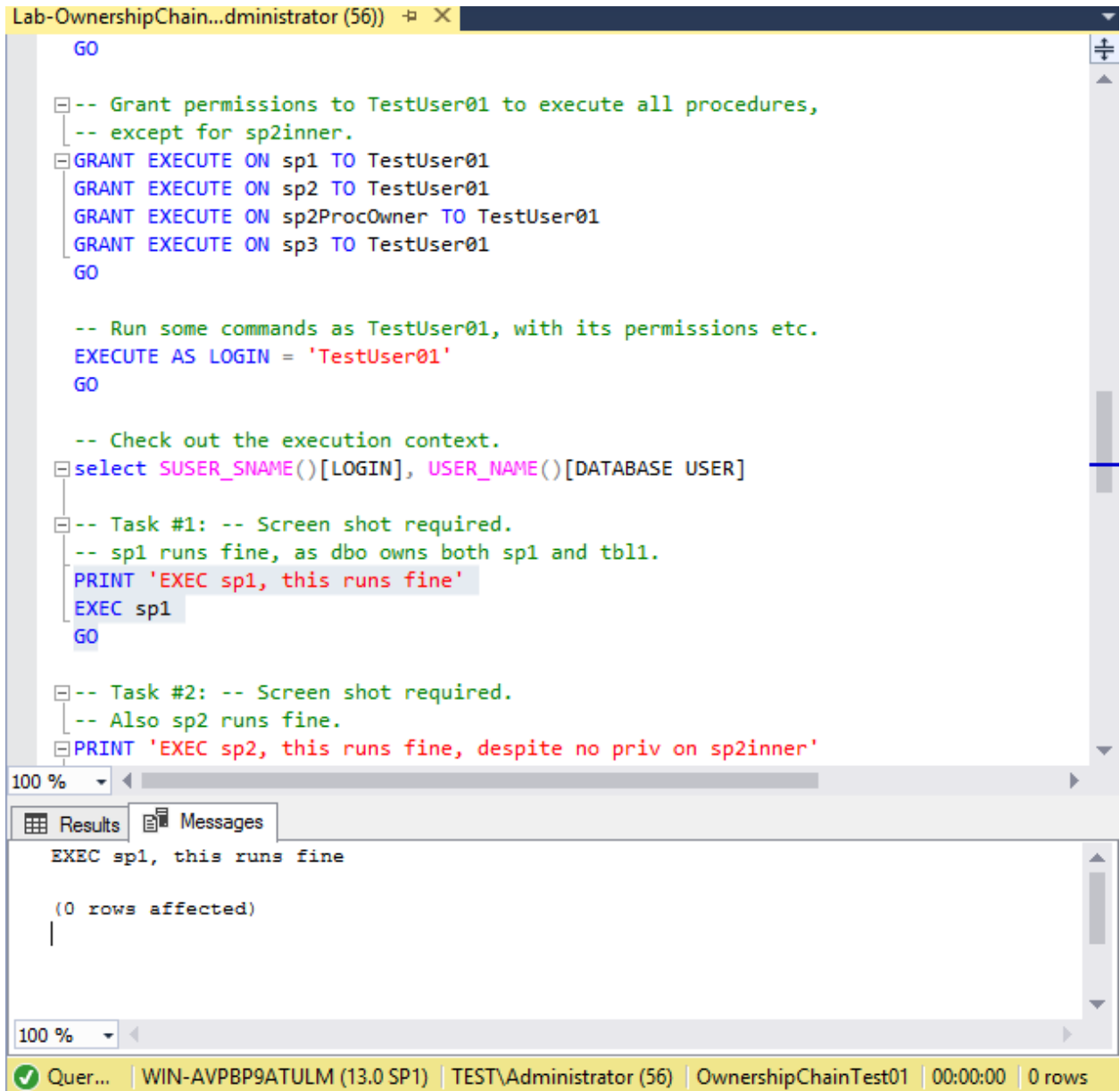


Lab: Ownership Chain

- This is an in-class lab, and worth 10 points.
- This is due on Saturday, March 28, 2020 at midnight.
- Use the following naming convention: homework, underscore, last name, first initial, and extension (e.g., Lab_Ownchain_ImG.docx).

- **(Task 1)** Show the outcome of this task in a screenshot. Also, explain briefly why you have received that result.



```
GO

-- Grant permissions to TestUser01 to execute all procedures,
-- except for sp2inner.
GRANT EXECUTE ON sp1 TO TestUser01
GRANT EXECUTE ON sp2 TO TestUser01
GRANT EXECUTE ON sp2ProcOwner TO TestUser01
GRANT EXECUTE ON sp3 TO TestUser01
GO

-- Run some commands as TestUser01, with its permissions etc.
EXECUTE AS LOGIN = 'TestUser01'
GO

-- Check out the execution context.
select USER_SNAME()[LOGIN], USER_NAME()[DATABASE USER]

-- Task #1: -- Screen shot required.
-- sp1 runs fine, as dbo owns both sp1 and tbl1.
PRINT 'EXEC sp1, this runs fine'
EXEC sp1
GO

-- Task #2: -- Screen shot required.
-- Also sp2 runs fine.
PRINT 'EXEC sp2, this runs fine, despite no priv on sp2inner'
```

100 %

Results Messages

EXEC sp1, this runs fine

(0 rows affected)

100 %

✓ Quer... | WIN-AVPBP9ATULM (13.0 SP1) | TEST\Administrator (56) | OwnershipChainTest01 | 00:00:00 | 0 rows

We were able to execute this command because we granted test user TestUser01 permission to execute the procedure sp1.

- **(Task 2)** Show the outcome of this task in a screenshot. Also, explain briefly why you have received that result.

```

Lab-OwnershipChain...dministrator (56)
GRANT EXECUTE ON sp3 TO TestUser01
GO

-- Run some commands as TestUser01, with its permissions etc.
EXECUTE AS LOGIN = 'TestUser01'
GO

-- Check out the execution context.
select USER_SNAME()[LOGIN], USER_NAME()[DATABASE USER]

-- Task #1: -- Screen shot required.
-- sp1 runs fine, as dbo owns both sp1 and tbl1.
PRINT 'EXEC sp1, this runs fine'
EXEC sp1
GO

-- Task #2: -- Screen shot required.
-- Also sp2 runs fine.
PRINT 'EXEC sp2, this runs fine, despite no priv on sp2inner'
EXEC sp2
GO

-- Task #3: -- Screen shot required.
-- But sp2ProcOwner fails twice.
PRINT 'EXEC sp2ProcOwner, two permission errors'
EXEC sp2ProcOwner

```

100 %

Results Messages

EXEC sp2, this runs fine, despite no priv on sp2inner

(0 rows affected)

(0 rows affected)

100 %

Quer... | WIN-AVPBP9ATULM (13.0 SP1) | TEST\Administrator (56) | OwnershipChainTest01 | 00:00:00 | 0 rows

We were able to execute this command because we granted test user TestUser01 permission to execute the procedure sp2. And it printed the outcome.

- **(Task 3)** Show the outcome of this task in a screenshot. Also, explain briefly why you have received that result.

```
-- Run some commands as TestUser01, with its permissions etc.
EXECUTE AS LOGIN = 'TestUser01'
GO

-- Check out the execution context.
select SUSER_SNAME()[LOGIN], USER_NAME()[DATABASE USER]

-- Task #1: -- Screen shot required.
-- sp1 runs fine, as dbo owns both sp1 and tbl1.
PRINT 'EXEC sp1, this runs fine'
EXEC sp1
GO

-- Task #2: -- Screen shot required.
-- Also sp2 runs fine.
PRINT 'EXEC sp2, this runs fine, despite no priv on sp2inner'
EXEC sp2
GO

-- Task #3: -- Screen shot required.
-- But sp2ProcOwner fails twice.
PRINT 'EXEC sp2ProcOwner, two permission errors'
EXEC sp2ProcOwner
GO

-- Task #4: -- Screen shot required.
```

100 %

Messages

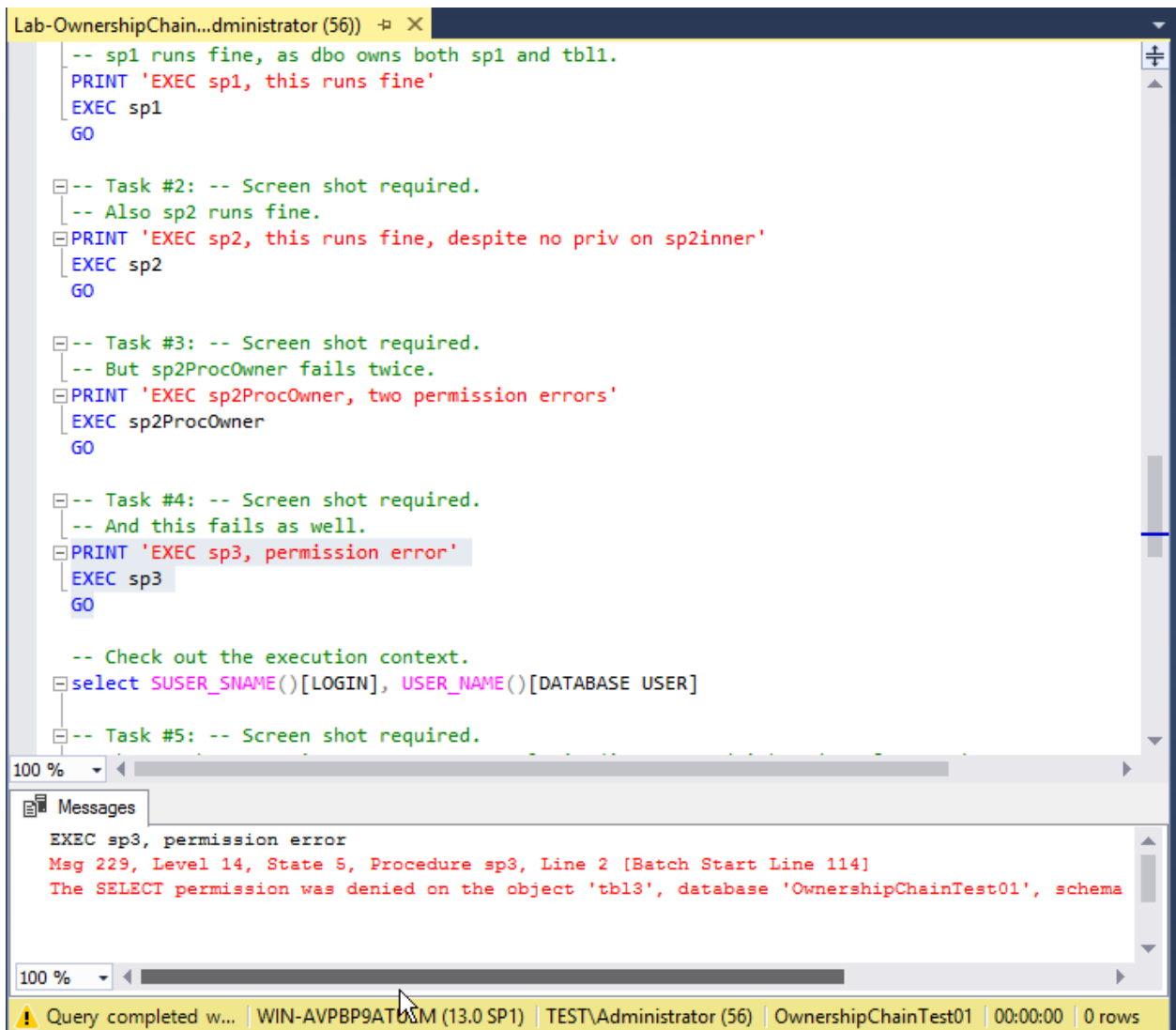
EXEC sp2ProcOwner, two permission errors
Msg 229, Level 14, State 5, Procedure sp2ProcOwner, Line 2 [Batch Start Line 108]
The SELECT permission was denied on the object 'tbl2', database 'OwnershipChainTest01'
Msg 229, Level 14, State 5, Procedure sp2inner, Line 1 [Batch Start Line 108]
The EXECUTE permission was denied on the object 'sp2inner', database 'OwnershipChainTest01'

100 %

Quer... | WIN-AVPBP9ATULM (13.0 SP1) | TEST\Administrator (56) | OwnershipChainTest01 | 00:00:00 | 0 rows

We were not able to execute this command because those stored procedures are owned by another user and we do not have permission to execute them.

- **(Task 4)** Show the outcome of this task in a screenshot. Also, explain briefly why you have received that result.



The screenshot shows a SQL Server Enterprise Manager window titled "Lab-OwnershipChain...dministrator (56)". The main pane displays a SQL script with several tasks and a final SELECT statement. The script is as follows:

```
-- sp1 runs fine, as dbo owns both sp1 and tbl1.
PRINT 'EXEC sp1, this runs fine'
EXEC sp1
GO

-- Task #2: -- Screen shot required.
-- Also sp2 runs fine.
PRINT 'EXEC sp2, this runs fine, despite no priv on sp2inner'
EXEC sp2
GO

-- Task #3: -- Screen shot required.
-- But sp2ProcOwner fails twice.
PRINT 'EXEC sp2ProcOwner, two permission errors'
EXEC sp2ProcOwner
GO

-- Task #4: -- Screen shot required.
-- And this fails as well.
PRINT 'EXEC sp3, permission error'
EXEC sp3
GO

-- Check out the execution context.
select USER_SNAME()[LOGIN], USER_NAME()[DATABASE USER]

-- Task #5: -- Screen shot required.
```

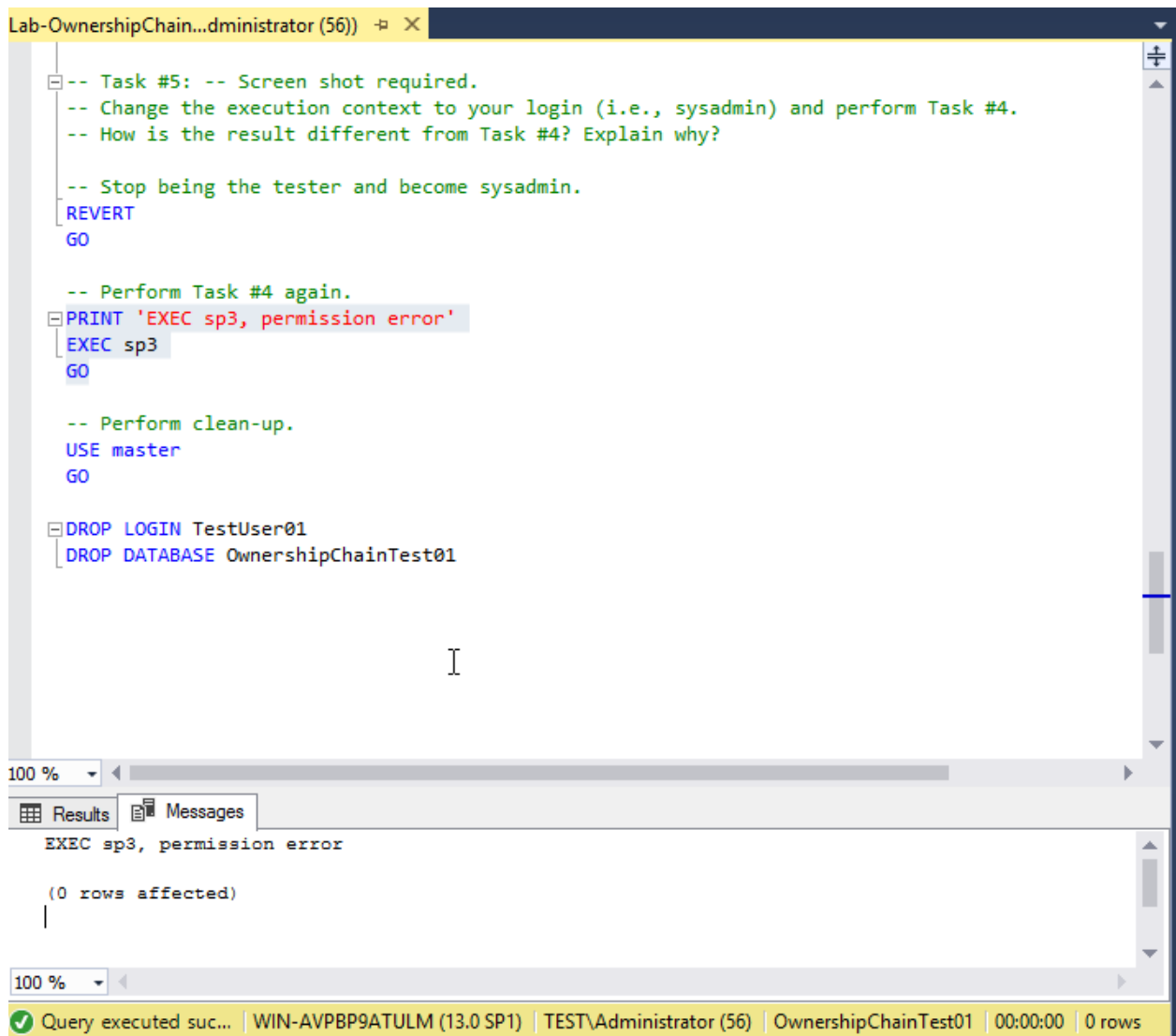
The bottom pane shows the "Messages" window with the following error message:

```
EXEC sp3, permission error
Msg 229, Level 14, State 5, Procedure sp3, Line 2 [Batch Start Line 114]
The SELECT permission was denied on the object 'tbl3', database 'OwnershipChainTest01', schema
```

The status bar at the bottom indicates: "Query completed w... | WIN-AVPBP9AT...M (13.0 SP1) | TEST\Administrator (56) | OwnershipChainTest01 | 00:00:00 | 0 rows".

We were not able to execute this command because those stored procedures are owned by another user and we do not have permission to execute them.

- (**Task 5**) Show the outcome of this task in a screenshot. Also, explain briefly why the result is different from the one from Task #4?



The screenshot shows a SQL Server Enterprise Manager window titled "Lab-OwnershipChain...dministrator (56)". The main query window contains the following T-SQL script:

```
-- Task #5: -- Screen shot required.
-- Change the execution context to your login (i.e., sysadmin) and perform Task #4.
-- How is the result different from Task #4? Explain why?

-- Stop being the tester and become sysadmin.
REVERT
GO

-- Perform Task #4 again.
PRINT 'EXEC sp3, permission error'
EXEC sp3
GO

-- Perform clean-up.
USE master
GO

DROP LOGIN TestUser01
DROP DATABASE OwnershipChainTest01
```

The script is executed, and the Results pane at the bottom shows the output of the PRINT statement:

```
EXEC sp3, permission error

(0 rows affected)
```

The status bar at the bottom indicates: "Query executed suc... | WIN-AVPBP9ATULM (13.0 SP1) | TEST\Administrator (56) | OwnershipChainTest01 | 00:00:00 | 0 rows".

We were able to execute this command because we used the command REVERT with which we reverted back to sysadmin allowing us to execute the procedure in task 4.