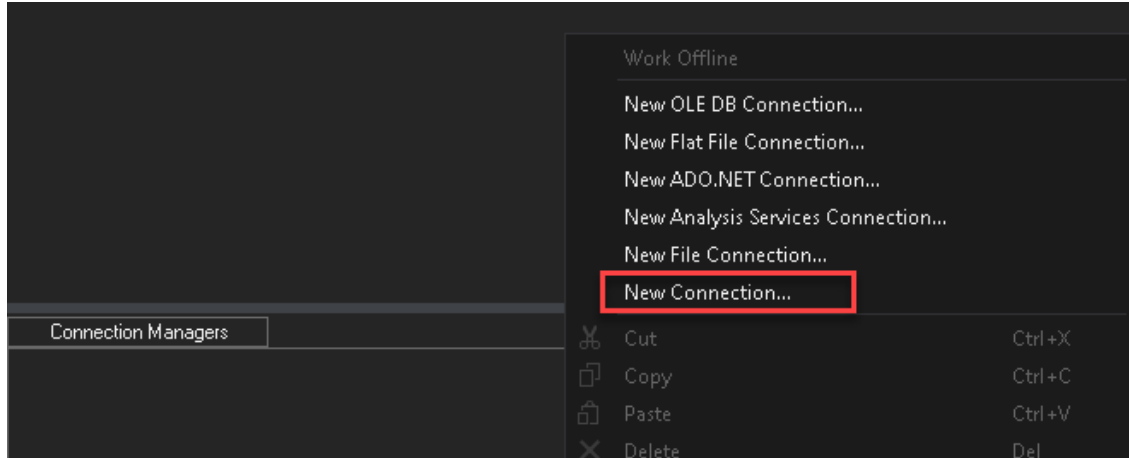


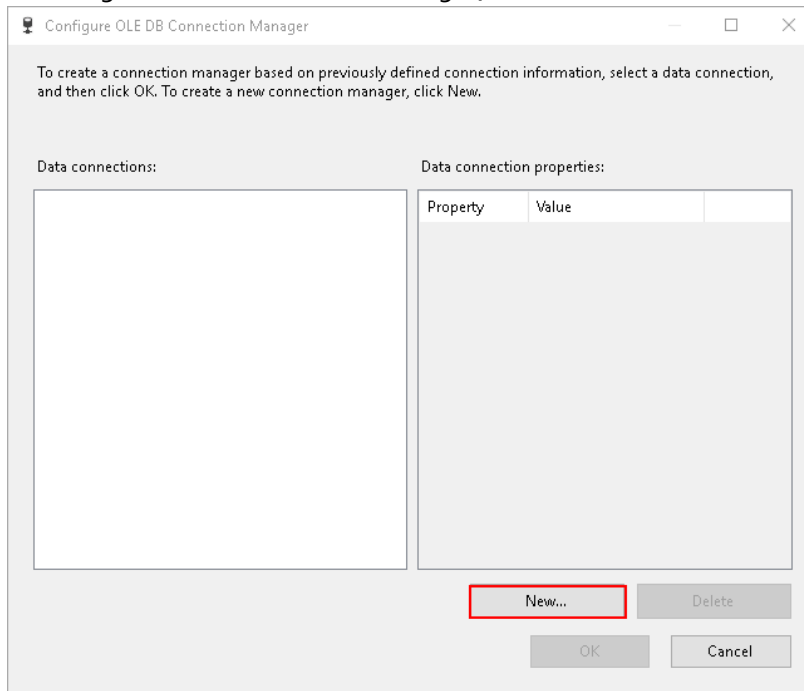
SQL SERVER INTEGRATION SERVICES

MODULE 04 – LAB 03 – EXERCISE 01: CHECKPOINTS

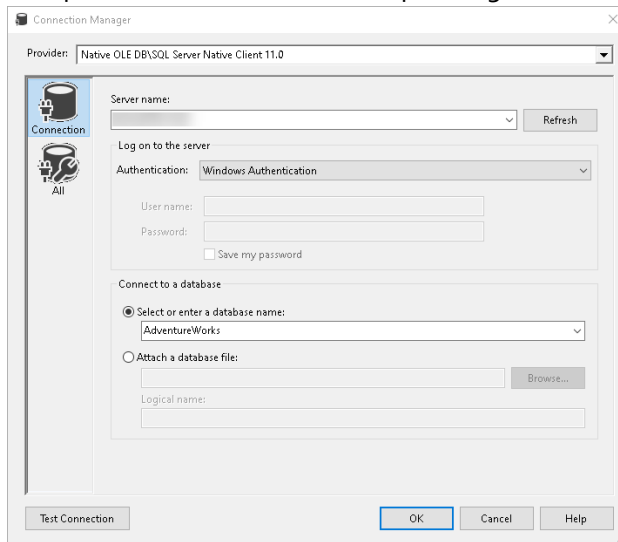
1. Create new integration services project.
2. Set up a connection manager for the database. In the bottom center pane under Connection Manager, right-click select New Ole-DB Connection.



3. In Configure OLE DB Connect Manager, click New.



- Setup connection to SQL Server pointing to the AdventureWorks database.



- Create a new Project Parameter, "CheckpointPath". Set it to String value with default value C:\Temp\ (confirm the path exists, if not create it).

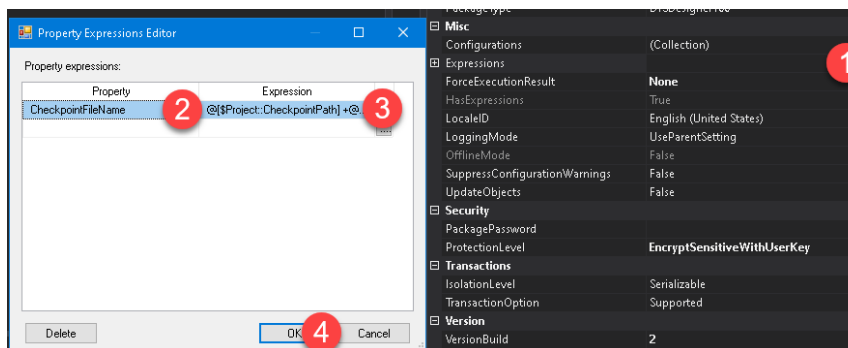
Name	Data type	Value	Sensitive	Required
CheckpointPath	String	C:\Temp\	False	True

- Set Package Checkpoint properties – Leave CheckpointFileName as blank.

Checkpoints	
CheckpointFileName	
CheckpointUsage	IfExists
SaveCheckpoints	True

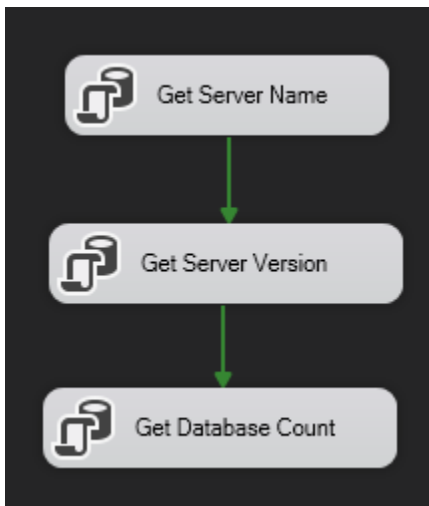
- The CheckpointFileName should be dynamic, therefore we must use expressions to set the value.

Expression: @[Project::CheckpointPath] + @[System::PackageName] + "_SSIS_Checkpoint.xml"



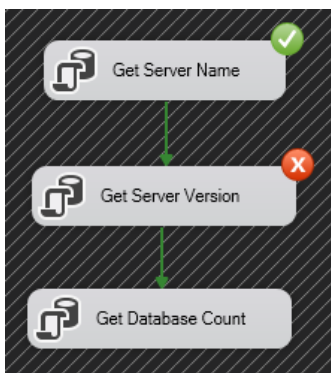
8. Create three "Execute SQL Task" and respective SQL code and link it to connection created in step #1. Set the property "FailPackageOnFailure" to true for each task.

Task Name	SQL Code
Get Server Name	SELECT @@ServerName
Get Server Version	SELECT @@Versions
Get Database Count	SELECT COUNT(*) AS DBCount FROM sys.databases



Execution	
DelayValidation	False
Disable	False
DisableEventHandlers	False
FailPackageOnFailure	True
FailParentOnFailure	False
MaximumErrorCount	1

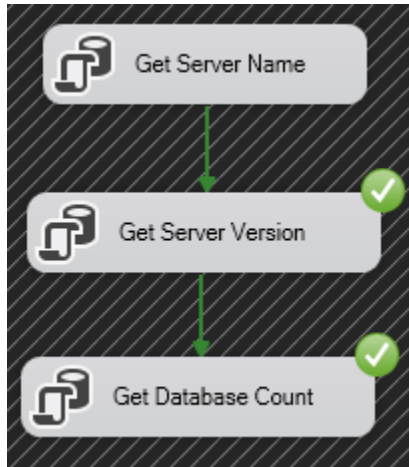
9. Execute the task, it should fail at "Get Server Version."



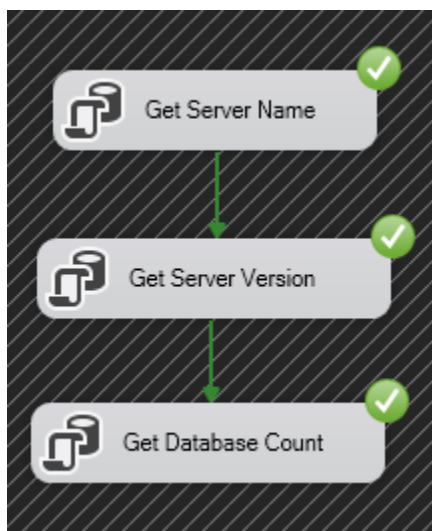
10. Review the checkpoint file that got created in C:\Temp\ (reformatted for lab).

```
<DTS:Checkpoint xmlns:DTS="www.microsoft.com/SqlServer/Dts" DTS:PackageID="{F93B1C31-D6D7-4210-AAA0-4B9AC0C0EB0D}">  
  <DTS:Variables DTS:ContID="{F93B1C31-D6D7-4210-AAA0-4B9AC0C0EB0D}" />  
  <DTS:Container DTS:ContID="{0A386E59-1745-4279-A219-83F1A1E92669}" DTS:Result="0" DTS:PrecedenceMap="" />  
</DTS:Checkpoint>
```

11. The package failed because "Get Server Version" SQL code is incorrect. Update the code to "SELECT @@Version" and rerun. Notice this time, it skips the first SQL Task due to check point.



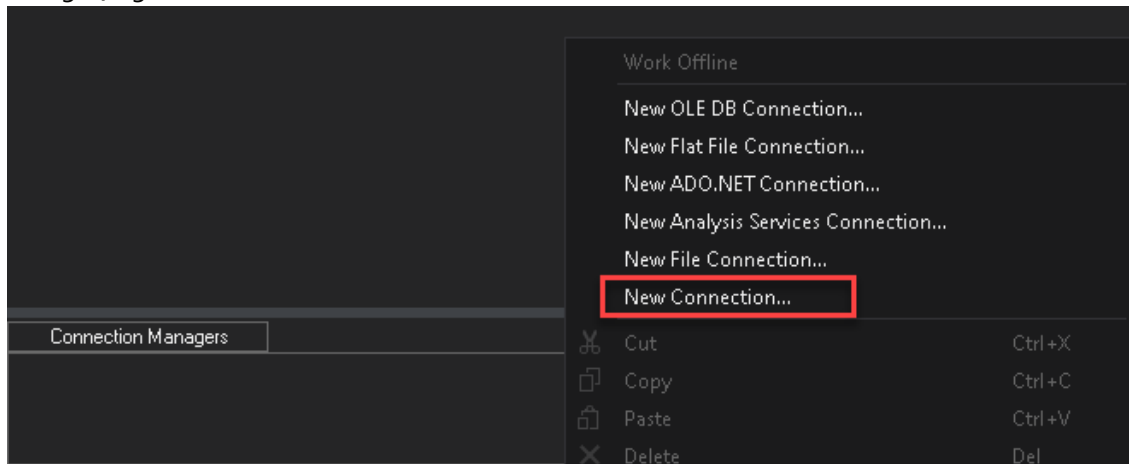
12. Review the C:\Temp\ notice the checkpoint should have been deleted at the end of execution.
13. Re-run the package. This time all three steps run, because the check point file was deleted after previous execution.



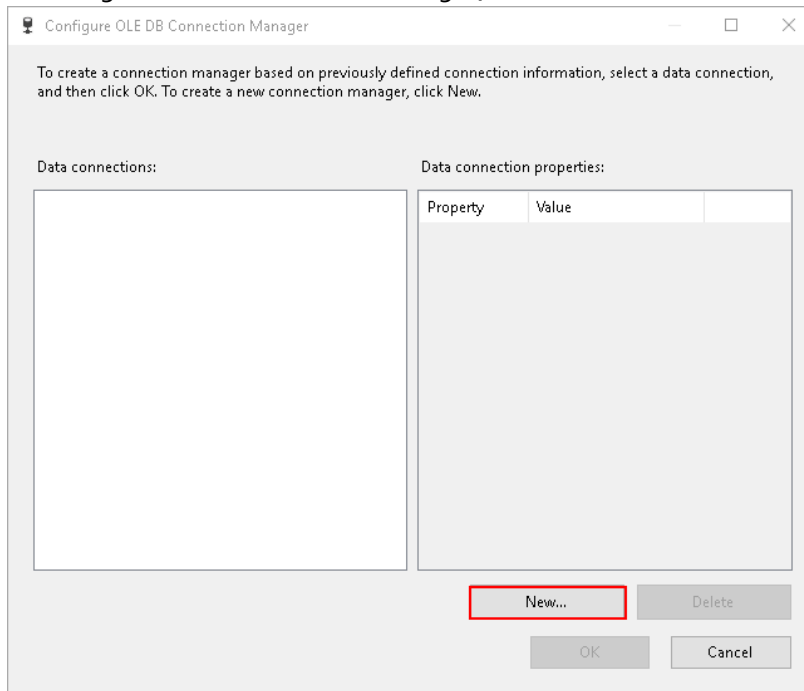
MODULE 04 – LAB 03 – EXERCISE 02: TRANSACTIONS

Note: Instructions in this exercise are not as detailed intentionally. Review previous labs if unsure how to complete some steps.

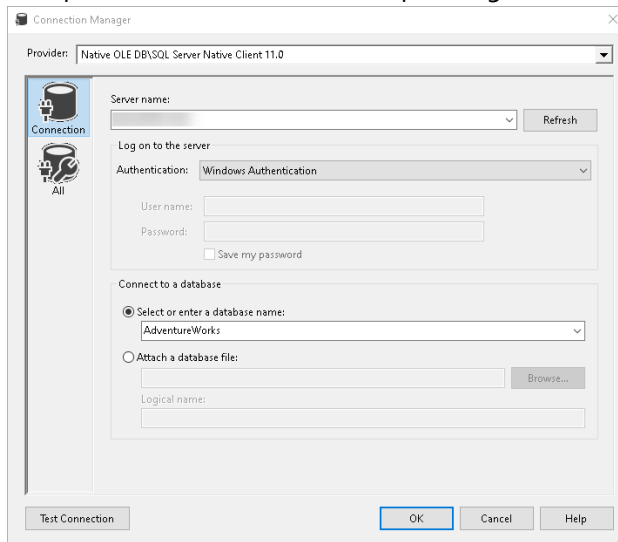
1. Create new integration services project.
2. Set up a connection manager for the database. In the bottom center pane under Connection Manager, right-click select New Ole-DB Connection.



3. In Configure OLE DB Connect Manager, click New.



4. Setup connection to SQL Server pointing to the AdventureWorks database.



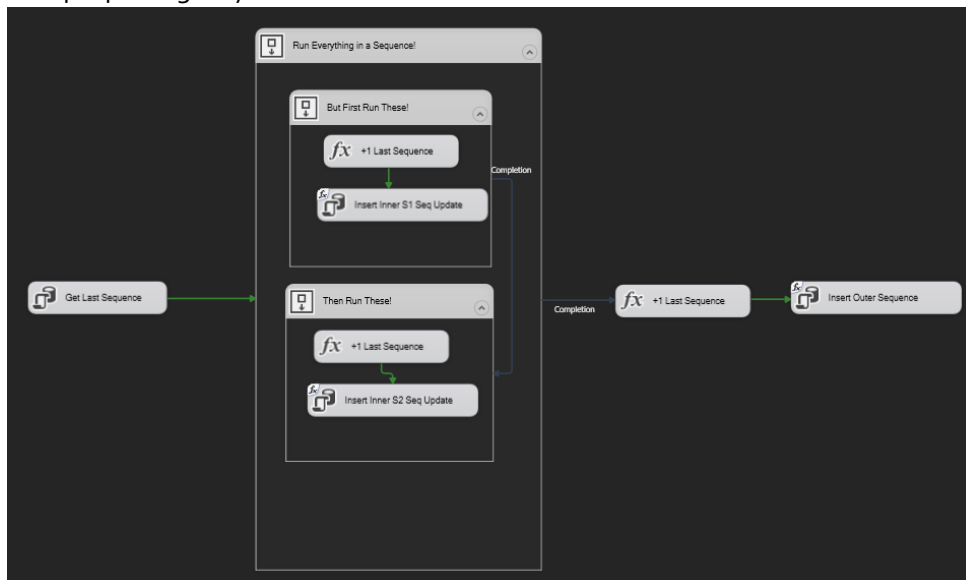
5. Create a new table in SQL Server.

```
CREATE TABLE dbo.TxSequences (SeqNum INT, CallLoc VARCHAR(255), DateSaved DATETIME)
```

6. Create a new package variable.

Variables			
Name	Scope	Data type	Value
SeqNum	Package2	Int32	0

7. Setup a package layout as below.



8. Update "Get Last Sequence".

General	
Name	Get Last Sequence
Description	Get the last sequence saved in dbo.TxSequences
Options	
TimeOut	0
CodePage	1252
TypeConversionMode	Allowed
Result Set	
ResultSet	Single row
SQL Statement	
ConnectionType	OLE DB
Connection	AdventureWorks2012
SQLSourceType	Direct input
SQLStatement	SELECT MAX(SeqNum) AS SeqNum FROM dbo.TxSequences
IsQueryStoredProcedure	False
BypassPrepare	True

BypassPrepare
Indicates whether the task should prepare the query before executing it.

Browse... Build Query... Parse Query

```
SELECT MAX(SeqNum) AS SeqNum FROM dbo.TxSequences
```

9. Output results to variable created in step #6.

Execute SQL Task Editor

Configure the properties required to run SQL statements and stored procedures using the selected connection.

General	Result Name	Variable Name
Parameter Mapping	0	User::SeqNum
Result Set		
Expressions		

10. Update each Expression Tasks (three in total) to following expression.

```
@[User::SeqNum] = @[User::SeqNum]+1
```

11. Update each Execute SQL Task (excluding Get Last Sequence) to use expression for SQL string. Use the following expression.

```
"INSERT INTO dbo.TxSequences VALUES (' + (DT_WSTR,5) @[User::SeqNum] + ', 'Inner S1', GETDATE())"
```

12. Execute the package after all the updates are completed. The default execution should run without problem.



13. Verify the results in the SQL Server with the following code.

```
SELECT *
FROM dbo.TxSequences

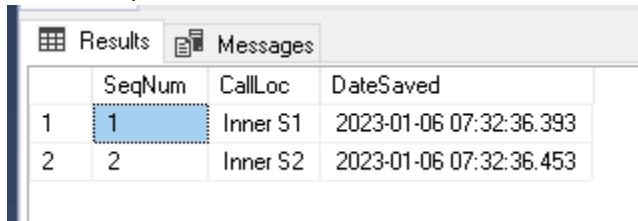
DELETE
FROM dbo.TxSequences
```

Results		Messages	
	SeqNum	CallLoc	DateSaved
1	1	Inner S1	2023-01-06 07:29:46.643
2	2	Inner S2	2023-01-06 07:29:46.690
3	3	Outer	2023-01-06 07:29:46.730

14. Next modify the "Insert Outer Sequence" SQL string expression to the following value.

```
"INSERT INTO dbo.TxSequences VALUES (1, " + (DT_WSTR,5) @[User::SeqNum] + ",
'Outer', GETDATE())"
```


15. Execute the package and review SQL data as in step #13. We should get only two rows. Because by default SSIS each container/task is their own transactions.



The screenshot shows the 'Results' tab in SQL Server Data Tools. It displays a table with four columns: 'SeqNum', 'CallLoc', and 'DateSaved'. The first row has values 1, Inner S1, and 2023-01-06 07:32:36.393. The second row has values 2, Inner S2, and 2023-01-06 07:32:36.453. The first row is highlighted with a blue selection bar.

	SeqNum	CallLoc	DateSaved
1	1	Inner S1	2023-01-06 07:32:36.393
2	2	Inner S2	2023-01-06 07:32:36.453

16. Next change the package property **TransactionOption** to **Required** and rerun the package. Review SQL data as in step #13. This time we get no rows because the entire package is built as a single transaction.
17. Next change the package property **TransactionOption** back to **Supported** but change the outer sequence "Run Everything in a Sequence!" **TransactionOption** to **Required**. Rerun the package and review the results. We get results like #15.