SQL Server Profiler Step by Step

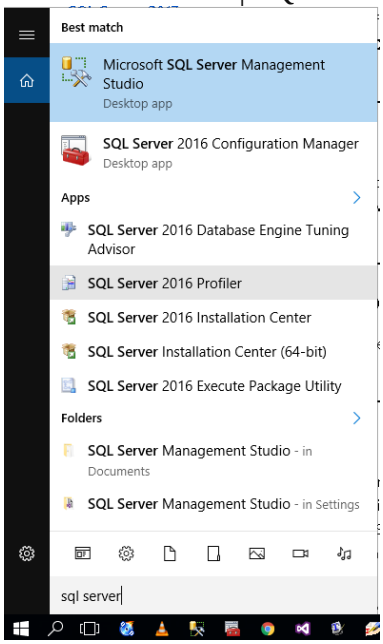
SQL Server Profiler is an interface to create and manage traces and analyze and replay trace results. Events are saved in a trace file that can later be analyzed or used to replay a specific series of steps when trying to diagnose a problem.
Microsoft SQL Server Profiler is a graphical user interface to SQL Trace for monitoring T-SQL Statements of Database Engine. We can save and reuse the state at a later point of time.

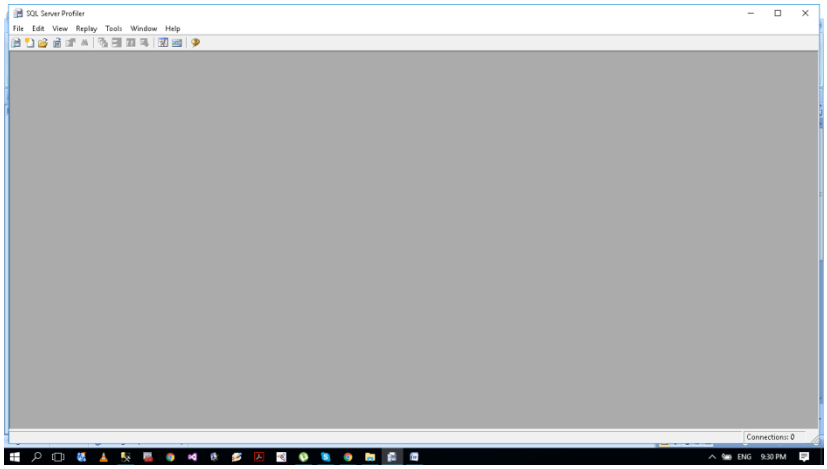
We can do the following using SQL Server Profiler

- Create a trace
- Watch the trace results as the trace runs
- Store the trace results in a table
- Start, stop, pause, and modify the trace results as necessary
- Replay the trace results

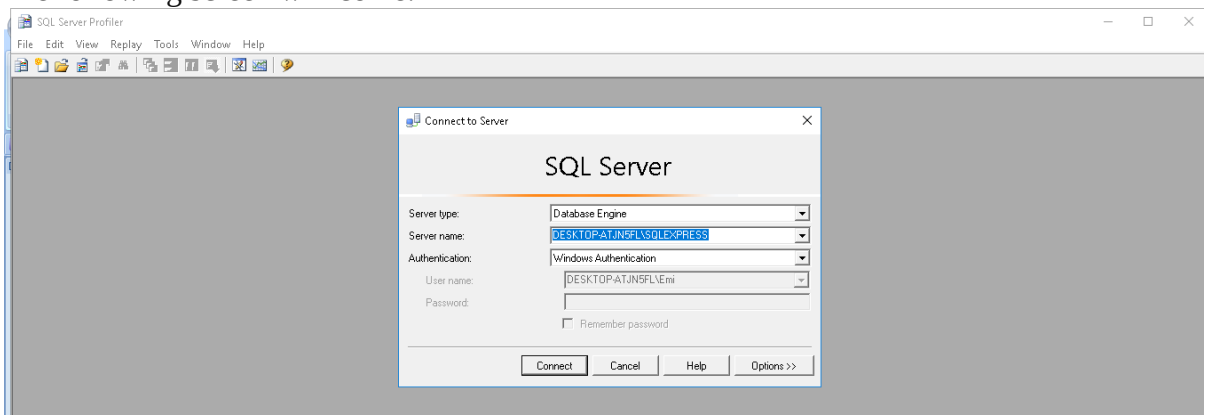
- Use SQL Server Profiler to monitor only the events in which you are interested.

Menu Path: Start | SQL Server Profiler.

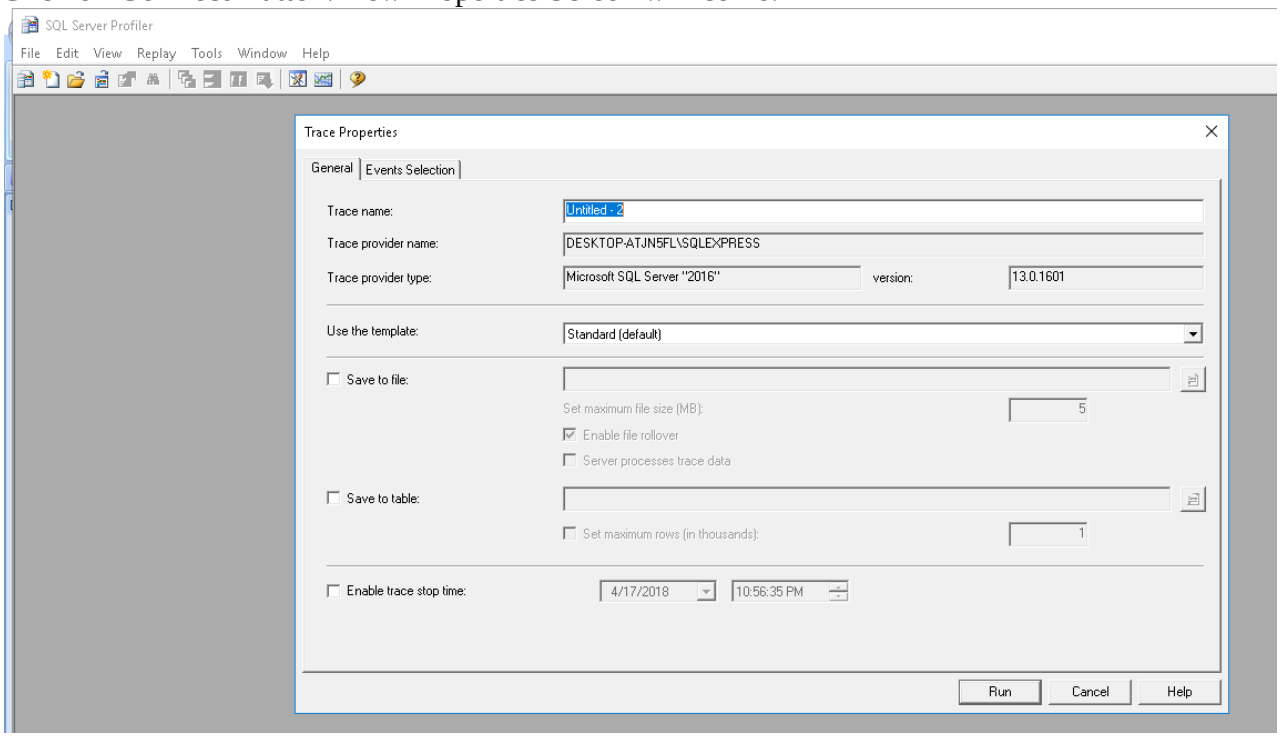




The following screen will come:



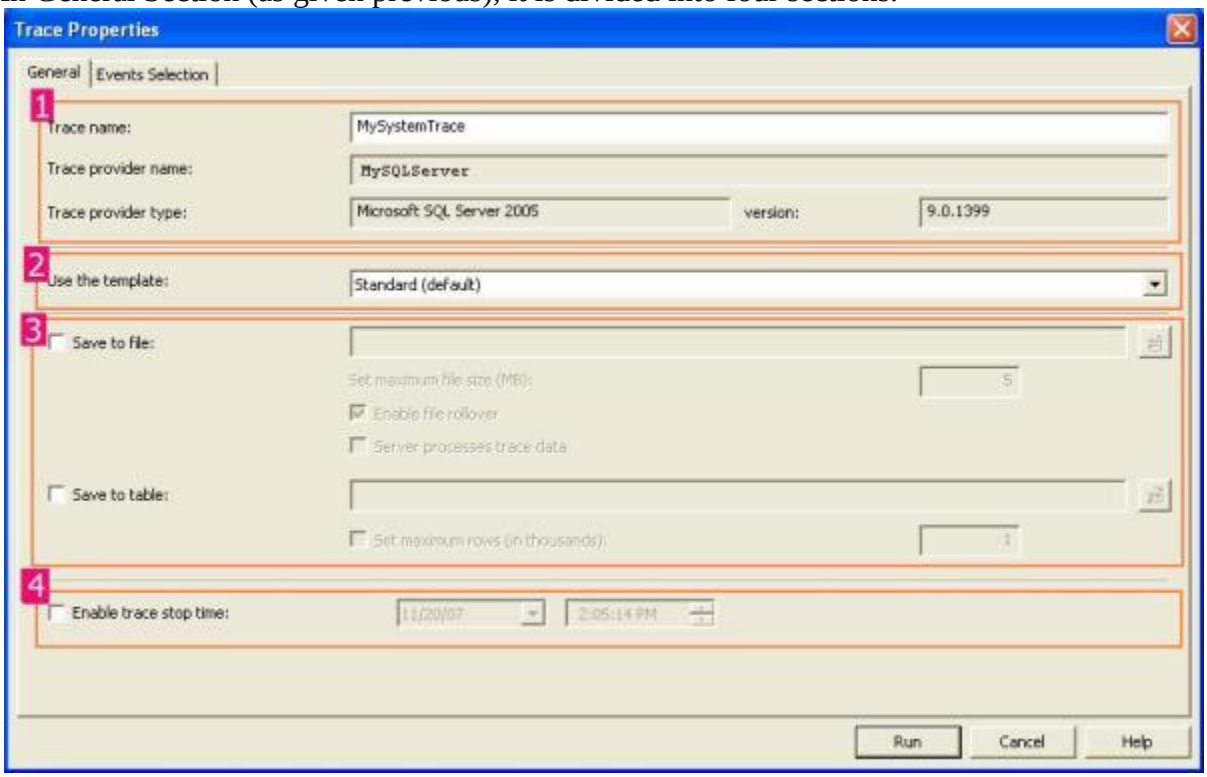
Click on **Connect** Button. New Properties Screen will come:



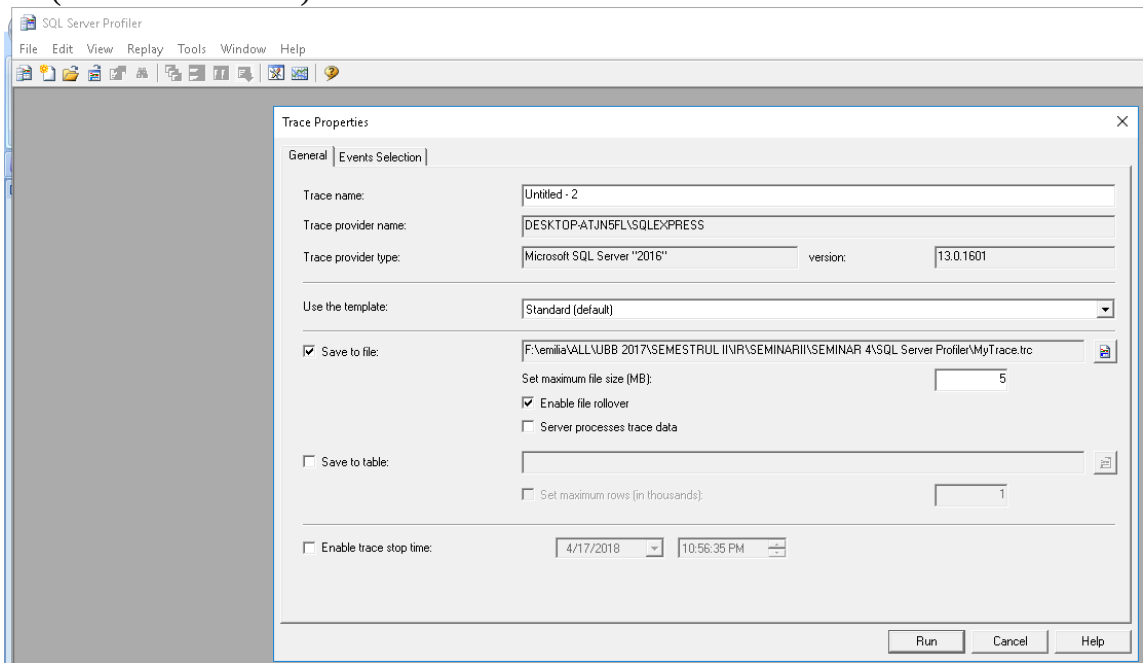
It has two selection tabs:

- **General:** It is used for general setting for Trace Database Engine.
- **Event Selection:** It is used to add or remove some selected event for monitor.

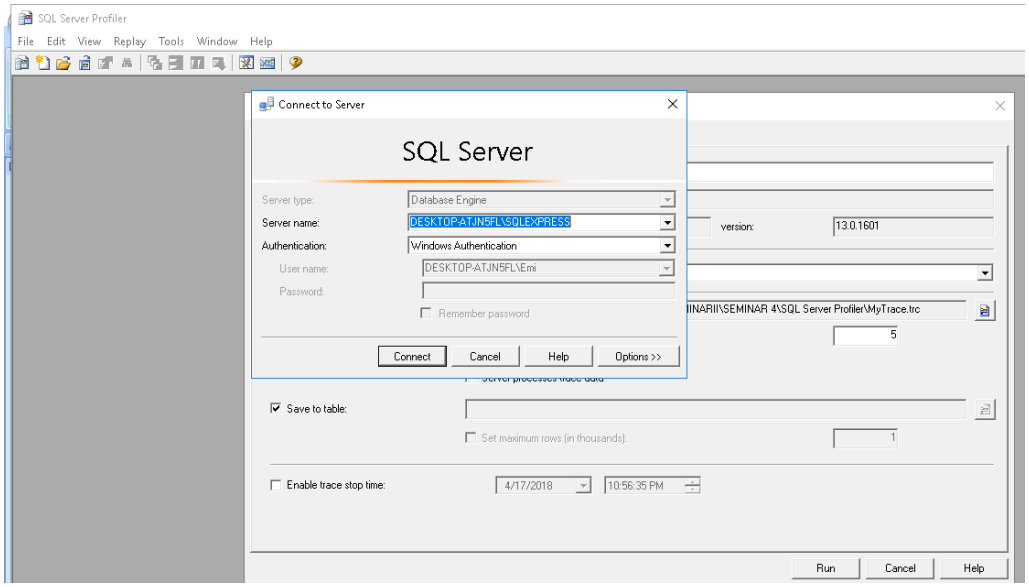
In General Section (as given previous), it is divided into four sections.

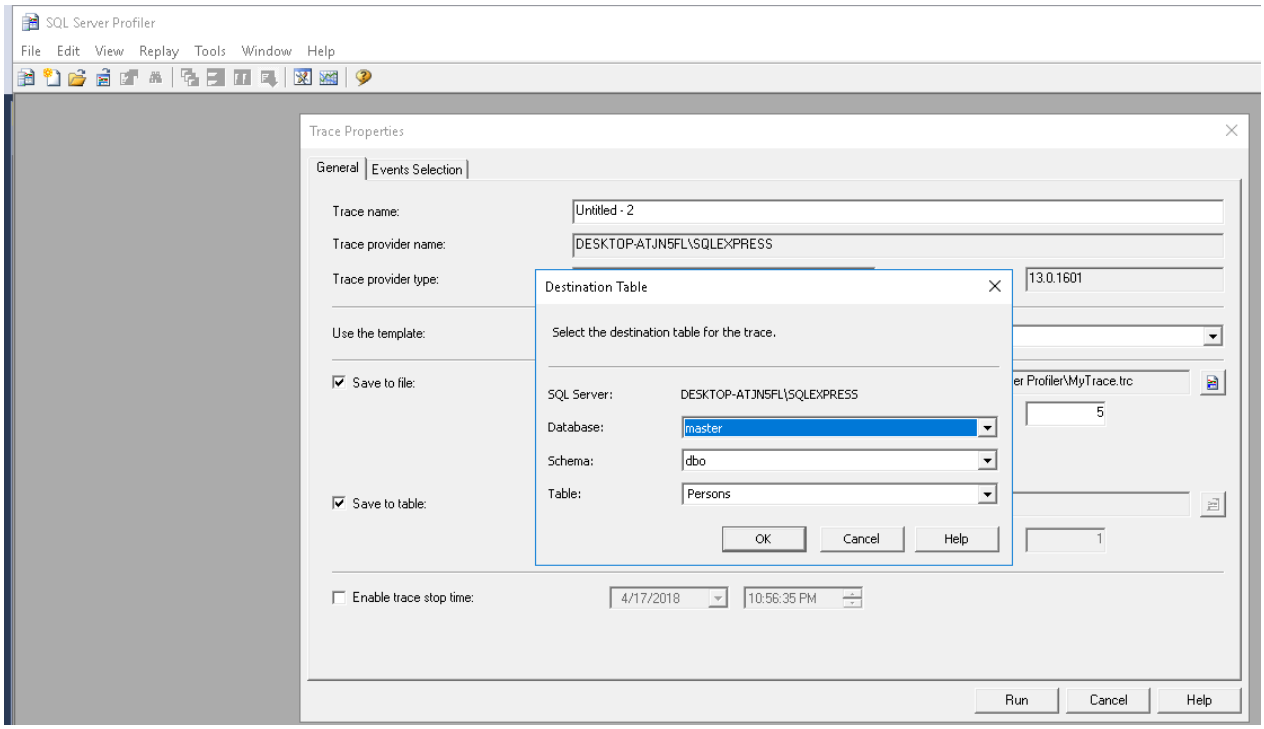


Section 1: You have to specify the name of your trace, Trace provider name and server name - are predefined and based upon your SQL Server. It is not editable.
Section 2: It is the template section. You can choose different type of Templates based upon your requirements. It is the configuration for trace. By default, it is "Standard (Default)" templates. Others templates are T-SQL, T-SQL Duration, T-SQL Reply, T-SQL SPs, etc. You can create your own custom Templates by selecting different Events and Event Class. It is saved as "*.tdf*" extension.
Section 3: This section is related to save your trace. Either as File (*.trc*) or in a database. as table. While clicking on **Save to file** check box, File save dialog box should open and you can save that file (with *.trc* extension).

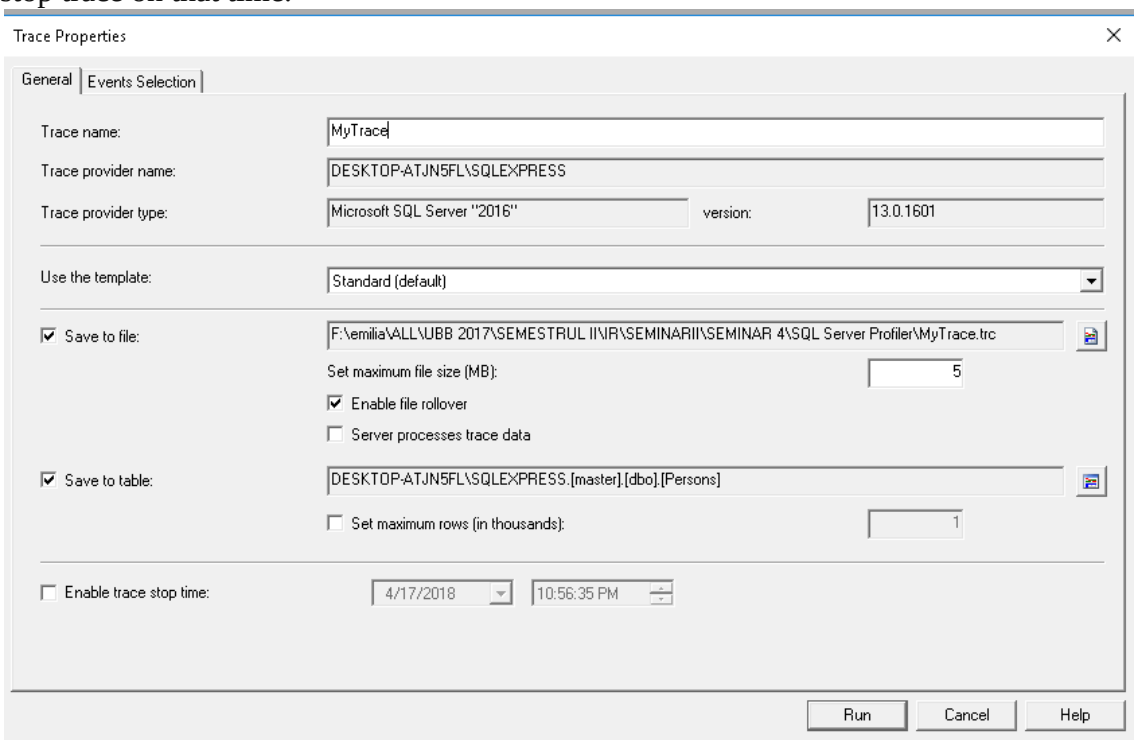


If check the ***"Save to Table"***, it will connect with your server and ask you to which database you want to save that trace table information.





Section 4: You can stop your trace on a particular time. Check the "***Enable trace stop time***" checkbox and give the time at which you want to stop track, SQL Server will automatically stop trace on that time.



What is an Event? **An Event is an action or operation that is performed in SQL Server 2016 Database Engine.**
Some examples of Events are:

- Transact-SQL SELECT, INSERT, UPDATE, and DELETE statements.
- User login and logout
- Execution of Stored procedures
- Operation with cursor

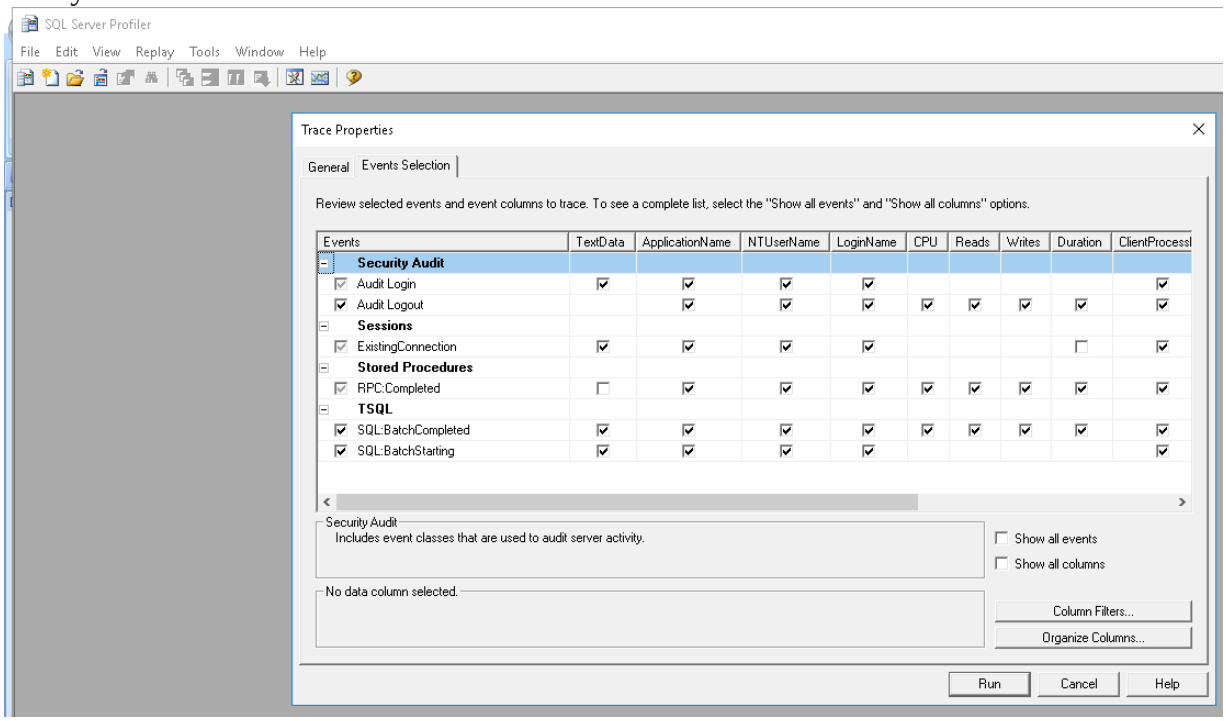
SQL Server profiler is able to trace all of these events and all these events are categories on a particular Eventclass.

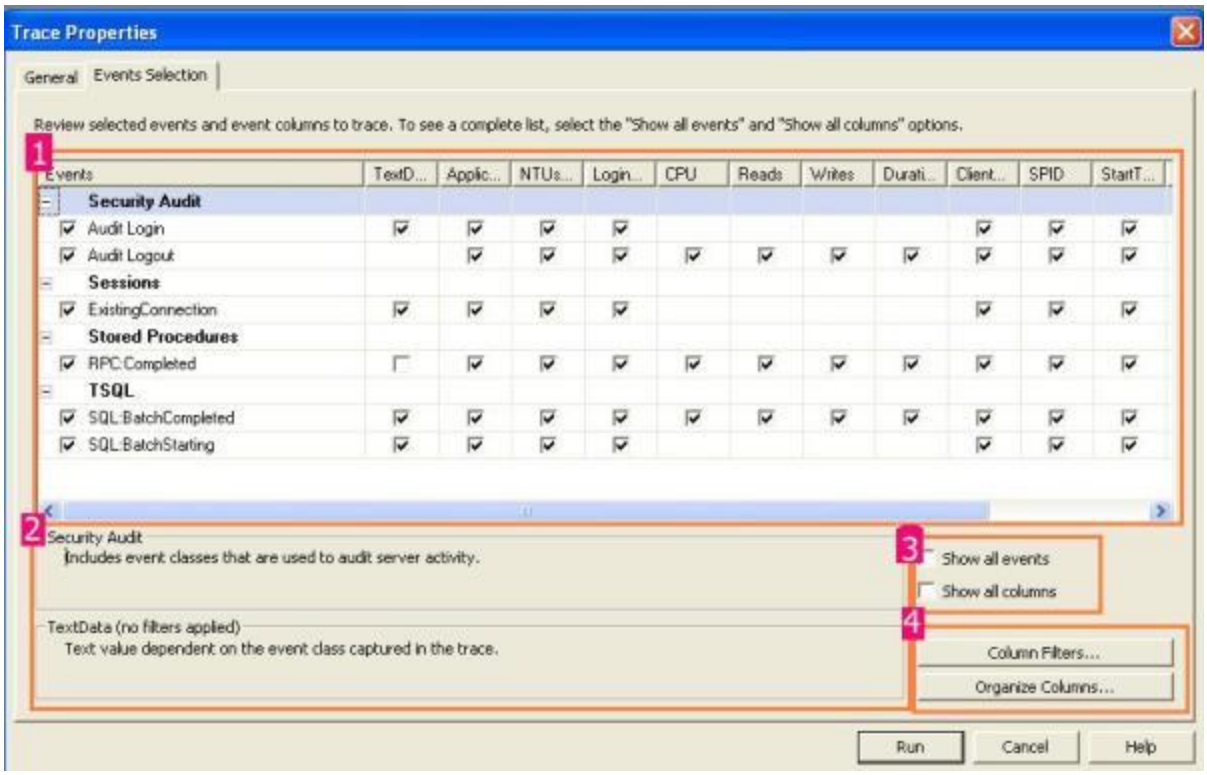
What is an Event Class? **Event class is a type of event that can be traced.**

Some examples are:

- SQL: BatchCompleted
- SQL: Batch Starting
- Audit Login
- Audit Logout
- Lock: Acquired
- Lock: Released

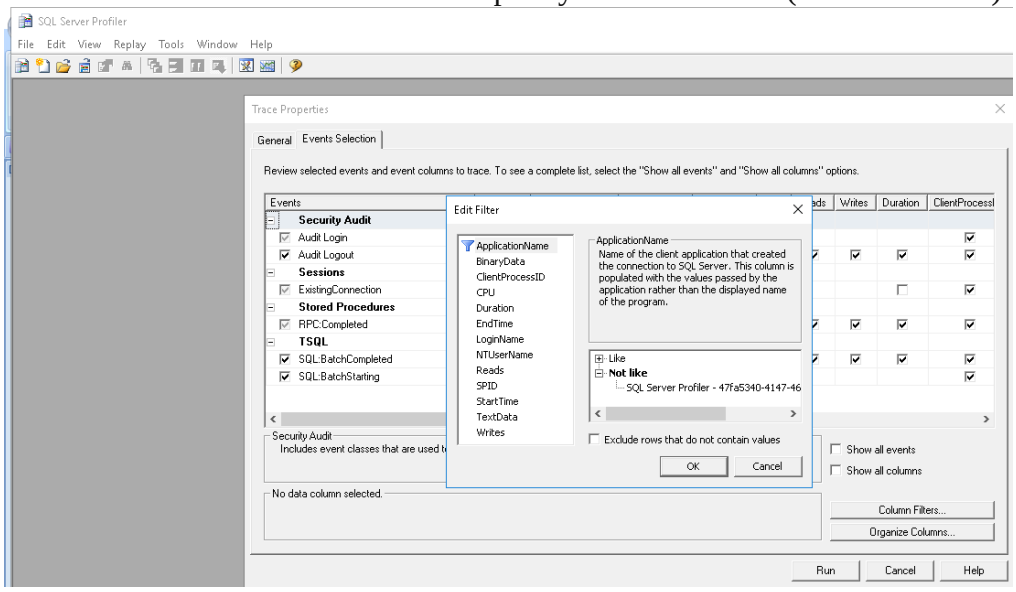
Now you can select **Events Selection**



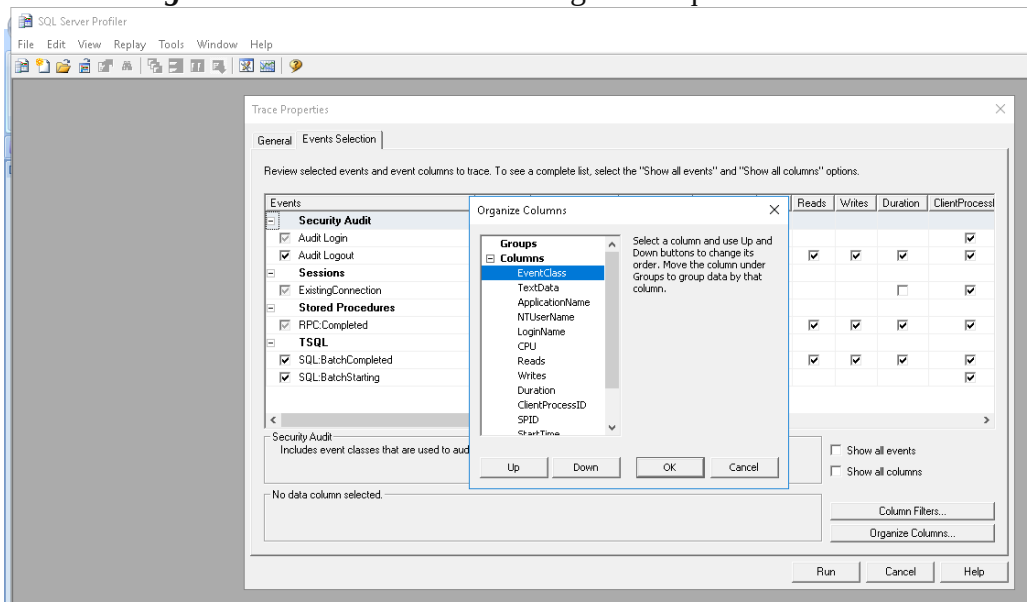


In **section 1**, we can select the proper check box based upon our requirement, **section 2** will display the details of Selected events and Events class. If you check in the check box of **section 3**, you will get all the list of Events and Columns in Section 1. **Section 4** is something like customization.

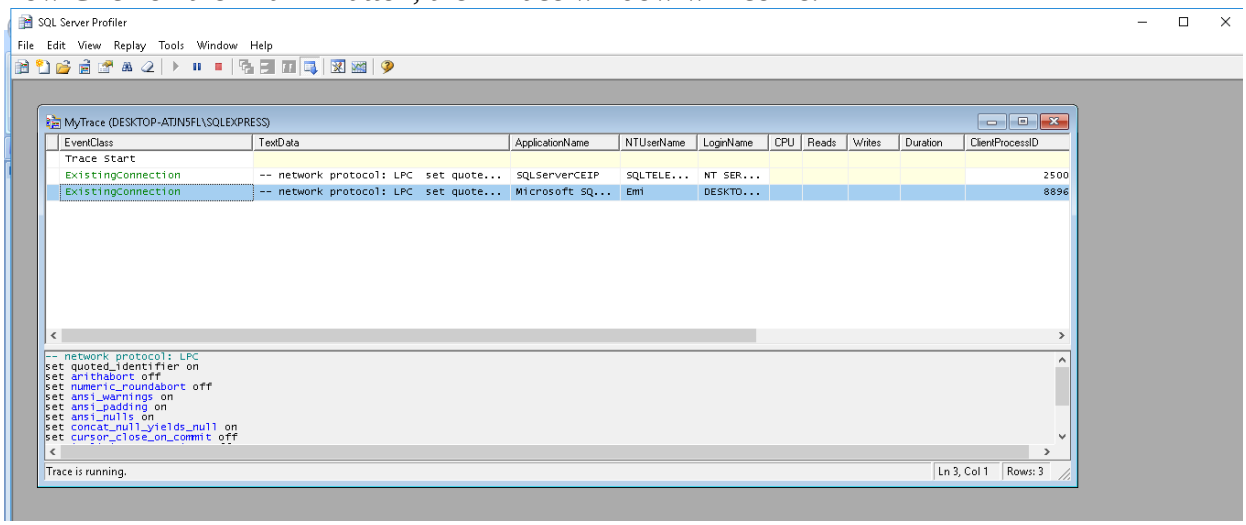
Click on "**Column Filter Button**" to specify some condition (like or Not like).

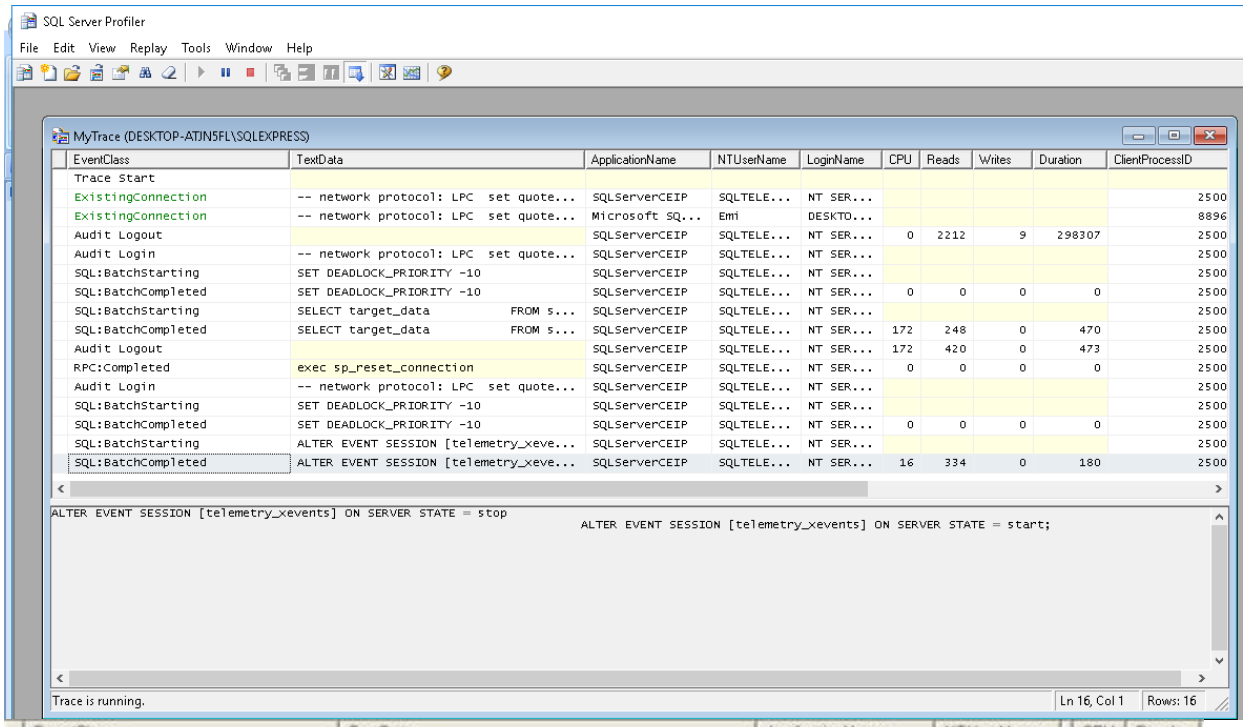


Click on "***Organize Column***" button to change the sequence of order of selected events.



Now Click on the "***Run***" Button, then Trace window will come:





EventClass	TextData	ApplicationName	NTUserName	CPU	Reads
Audit Login	-- network protocol: LPC set quote...	Microsoft SQ...	abhijit...		
SQL:BatchStarting	SELECT SYSTEM_USER	Microsoft SQ...	abhijit...		
SQL:BatchCompleted	SELECT SYSTEM_USER	Microsoft SQ...	abhijit...	0	0
SQL:BatchStarting	SET ROWCOUNT 0 SET TEXTSIZE 2147483...	Microsoft SQ...	abhijit...		
SQL:BatchCompleted	SET ROWCOUNT 0 SET TEXTSIZE 2147483...	Microsoft SQ...	abhijit...	0	0
SQL:BatchStarting	select @@spid select SERVERPROPERTY...	Microsoft SQ...	abhijit...		
SQL:BatchCompleted	select @@spid select SERVERPROPERTY...	Microsoft SQ...	abhijit...	0	0
SQL:BatchStarting	Use northwind	Microsoft SQ...	abhijit...		
SQL:BatchCompleted	Use northwind	Microsoft SQ...	abhijit...	15	251
SQL:BatchStarting	select * from employees	Microsoft SQ...	abhijit...		
SQL:BatchCompleted	select * from employees	Microsoft SQ...	abhijit...	0	478

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select * from employees
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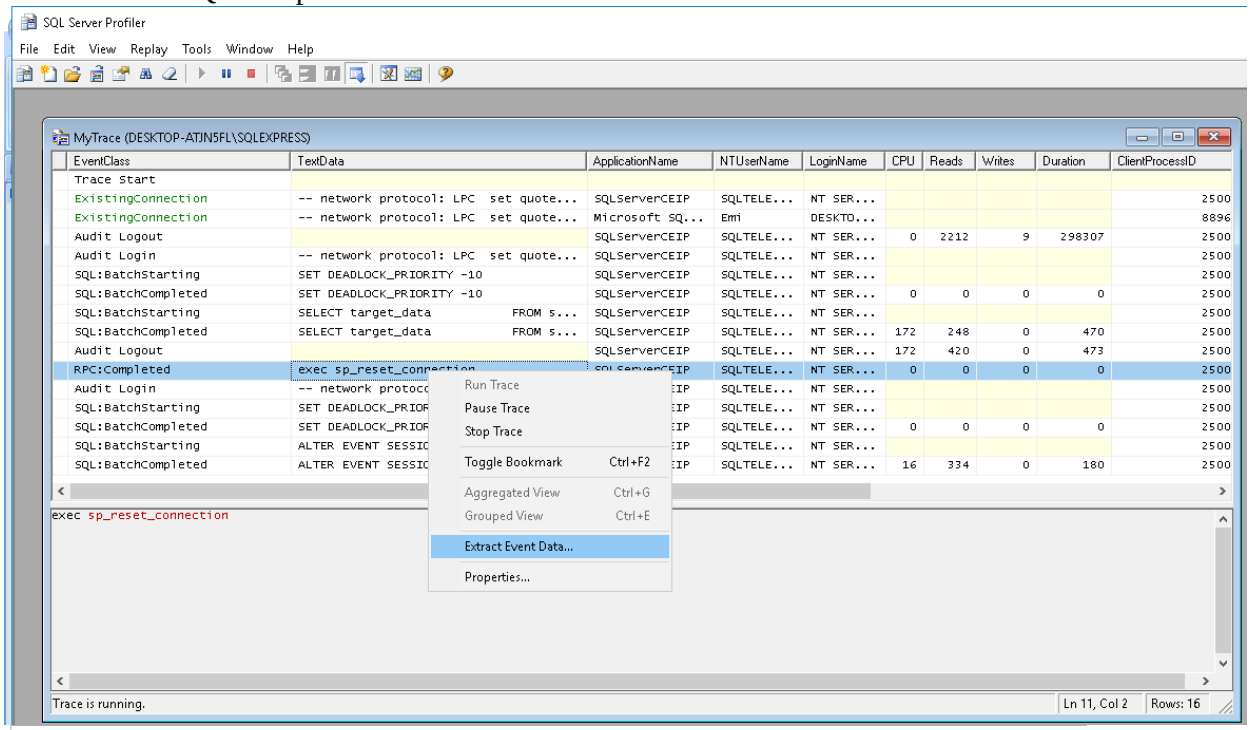
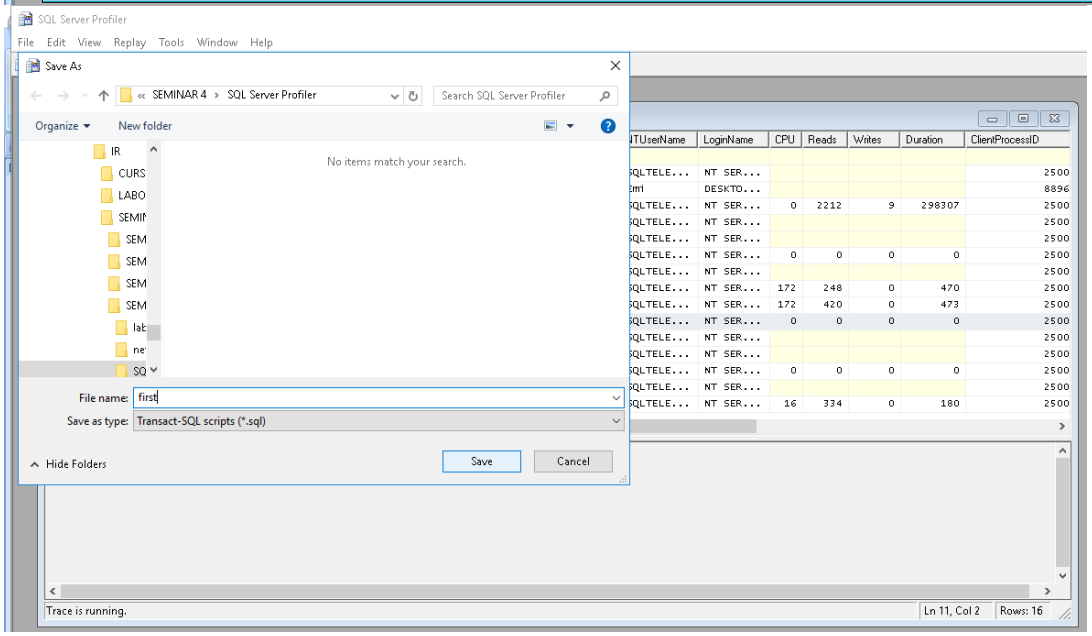
ClientProcessID	SPID	StartTime	EndTime
2836	53	2007-11-20 15:49:03...	
2836	53	2007-11-20 15:49:04...	
2836	53	2007-11-20 15:49:04...	2007-11-20 15:49:04...
2836	53	2007-11-20 15:49:04...	
2836	53	2007-11-20 15:49:04...	2007-11-20 15:49:04...
2836	53	2007-11-20 15:49:04...	
2836	53	2007-11-20 15:49:04...	2007-11-20 15:49:04...
2836	53	2007-11-20 15:49:13...	
2836	53	2007-11-20 15:49:13...	2007-11-20 15:49:13...
2836	53	2007-11-20 15:49:19...	
2836	53	2007-11-20 15:49:19...	2007-11-20 15:49:19...

Using these windows, you will get the detailed time duration of a query and all other events information that you have selected. You can save this result and use it in future. Or you can

extract a particular query from the trace, just right click and click on "E*xtract Event Data"*. And save this as a SQL Script.





Reply in SQL Server Profiler

SQL Server profiler has a Reply facility which has the ability to save a trace and replay it later. Replay is useful to troubleshoot an application. Trace replay supports debugging by using Toggle Breakpoint and the Run to Cursor options on the SQL Server Profiler Replay menu.

Anything changed in SQL Server Management Studio will be traced by the SQL Profiler. So it can basically be used for database performance check. We also have "SQL Server Performance Monitor" to monitor the System and Server performance too.

References:
https://docs.microsoft.com/en-us/sql/tools/sql-server-profiler/sql-server-profiler?view=sql-server-2017
https://msdn.microsoft.com/en-us/library/ff650699.aspx
https://www.codeproject.com/Articles/21371/SQL-Server-Profiler-Step-by-Step