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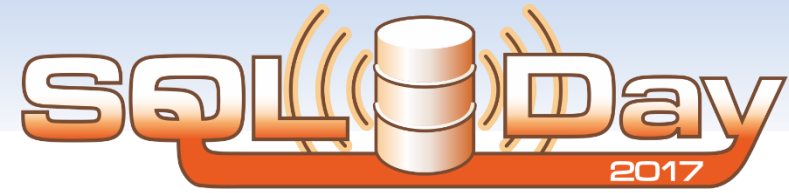


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Database Unit Tests with tSQLt



About the Author



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- Principal Database Analyst at Sabre
- Working with SQL Server for ~7 years
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Microsoft
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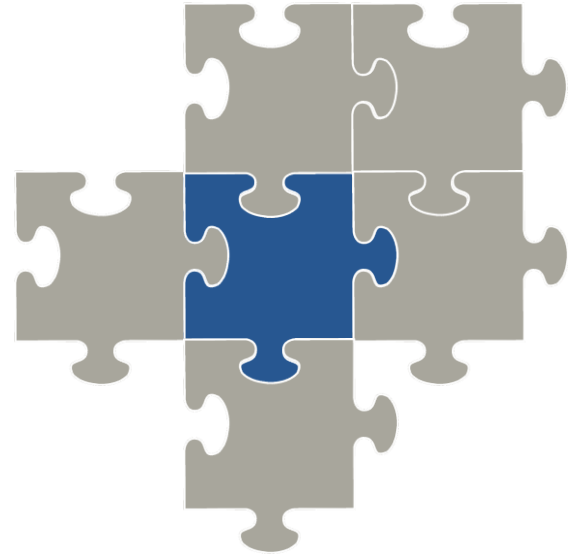
Solutions Expert

Data Platform



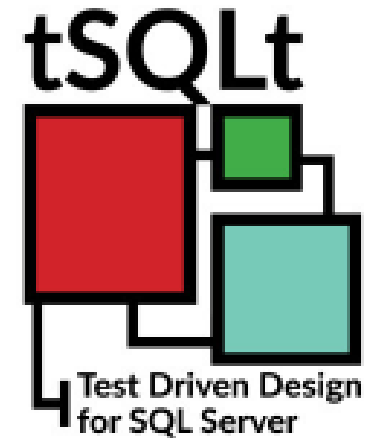
Unit Tests

- Take the smallest testable piece of software and test it in isolated conditions.
- F.I.R.S.T Principles:
 - Fast
 - Isolated
 - Repeatable
 - Self-Validating
 - Thorough and Timely



tSQLt Framework

- Open Source Framework
- Written in TSQL and C# (CLR)
- Runs on database level
- Provides various Assert methods
- Allows object mocking








<http://tsqlt.org/>

<https://github.com/tSQLt-org/tSQLt>



What we get?

Name	Date modified	Type	Size
 Example	2016-01-30 15:13	SQL File	180 KB
 License	2016-01-30 15:13	Text Document	10 KB
 ReleaseNotes	2016-01-30 15:13	Text Document	16 KB
 SetClrEnabled	2016-01-30 15:13	SQL File	1 KB
 tSQLt.class	2016-01-30 15:13	SQL File	164 KB

Requirements

- Requires CLR (SQL Server 2005 SP2 +)
- tSQLt schema
- ~~Trustworthy database~~



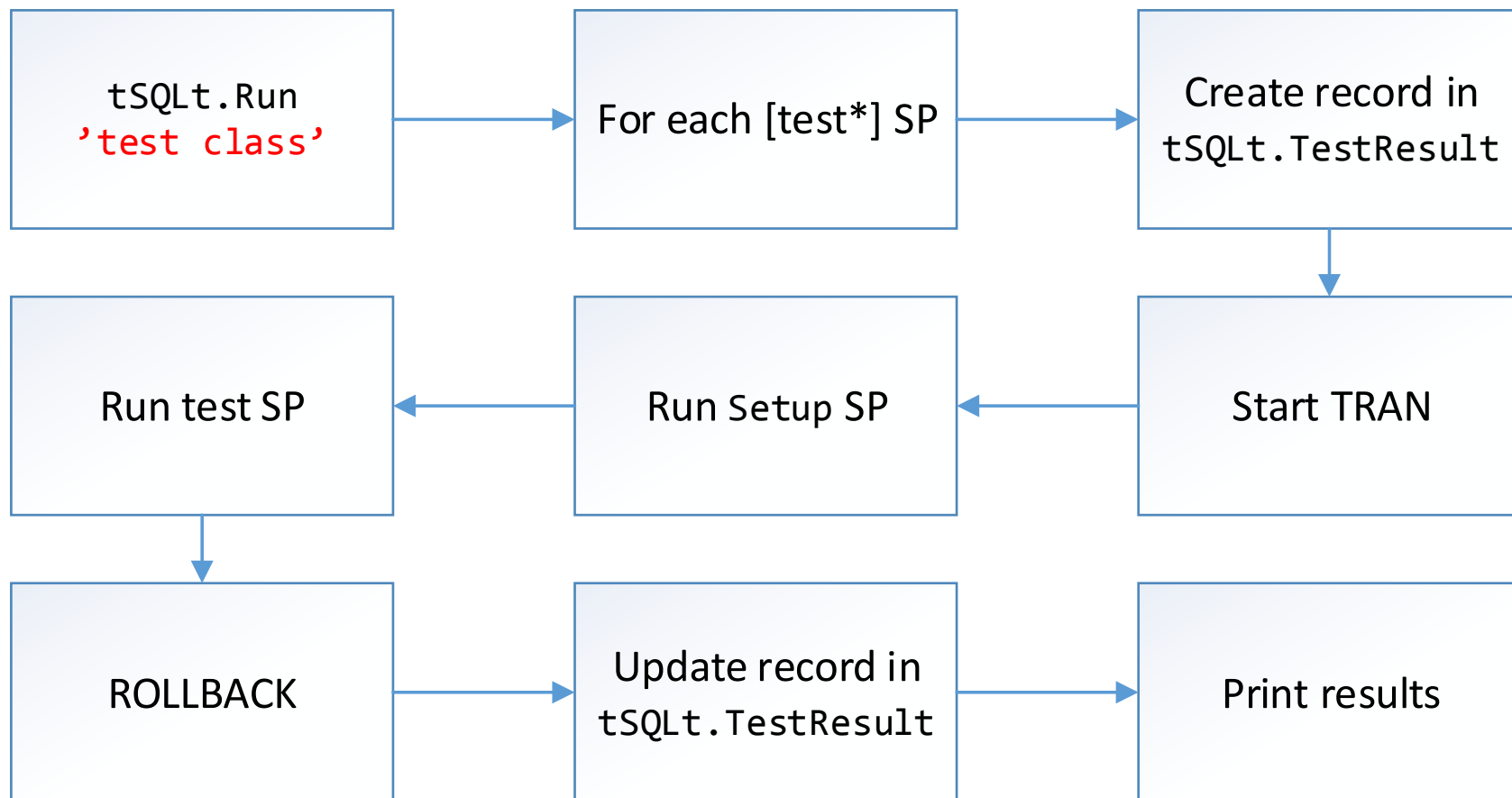
Test creation and execution

- tSQLt.NewTestClass
- tSQLt.Run [[@testName =] 'test name']
- tSQLt.RunAll

DEMO



tSQLt.Run



Assertions

- tSQLt.AssertEmptyTable
- tSQLt.AssertEquals
- tSQLt.AssertEqualsString
- tSQLt.AssertEqualsTable
- tSQLt.AssertEqualsTableSchema
- tSQLt.AssertLike
- tSQLt.AssertNotEquals
- tSQLt.AssertObjectDoesNotExist
- tSQLt.AssertObjectExists
- tSQLt.AssertResultSetsHaveSameMetaData
- tSQLt.Fail



Isolating Dependencies

Tables:

- tSQLt.FakeTable
- tSQLt.ApplyConstraint
- tSQLt.ApplyTrigger

Procedures:

- tSQLt.SpyProcedure

Functions:

- tSQLt.FakeFunction



Something went wrong?

[tSQLt].[Private_RenamedObjectLog] for the rescue!

```
SELECT OriginalName,  
       SCHEMA_NAME(schema_id) + '.' + name AS [Name of Renamed Table],  
       create_date  
FROM [tSQLt].[Private_RenamedObjectLog]  
JOIN sys.objects  
     ON objectid = object_id
```

	OriginalName	Name of Renamed Table	create_date
1	[Customer]	dbo.tSQLt_tempobject_231e4928f4cc4da7916d8353b30...	2017-05-03 12:05:35.090
2	[CalcSalesTaxForSale]	dbo.tSQLt_tempobject_2d20b384913f4b69adcd4afdd81f...	2017-05-03 12:06:32.990
3	[HistoricalReport]	dbo.tSQLt_tempobject_bd1e755c6ab14cdcab9092ffbdc...	2017-05-03 12:06:38.753



What else?

- SqlCop *by George Mastros*
 - <http://sqlcop.lessthandot.com>
 - <http://dl.dropbox.com/u/58229865/SQLCop%20Tests.zip>
- SQLCover Code Coverage *by Ed Elliott*
 - <https://the.agilesql.club/Projects/SQLCover>
 - <https://github.com/GoEddie/SQLCover>
 - <https://github.com/danielpalme/ReportGenerator>



Problems

- INSERT INTO ... EXEC
- Synonyms
- Schema binding
- Watch out for **time**
- Exceptions from rules
- Cannot run tests in parallel

DEMO



Best practices

- Separate test class for each tested object
- Single assertion per test
- Parameters testing
- Resultset schema testing
- Table schema testing (prevent changes)



**THANK YOU
AND GOOD LUCK!**



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