



Mastering Dynamic SQL

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- 20+ years as a DBA
- NESQL Board Member
- Co-Founder, WITspiration
- Speaker Idol Winner 2019
- #Redgate100 (2022)
- Microsoft MVP - Data Platform



Solving Real World SQL Server Problems

Learning Pathway

Wednesday

- Unlocking the Power of WhoIsActive – *Jeff Iannucci*
- Is Storage the Root Cause of Your Performance Woes... or Not?
– *Andy Yun*

Thursday

- **Mastering Dynamic SQL – *Deborah Melkin***
- Making the Most of Query Store in the Real World – *Jeff Iannucci*

Friday

- Conquering the Monster Proc – How to Combat Legacy Code
– *Deborah Melkin*

“ Q: *What is Dynamic SQL?*

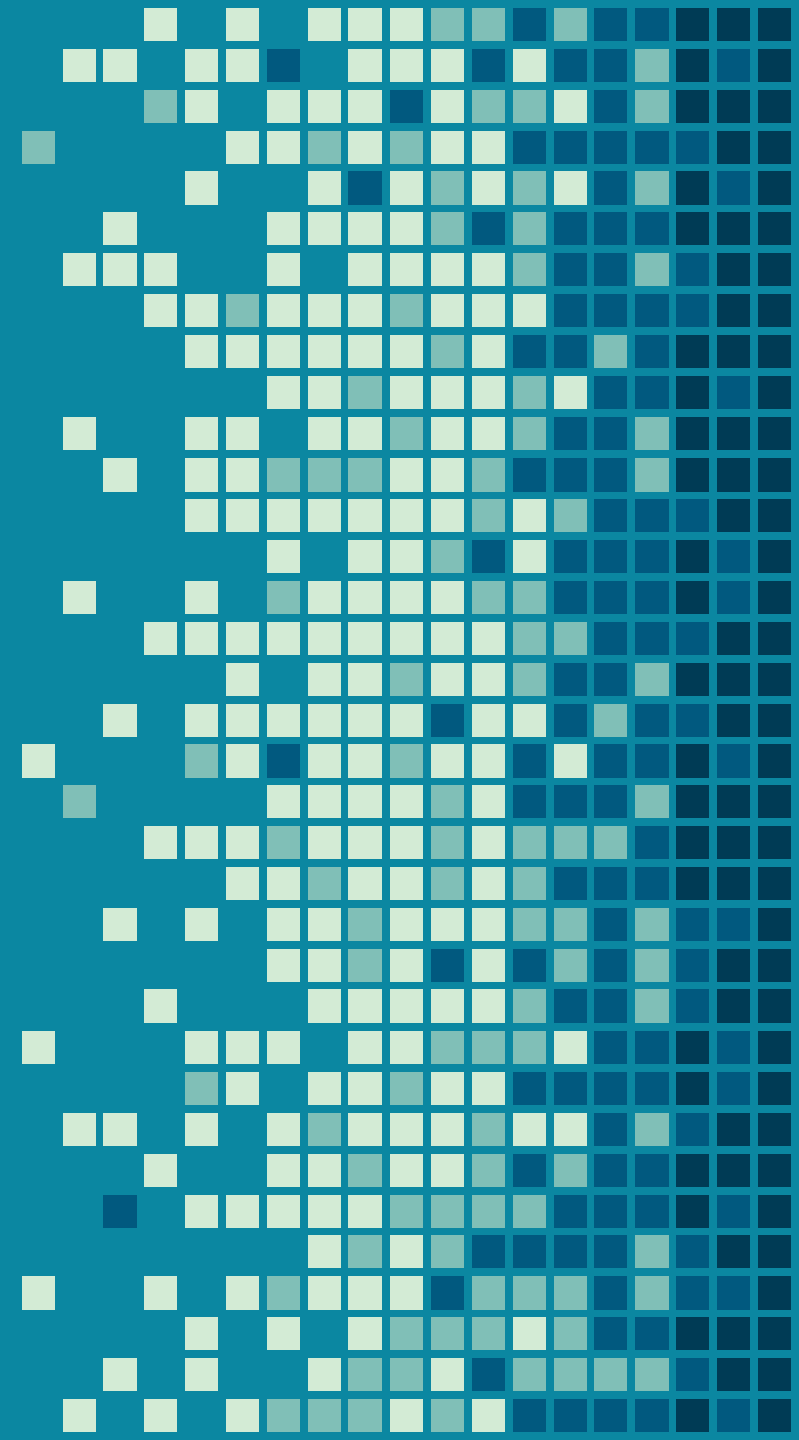
A: *SQL statements that are created ad hoc and executed.*

Agenda

- Use Cases
- Security
- Syntax
- Demos
- Tips & Tricks

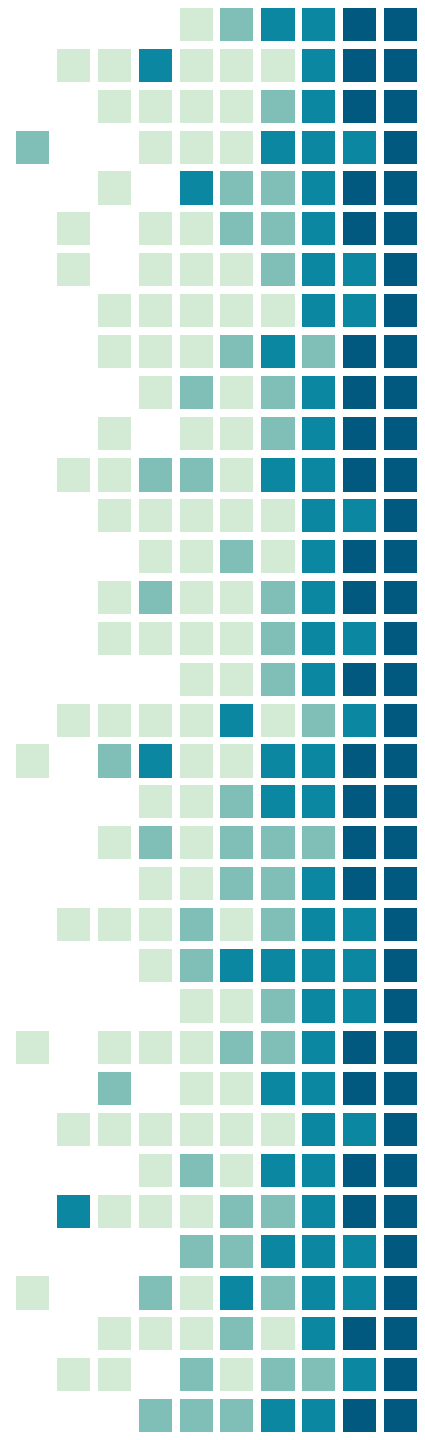


“ Use Cases



When to Use

- “Catch All” Queries
- End User Customized Queries
- Variables for server, database, or object names
- Delay parsing of query



“Catch-All” Queries

- A single query that tries to account for all options available.

```
WHERE (VIN = @vin OR @vin IS NULL)
AND (BaseModelID = @BaseModelID OR @BaseModelID IS NULL)
AND (PackageID = @PackageID OR @PackageID IS NULL)
AND (TrueCost = @TrueCost OR @TrueCost IS NULL)
AND (InvoicePrice = @InvoicePrice OR @InvoicePrice IS NULL)
```


End User Customized Queries

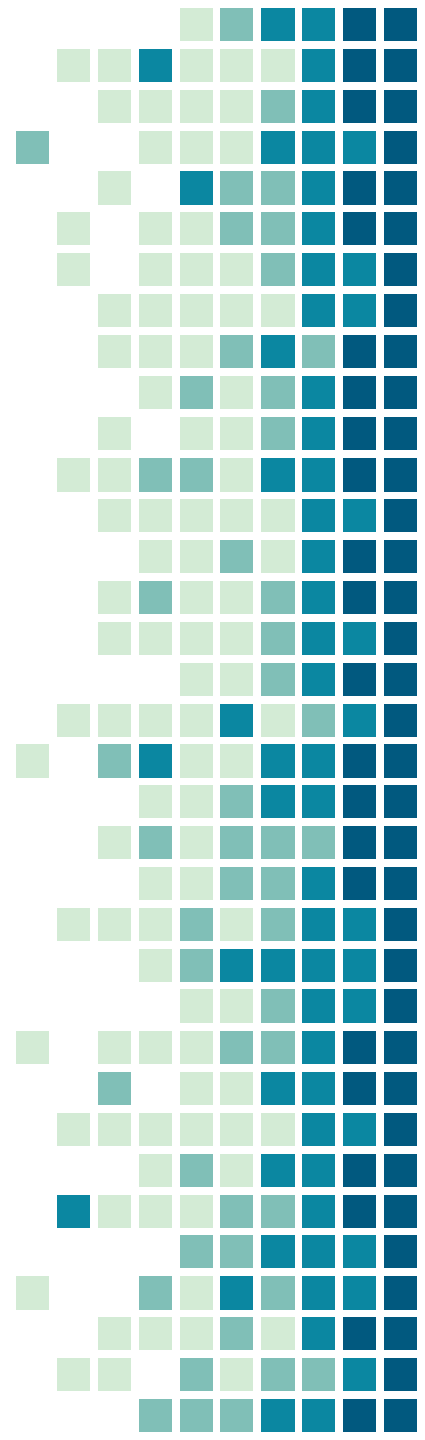
Application has screens that display data based on what clients choose.

- Dealership A wants:

- VIN
- True Cost
- Invoice Price

- Dealership B wants:

- VIN
- Base Model Name
- Package Name
- MSRP



Variables for Static Info

- Allows variables to be used to specify parts of the query that can't otherwise accept variables.

```
SELECT * FROM @database.dbo.Inventory
```

```
DECLARE @database sysname = 'AutoDealershipDemo',  
@sql nvarchar(max)
```

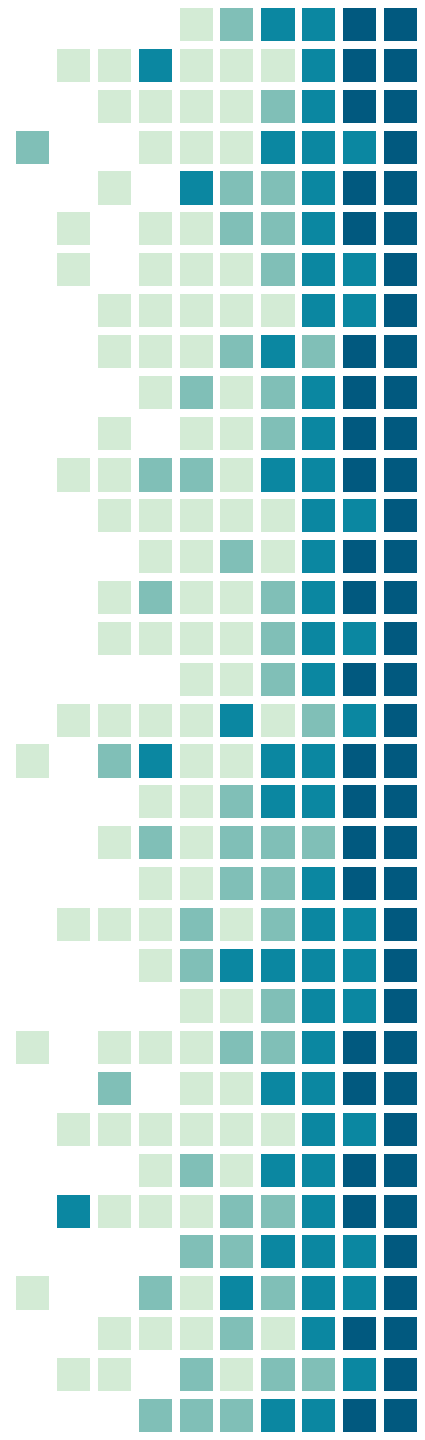
```
SELECT @sql = 'SELECT *  
FROM ' + quotename(@database) + '.dbo.Inventory'
```

Delay Parsing

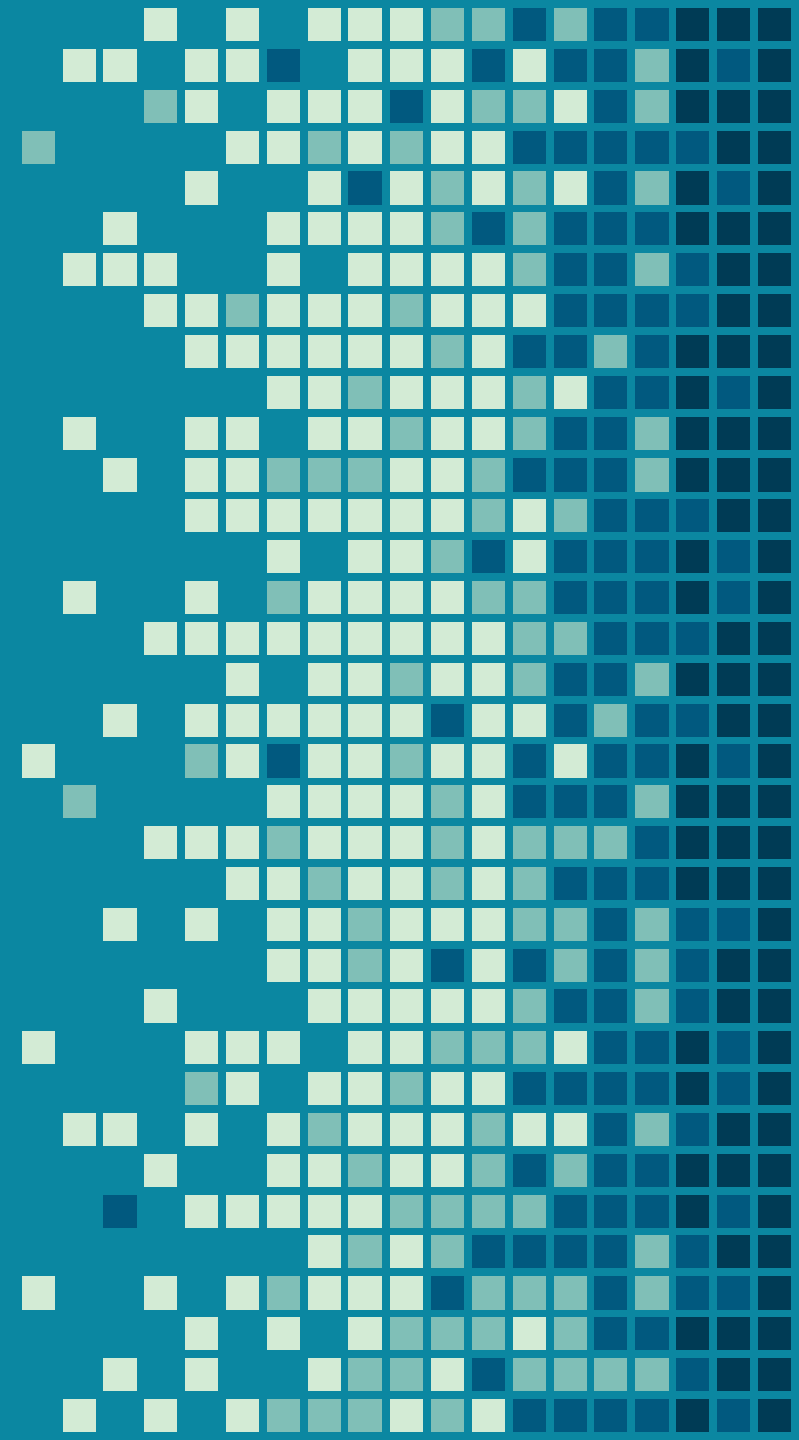
- Moves the parsing of the query to run-time execution to avoid errors or allow for better error handling.

```
SELECT UpgradeTestID, StaticColumn, DropThisColumn  
FROM DynamicSQL.UpgradeTestTable
```

```
ALTER TABLE DynamicSQL.UpgradeTestTable  
DROP COLUMN DropThisColumn  
GO 2
```

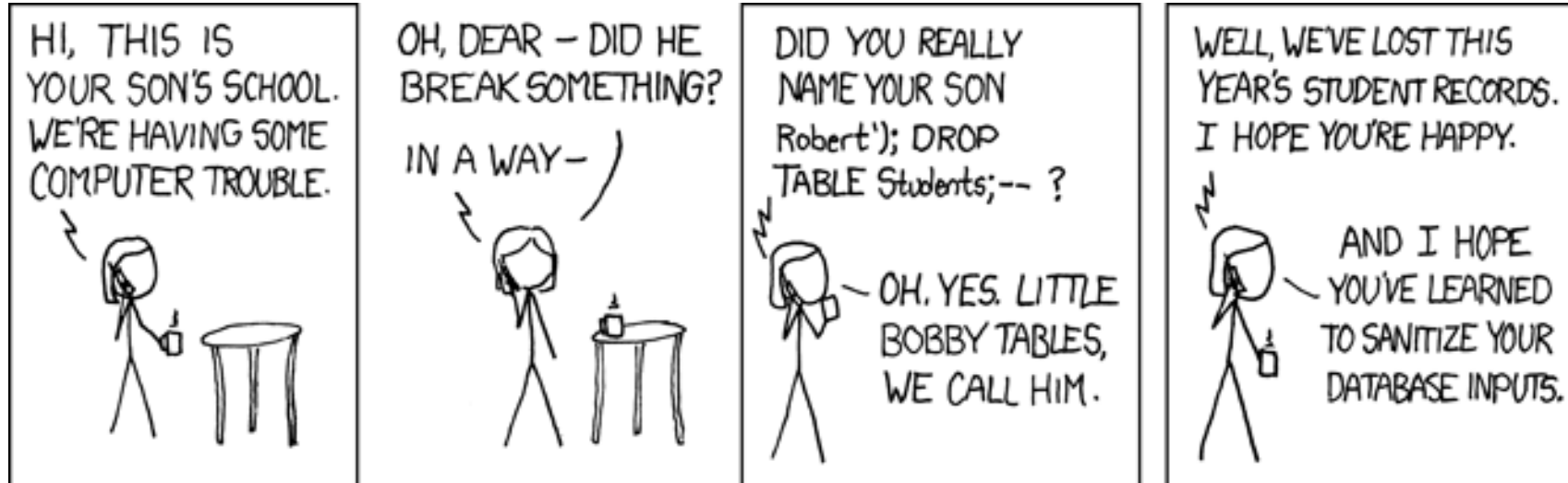


“ Security & Vulnerabilities

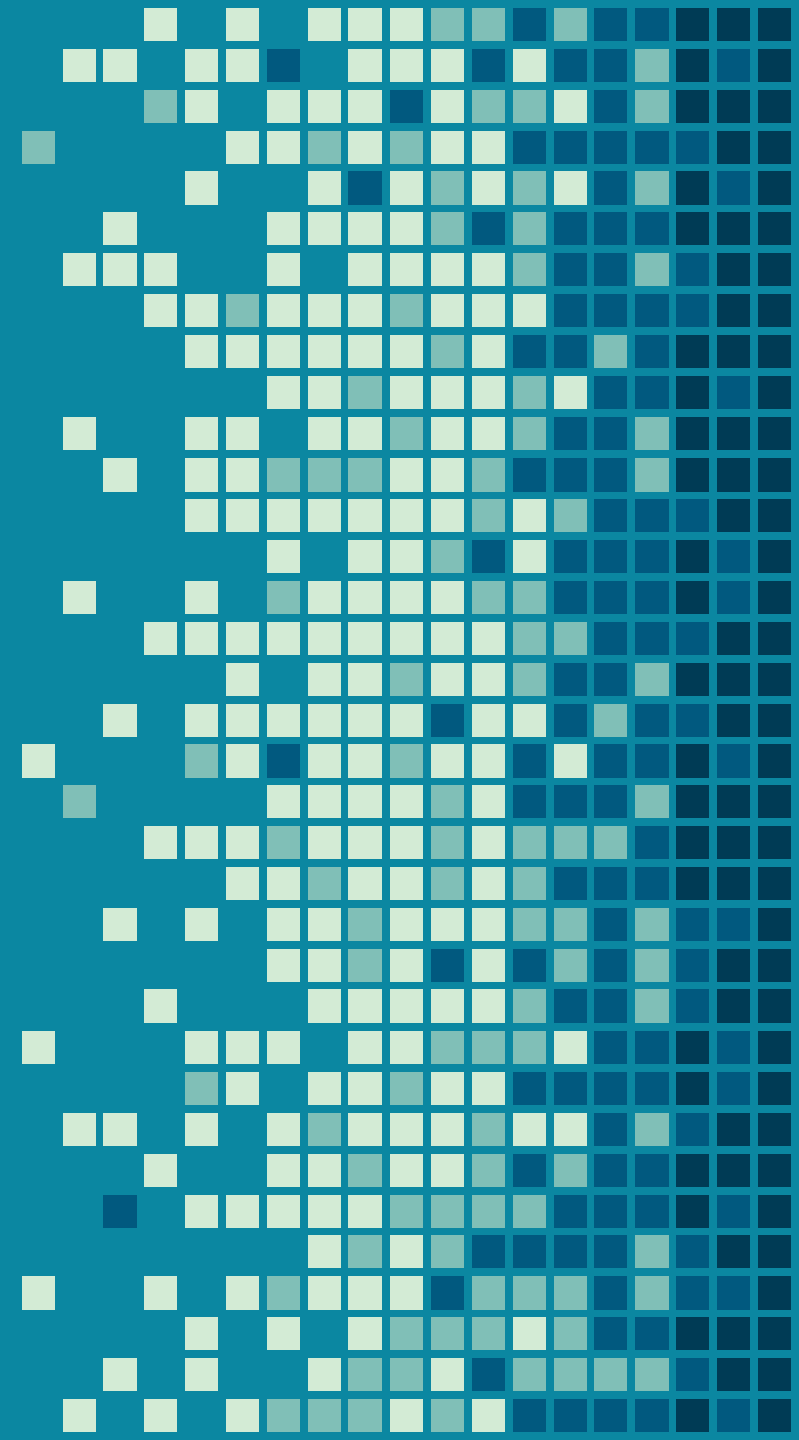


Protect Against SQL Injection

- Dynamic SQL can be vulnerable to SQL Injection if you don't code against it.
- xkcd.com: "[Little Bobby Tables](http://xkcd.com/326/)"

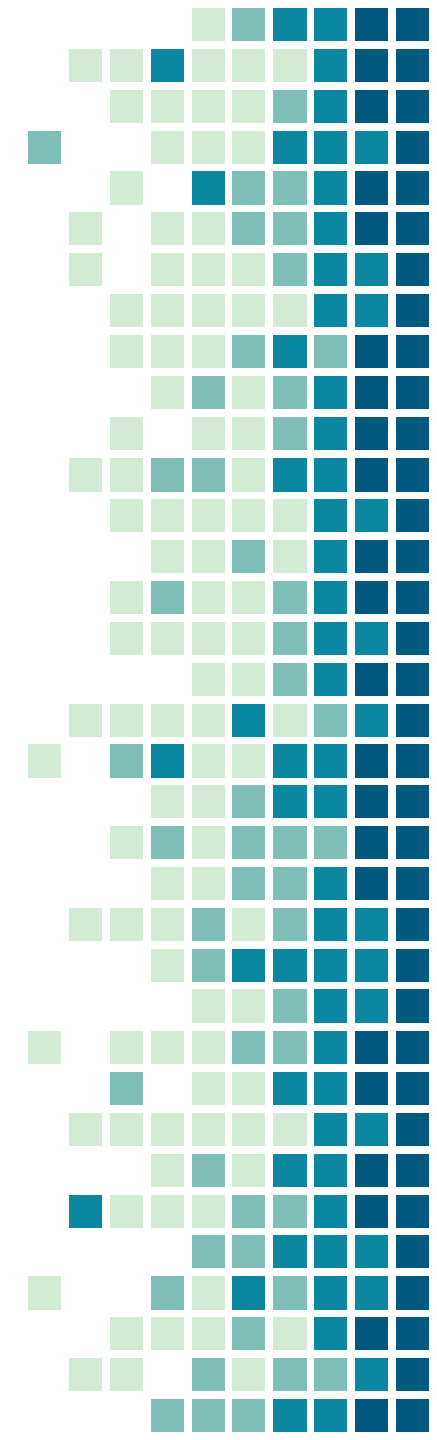


“ *Syntax*



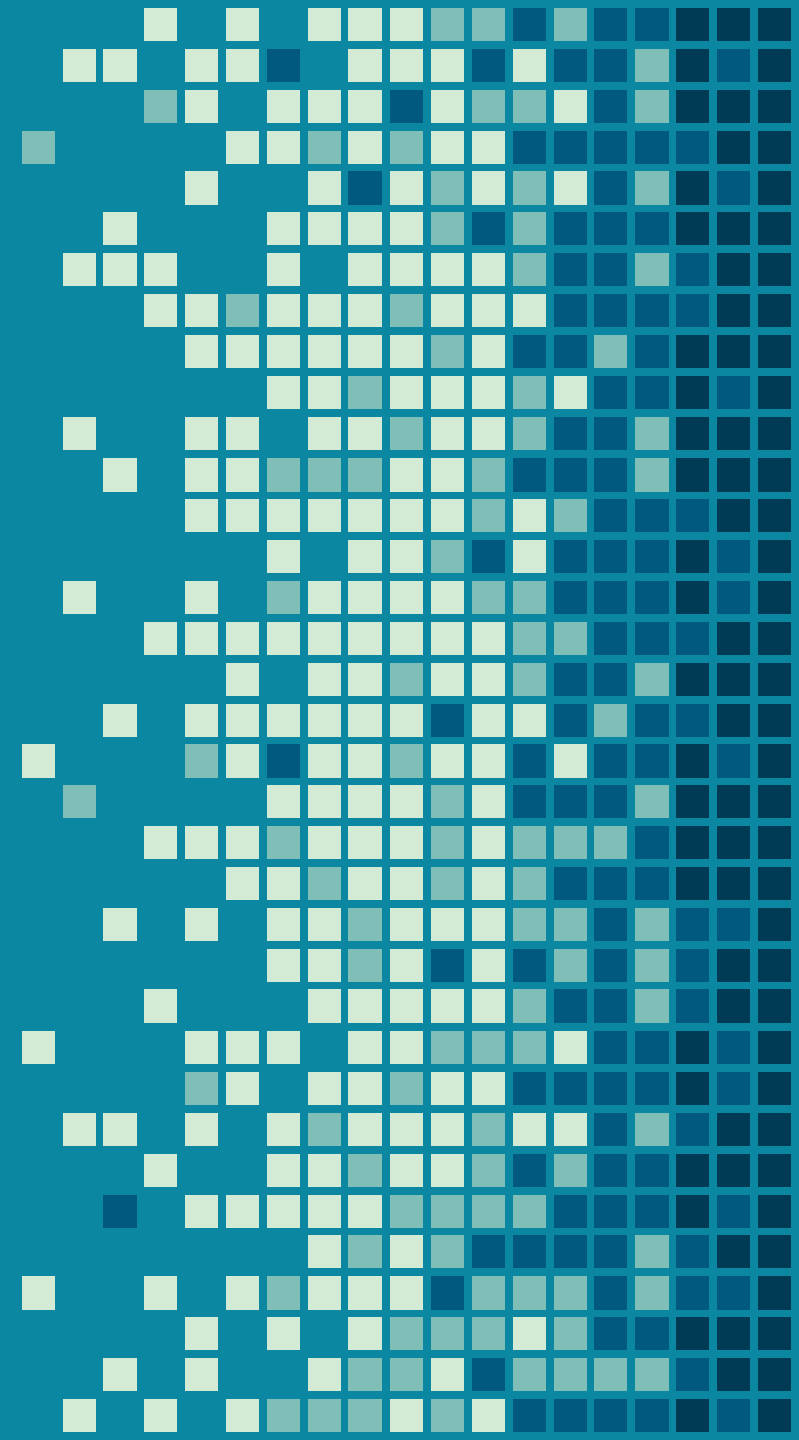
Ways to Write Dynamic SQL

- EXEC (@sql)
- EXEC sp_executesql @sql
 - ★ ■ Allows for parameters to be passed in and out of the statement
- EXEC sp_MSforeachdb @sql
 - Not documented or officially supported

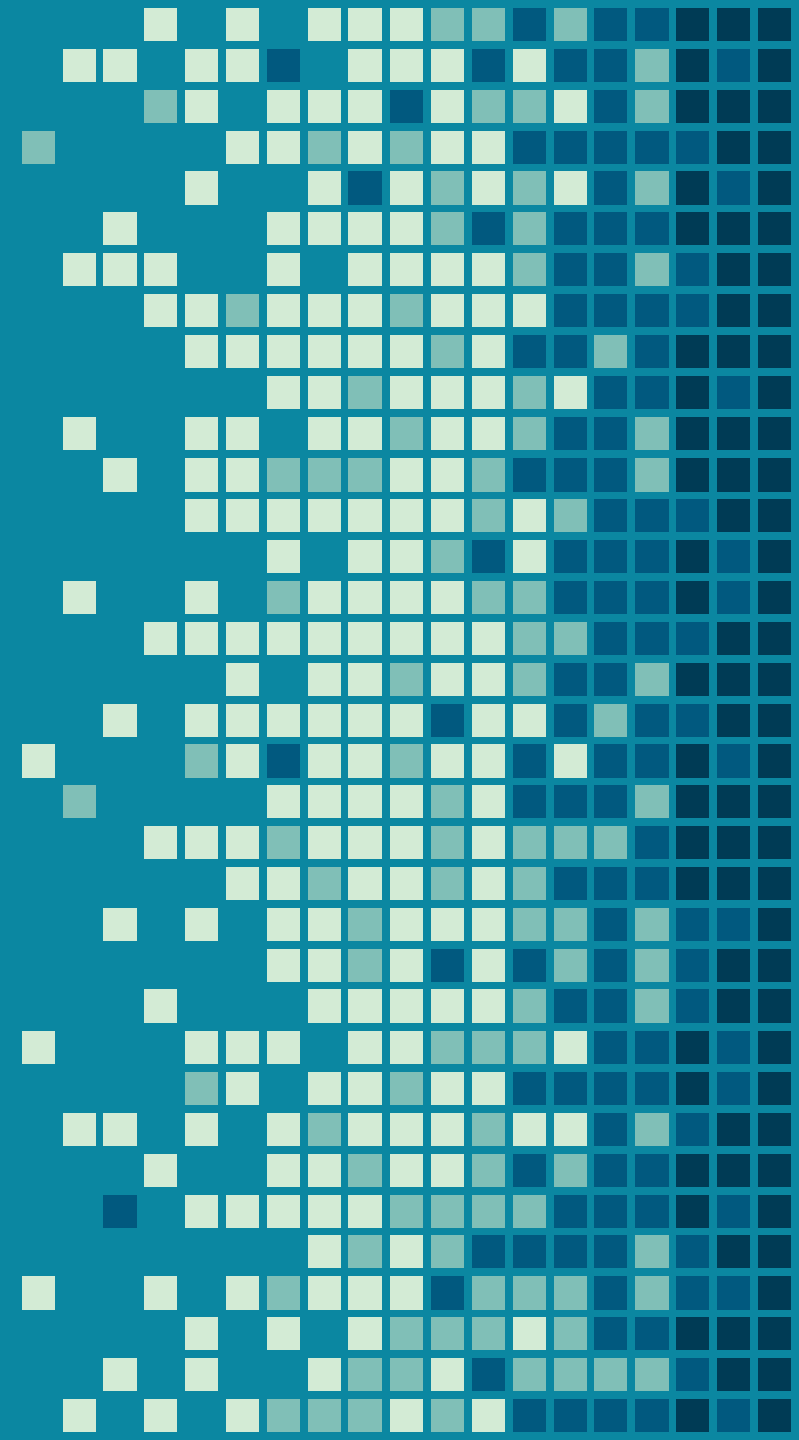


“ *At this point, I could talk
about it or show you....*

Demo Time!



“ Tips & Tricks



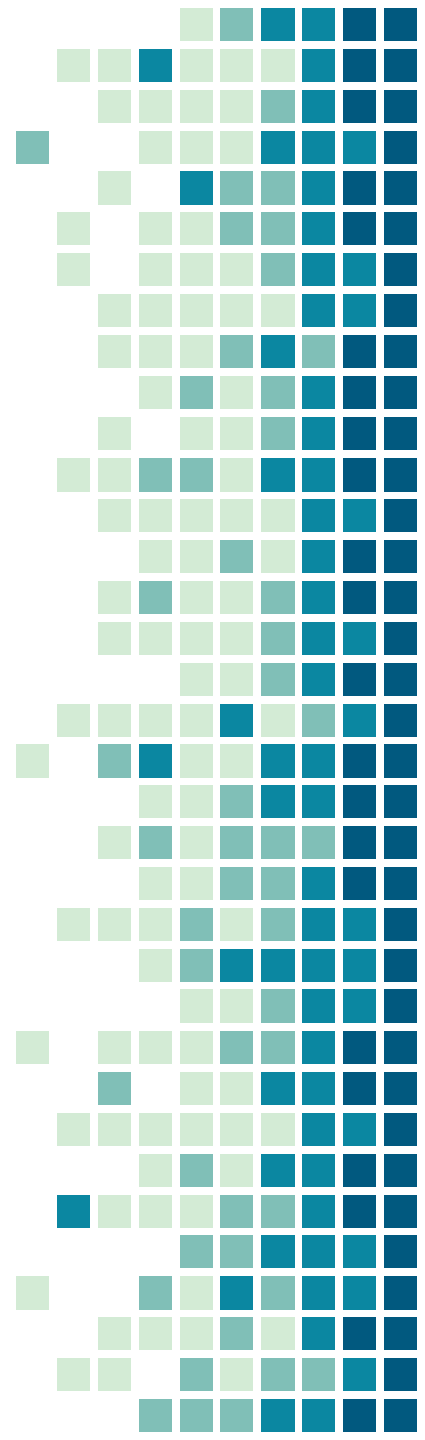
Tips & Tricks

- Add `@debug bit` to your procs
- Validate your parameters
- Use `quotename` for your objects
- Add error handling



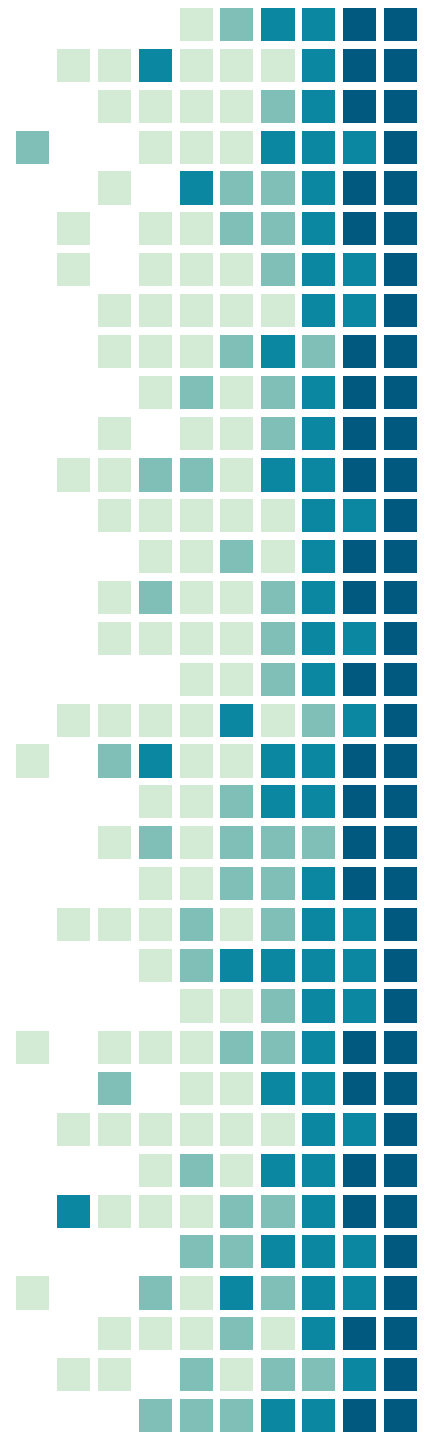
Tips & Tricks (cont'd)

- Performance tune the created statement like you would any other SQL in your codebase
 - You are just creating the different versions of the SQL to run.



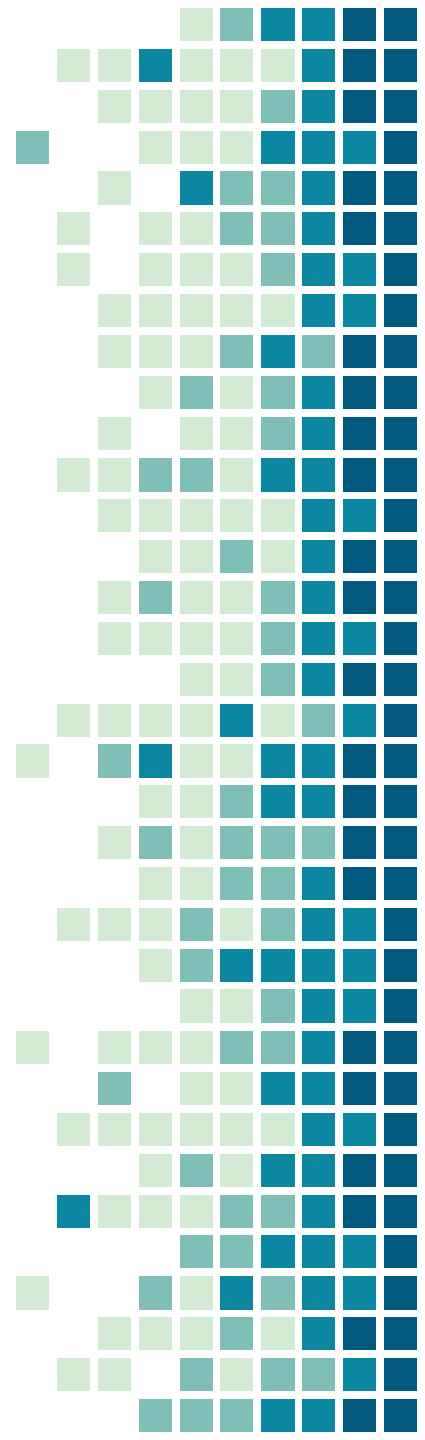
Resources

- Tara Kizer – [EXEC vs sp_executesql](#)
- Tim Ford – [Run same command on all SQL Server databases without cursors](#)
- Eitan Blumin – [Simplest Alternative To sp_msforeachdb](#)
- Aaron Bertrand – [Making a More Reliable and Flexible sp_MSforeachdb](#)



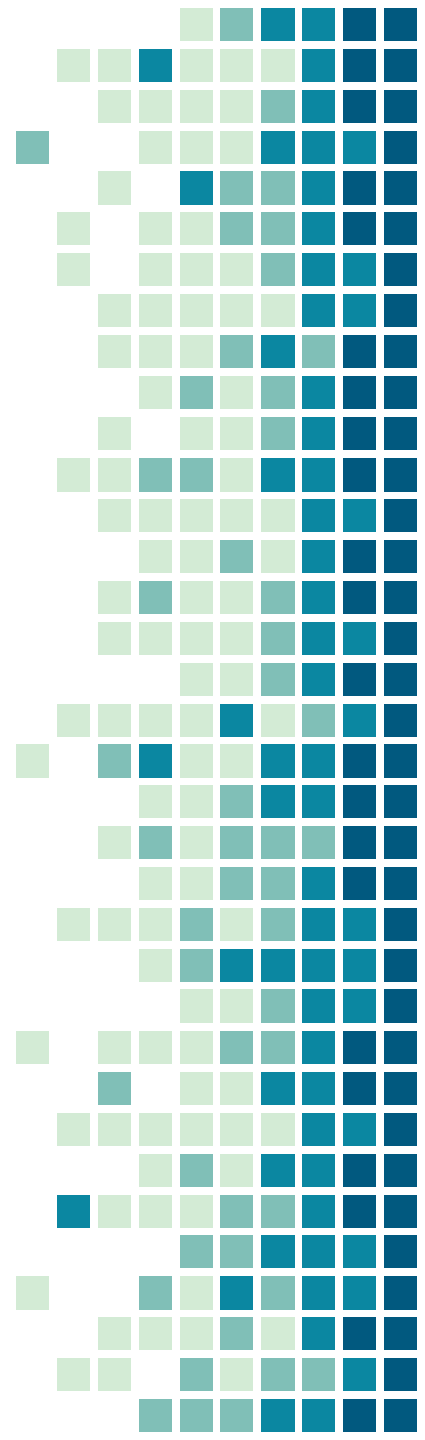
Resources (cont'd)

- Erland Sommarskog –
 - [The Curse and Blessings of Dynamic SQL](#)
 - [Error and Transaction Handling Part 2](#)
- Kenneth Fisher - [Demystifying Dynamic SQL](#)



Resources (cont'd)

- Deborah Melkin –
 - [Dynamic SQL, Sessions, and Execution](#)
 - [Openrowset Dynamic SQL Error Handling](#)
- Microsoft documentation: [sp_executesql](#)



Session evaluation

Your feedback is important to us



Evaluate this session at:

www.PASSDataCommunitySummit.com/evaluation



Thank you

If you have any other questions, feel free to reach out and ask!

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