Lab 1: Dedupe & Eliminate Indexes

1.4 p1

Meet your lead DBA.

Just like real life...

Our end users are yelling at us to make it go faster.

I'm doing the best I can to fend them off.

We don't wanna make changes to production unless we can prove it'll make things better.

Live attendees: when you wanna change something:
- Ask my permission first in Slack
  (In #BrentOzarUnlimited – no direct messages)
- Explain what you want to change, and why

1.4 p3

What I've assigned you to do

1. Analyze StackOverflow's indexes, then Dedupe & Eliminate them

2. Script out the changes you want to make (but only focus on reducing index counts for now – don't add more indexes yet)

3. Ask your lead DBA for approval

1.4 p4

To do it, we need running loads.

If we're going to Eliminate unused indexes, then we need real workloads using some of the indexes.

(This is also why tools like sp_BlitzIndex don't work very well in development & offline environments: none of the indexes are really getting used.)
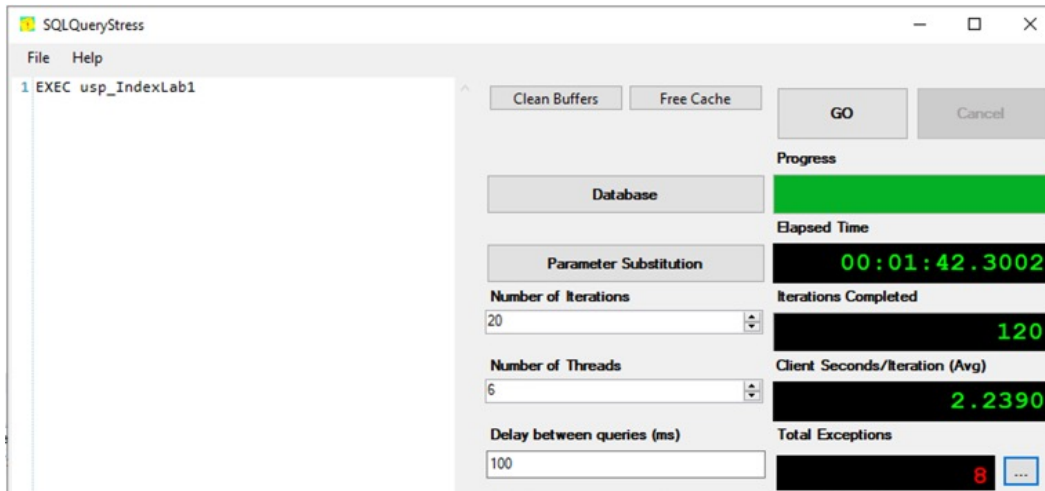
Labs 1, 2, & 3 use the same SQL:

1. If you've been playing around adding/dropping indexes, restore your StackOverflow database

2. Copy & run the setup script for Lab 1

3. Start SQLQueryStress:
    1. File Explorer, \Labs, double-click SQLQueryStress.exe
    2. Click File, Open, \Labs\IndexLab1.json
    3. Click Go
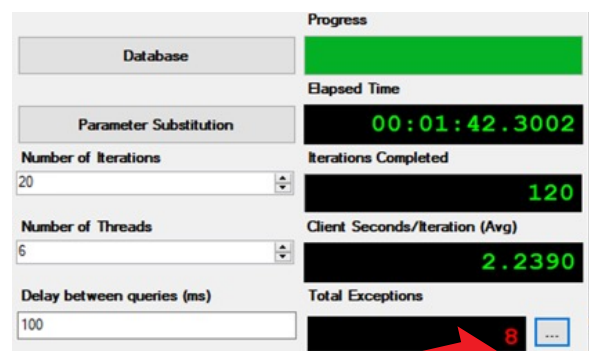
What SQLQueryStress is

A few errors are okay.
100% error rate is not.

OK errors:
- Divide by zero
- Transaction count
- Deadlock

But if you get errors about procs not being found or syntax errors, stop and ask for help, include screenshots.

You can stop it at any time.

You don't need the queries running live as you work for labs 1-3. (Lab 4 will be different.)

Click Cancel on SQLQueryStress whenever you want: you don't have to wait for it to finish the lab.

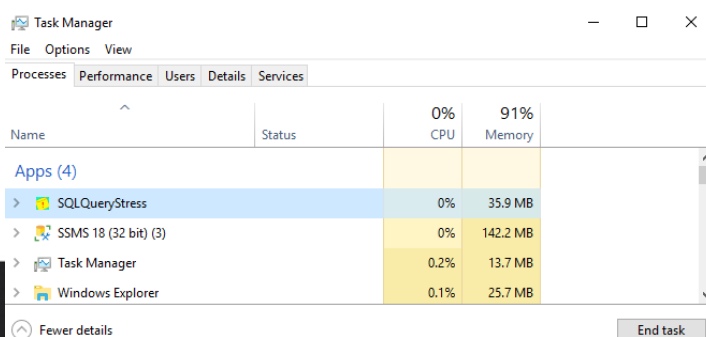Just let it run for at least 5-10 minutes to build up data in your index usage DMVs.

1.4 p9

Sometimes, it goes rogue.

Sometimes you'll cancel it and close it, but it will keep running in the background, headless.

Go into Task Manager to make sure it's not there.
If it is, end-task it a couple of times to kill it.

1.4 p10

How I'd budget these 2 hours

5 minutes – overview: stop the load test, run sp_BlitzIndex, pick the first table you want to focus on tuning.

15 minutes – analyze 1 table: focus on it, script out all of the changes that you want to make at once (not just one index - I'm a busy manager), then ask approval.

Repeat that a couple/few of times for 3-4 tables, and give me a recap of your space/index savings.

60 minutes – lunch. Turn in your homework at least 5 minutes before class starts again.

1.4 p11

Format for your homework

```sql
/* 2019-11-29: Hi! Wow, you smell much better today, even across Slack. Not nearly as bad as yesterday.

I reviewed the Users table, and we need to drop these indexes because they're not getting used: */
DROP INDEX IX_DisplayName ON dbo.Users;
DROP INDEX IX_LastAccessDate ON dbo.Users;
DROP INDEX IX_ID4 ON dbo.Users;
GO

/* In case things go wrong, here's an undo script:
CREATE INDEX IX_DisplayName ON dbo.Users(DisplayName);
CREATE INDEX IX_LastAccessDate ON dbo.Users(LastAccessDate);
CREATE INDEX IX_ID4 ON dbo.Users(Id);

This index is a narrower subset of IX_LocationWebsiteUrl, so we should drop it: */
DROP INDEX IX_Location ON dbo.Users;
GO

/* In case things go wrong, here's an undo script:
CREATE INDEX IX_Location ON dbo.Users(Location);

I'd like to merge these two indexes together into one:

CREATE INDEX IX_Reputation_Includes ON dbo.Users(Reputation) INCLUDE (LastAccessDate);
CREATE INDEX IX_Reputation_Location ON dbo.Users(Reputation, Location);

Into this one: */
CREATE INDEX IX_Reputation_Location_Includes ON dbo.Users(Reputation, Location) INCLUDE (LastAccessDate);
GO
/* And get rid of those above two afterwards: */
DROP INDEX IX_Reputation_Includes ON dbo.Users;
DROP INDEX IX_Reputation_Location ON dbo.Users;
GO
```
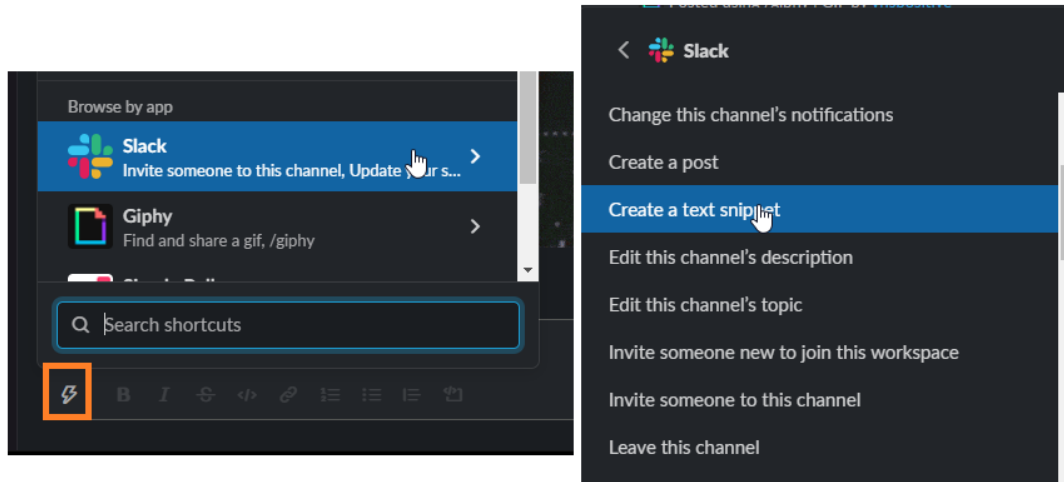
1.4 p12

To turn in your homework in Slack

1.4 p13

Stumped? Take a peek at Slack.

The Slack room lets you see:

- Other peoples' answers

- How quick (or slow) you are compared to them

- How thorough you are compared to them

- Who you should cheat off of
  during the final exam

1.4 p14

What to expect

The workload won't finish faster: the D/E parts are about clearing away dead weight so we can make things faster in the A/T/H steps.

(Sometimes D/E does actually speed things up, like when you have blocking contention – but we'll get to that in a later lab.)

1.4 p15