Lab 3: Changing Query Logic

2.3 p1

Setting up for lab 3

1. Restart your SQL Server service (clears all stats)

2. Restore your StackOverflow database (Agent job)

3. Copy & run the setup script for Lab 3

4. Start SQLQueryStress with QueryLab3.json
   OR tune mqt_QueryLab3_Level1

2.3 p2

The last few topics we covered:

Changing the number of rows we return: pagination

Changing the order in which SQL Server processes:
CTEs, temp tables, and index hints

Changing where business logic lives:
rewriting/inlining user-defined functions

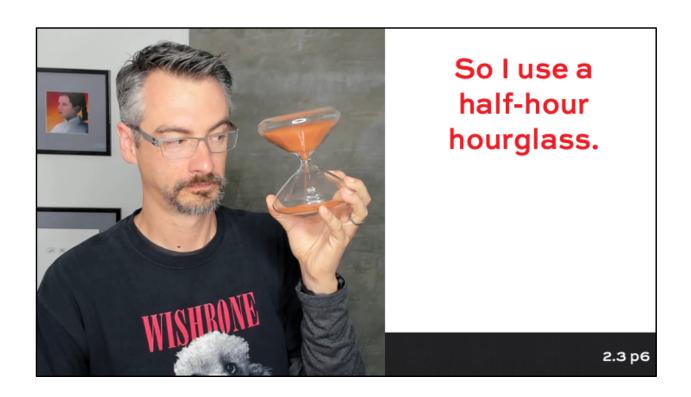We're starting to make big changes.

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Your job as a T-SQL tuner

- Read the query to understand what it's aiming for

- Analyze the query and the plan to understand where SQL Server is going wrong

- Come up with a better way to write the query

- Actually write it

- Test it for faster execution

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And in reality, you also have to:

- Test the results for accuracy
- Find more sets of parameters to test those too
- Document your work
- Convince your team to adopt it
- Check it into source control
- Get it into production

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So I use a half-hour hourglass.

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And in that half-hour, I try to:

- Read the query to understand what it's aiming for

- Analyze the query and the plan to understand where SQL Server is going wrong

- Come up with a better way to write the query

- Actually write it

- Test it for faster execution

And often, I can't do all that in 30 minutes.

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How to do your work faster

Use the production database contents
(same data, same distributions, same sizes)

Use the production server
(same version, config, hardware – but of course this comes with huge risks)

And today, we're doing the above two to help you.

Use a server *absolutely identical to* production
(and usually they say it is, but it ain't)

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How to do your work slower

Work in a database nothing like production:
different data sizes, distribution, contents

Work on a server nothing like production:
different hardware, config, versions

This is why you usually
can't make progress quickly.

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Timeline for this lab

5 minutes – sp_BlitzCache & query review: run sp_BlitzCache, pick a query where you can make a difference.

25-45 minutes – tune 1 query: review the plan, change query/indexes/stats, get the new actual plan. Be ruthless: if you need to change the result sets, do it. Report your before/after query plans in Slack with PasteThePlan.

If you have time: do 1 more query.

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What you can't do:

No indexes on columns over 200 bytes:
- ~~VARCHAR(250)~~
- ~~NVARCHAR(MAX)~~

And no, you can't use them as includes or indexed views either.

Stumped? Use the clues.

Each stored procedure in the load test has an identical version with _Clue at the end, like:

- usp_GetQuestionsByDate

- usp_GetQuestionsByDate_Clue

Just spend at least 10-15 minutes working on the original proc before you open its clue.