Exercise 1: Actual vs. Estimated Plans

Scenario

In the first exercise, you will learn to view both estimated and actual execution plans.

The main tasks for this exercise are as follows:

1. Load the test script
2. Generate an estimated execution plan for script 7.1
3. View the estimated execution plan for script 7.2 using SHOWPLAN_XML
4. Generate the actual execution plan for script 7.3
5. Try to generate an estimated execution plan for script 7.
6. Review the actual execution plan for script 7.4
7. Review the execution plans currently cached in memory using script 7.5

▶ Task 1: Load the test script

- Load the 51 – Lab Exercise 1.sql script from Solution Explorer.
- Change the database context to AdventureWorks.

▶ Task 2: Generate an estimated execution plan for script 7.1

- Generate an estimated plan for script 7.1.

▶ Task 3: View the estimated execution plan for script 7.2 using SHOWPLAN_XML

- Execute script 7.2 in SQL Server Query Analyzer.
- Click on the returned XML and view the execution plan.
- Right-click in the whitespace in the plan.
- Choose Show Execution Plan XML.
- Briefly review the XML.
- Close the XML window and the execution plan window.

▶ Task 4: Generate the actual execution plan for script 7.3

- Enable the option to include actual plans, then execute script 7.3. Note the returned execution plan tab and note that the plan is identical from the previous task.

▶ Task 5: Try to generate an estimated execution plan for script 7.4

- Request an estimated plan for script 7.4.
- Note the inability to create an estimated plan the reason is shown in the messages tab.

▶ Task 6: Review the actual execution plan for script 7.4

- Execute script 7.4 and note the returned plan.

▶ Task 7: Review the execution plans currently cached in memory using script 7.5

- Execute script 7.5 to view the plans currently cached in memory.

Results: After this exercise, you have reviewed various actual and estimated query plans.

Exercise 2: Identify Common Plan Elements

Scenario

Execution plans can contain many types of elements. You will learn to identify the most common plan elements and see how statements lead to these elements being used.

The main tasks for this exercise are as follows:

1. Load the test script
2. Explain the actual execution plan from script 7.6
3. Explain the actual execution plan from script 7.7
4. Explain the actual execution plan from script 7.8
5. Explain the actual execution plan from script 7.9
6. Explain the actual execution plan from script 7.10
7. Explain the actual execution plan from script 7.11
8. Explain the actual execution plan from script 7.12
9. Explain the actual execution plan from script 7.13
10. Explain the actual execution plan from script 7.14

▶ Task 1: Load the test script

- Load the 61 – Lab Exercise 2.sql script from Solution Explorer.
- Change the database context to AdventureWorks.
- Select the option to include actual execution plans from the Query menu.

▶ Task 2: Explain the actual execution plan from script 7.6

- Execute script 7.6.
- Explain the plan returned based upon the existing table structure.

▶ Task 3: Explain the actual execution plan from script 7.7

- Execute script 7.7.
- Explain the plan returned based upon the existing table structure.

▶ Task 4: Explain the actual execution plan from script 7.8

- Execute script 7.8.
- Explain the plan returned based upon the existing table structure.

▶ Task 5: Explain the actual execution plan from script 7.9

- Execute script 7.9.
- Explain the plan returned based upon the existing table structure.

▶ Task 6: Explain the actual execution plan from script 7.10

- Execute script 7.10.
- Explain the plan returned based upon the existing table structure.

Task 7: Explain the actual execution plan from script 7.11

- Execute script 7.11.
- Compare the plan to the one returned by script 7.10.
- Suggest a reason for the difference in plan, where the queries are almost identical. Also note the green Missing Index warning.

Task 8: Explain the actual execution plan from script 7.12

- Execute script 7.12.
- Explain the plan returned based upon the existing table structure.

Task 9: Explain the actual execution plan from script 7.13

- Execute script 7.13.
- Compare the plan to the one returned by script 7.12.
- Suggest a reason for the difference in plan, where the queries are very similar.

Task 10: Explain the actual execution plan from script 7.14

- Execute script 7.14.
- Note the difference in this plan from the plan for script 7.12.

Results: After this exercise, you will have analyzed the most common plan elements returned from queries.

Challenge Exercise 3: Query Cost Comparison (Only if time permits)

Scenario

You regularly find yourself trying to decide between different ways of structuring SQL queries. You are concerned that you aren't always choosing the highest-performing options. You will learn to use execution plans to compare the cost of statements in multi-statement batches.

The main tasks for this exercise are as follows:

1. Load the test script
2. Explain the actual execution plan from script 7.15

Task 1: Load the test script

- Load the 71 – Lab Exercise 3.sql script from Solution Explorer.
- Change the database context to AdventureWorks.
- Select the option to include actual execution plans from the Query menu.

Task 2: Explain the actual execution plan from script 7.15

- Execute script 7.15 as a single batch (both queries should be executed together).
- Explain the execution plan that is returned. In particular, explain the relationship between the two query plans.

Results: After this exercise, you have used execution plans to compare the cost of statements in multi-statement batches.