Session 3

INDEX

1. Concept

- Indexes are a common way to **enhance database performance**
  - An index allows the database server to find and retrieve specific rows **much faster** than it could do without an index.
  - But indexes also **add overhead to the database system** as a whole, so they should be used sensibly

1. Concept

- Types of indexes in SQL Server
  - Clustered index:
    - Store data rows in a sorted structure based on its key values
    - One clustered index at most
    - If create a new table with primary key, clustered index will be automatically created on this key
    - If add a primary key constraint to a table that already has a clustered index, SQL Server will enforce the primary key using a non-clustered index
  - Non-clustered index:
    - Separate data structure from data rows
    - May include one or more column
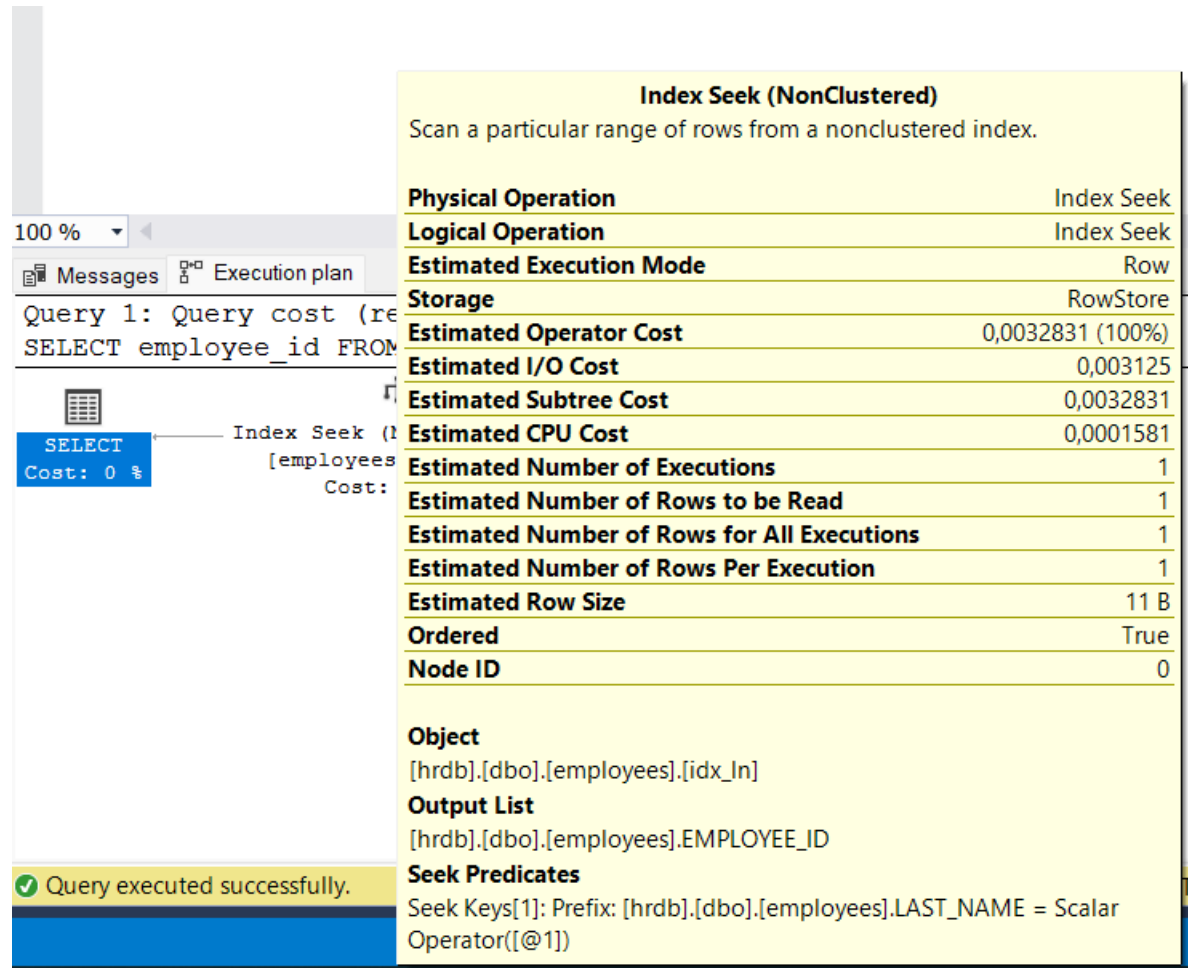   - A table may have many non-clustered index

2. Create index

```
CREATE [NONCLUSTERED] INDEX index_name
ON table_name(column_list);
```

3. Checking query plan

```
CREATE INDEX idx_ln ON
employees(last_name);

SELECT first_name, last_name FROM
employees WHERE last_name = 'abc';
```


100 %

Messages   Execution plan

Query 1: Query cost (re
SELECT employee_id FROM

SELECT
Cost: 0 %

Index Seek (N
[employees
Cost:

Query executed successfully.

Index Seek (NonClustered)
Scan a particular range of rows from a nonclustered index.

Physical Operation	Index Seek
Logical Operation	Index Seek
Estimated Execution Mode	Row
Storage	RowStore
Estimated Operator Cost	0,0032831 (100%)
Estimated I/O Cost	0,003125
Estimated Subtree Cost	0,0032831
Estimated CPU Cost	0,0001581
Estimated Number of Executions	1
Estimated Number of Rows to be Read	1
Estimated Number of Rows for All Executions	1
Estimated Number of Rows Per Execution	1
Estimated Row Size	11 B
Ordered	True
Node ID	0

Object
[hrdb].[dbo].[employees].[idx_ln]
Output List
[hrdb].[dbo].[employees].EMPLOYEE_ID
Seek Predicates
Seek Keys[1]: Prefix: [hrdb].[dbo].[employees].LAST_NAME = Scalar
Operator([@1])

4. Benchmarking

```sql
CREATE INDEX idx_ln ON
employees(last_name);

SELECT first_name, last_name FROM
employees WHERE last_name = 'abc';
```

Properties	▼ 📌 ✕
Current connection parameters	▾

Aggregate Status	
Connection failures	
Elapsed time	00:00:00.0520782
Finish time	5/31/2022 5:26:07 AM
Name	DESKTOP-4B9M15C\SQ
Rows returned	0
Start time	5/31/2022 5:26:07 AM
State	Open
Connection	
Connection name	DESKTOP-4B9M15C\SQ
Connection Details	