RUZ0096 PDBS 4.cvičení

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1 Oracle

1.1 Úkol 4: Dotazy

SELECT lname, fname, residence, COUNT(*) AS records FROM Customer GROUP BY lname, fname, residence;

SELECT lname, fname, COUNT(*) AS records FROM Customer GROUP BY lname, fname;

SELECT lname, residence, COUNT(*) AS records FROM Customer GROUP BY lname, residence;

###	MIN. COUNT	MIN. VALUES	MAX. COUNT	MAX. VALUES
lname, fname, residence	26	Nováková,Alena,Přerov	184	Veselá,Věra,Zlín
lname a fname	693	Nováková,Jana	2911	Novotná,Lucie
lname a residence	296	Pospíšilová,Praha	1403	Novotná,Karlovy Vary

1.2 Úkol 4: QEP: halda a index

1.3 Plán bez indexu

1.3.1 IO Cost, CPU Time, Vysvětlení použití plánu

```
[2025-03-17 23:29:08] completed in 13 ms
---- Query Processing Statistics ----
executions: 1
buffer gets: 1957
cpu_time_ms: 0
elapsed_time_ms: 11.072
rows_processed: 74
username: RUZ0096
query: select * from CUSTOMER where lname like 'Veselá' and fname like 'Věra' and RESIDENCE like 'Jihlava'
```

Databázový systém použil **Table access full (průchod haldou)**, protože neexistuje index. Další z důvodu je, že **po where klauzuli se nevyskytuje primary key**, tudíž DS **musí projít veškeré záznamy**.

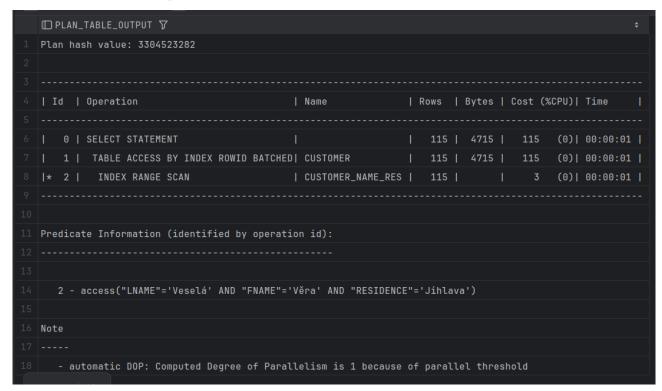
1.4 Popis haldy

blocks	2048
size (MB)	16
used_blocks	2048
size used (MB)	16
unused_blocks	0
size unused (MB)	0

1.5 Popis indexu

INDEX_NAME	CUSTOMER_NAME_RES
Velikost indexu (MB)	13
NUM_ROWS	300 000
LEAF_BLOCKS	1559
DISTINCT KEYS	2600
TIME (ms)	896
Blocks	1664

1.5.1 Plán pro select s indexem



1.5.2 IO Cost, CPU Time, Vysvětlení použití plánu

```
[2025-03-18 00:25:09] completed in 14 ms
---- Query Processing Statistics ----
executions: 2
buffer gets: 75
cpu_time_ms: 0
elapsed_time_ms: .8285
rows_processed: 74
username: RUZ0096
query: select * from CUSTOMER where lname like 'Veselá' and fname like 'Věra' and RESIDENCE like 'Jihlava'
```

Databázový systém použil vyhledávání pomocí **indexů**, protože IO Cost vyšel lépe.

1.5.3 lname fname MIN

• buffer gets: 1386

• cpu_time_ms: 0

• elapsed_time_ms: 8.716

1.5.4 lname fname MAX

• buffer gets: 365

• cpu_time_ms: 0

 \bullet elapsed_time_ms: 2.956

1.5.5 Velikost indexu

• Blocks: 1664

• Size(MB): 13

2 Microsoft SQL Server

2.1 Úkol 4: Dotazy

###	MIN. COUNT	MIN. VALUES	MAX. COUNT	MAX. VALUES
lname, fname, residence	27	Němec,Michal,Šumperk	85	Kučerová,Věra,Bohumín
lname a fname	756	Černý, Tomáš	1269	Procházková,Lenka
lname a residence	505	Dvořáková,Beroun	694	Krejčí,Prostějov

2.2 Úkol 4: QEP: halda a index

2.2.1 Bez indexu

- CPU time = 62 ms
- elapsed time = 53 ms
- logical reads = 1750
- physical reads = 0
- $\bullet \hspace{0.2in} \textbf{--Table Scan} (OBJECT: ([RUZ0096].[dbo].[Customer]), \hspace{0.2in} WHERE: \\$

Vysvětlení viz Oracle.

2.2.2 S indexem

□ name 7 ÷	□height 7 ÷	□level 7 ÷	□ page_count 7 ÷	☐record_count 7 ÷	□avg_record_size 🎖 💠	□ page_utilization 7 ÷	□avg_frag 🎖 💠
CUSTOMER_NAME_RES			0 1573	300000	39.997	98.9	1.53
CUSTOMER_NAME_RES			1 23	1573	43.389	38.3	86.96
CUSTOMER_NAME_RES			2 1	. 23	42.869	12.7	0

- index byl vytvořen za 237 ms
- **CPU** time = 0 ms
- elapsed time = 4 ms
- logical reads = 153
- physical reads = 0
- —Nested Loops —Index Seek —RID Lookup

Vysvětlení viz Oracle.

2.2.3 lname fname MIN

- P. položek = 756
- **CPU time** = 31 ms
- elapsed time = 31 ms
- logical reads = 1145
- physical reads = 0
- $\bullet \quad \text{—Table Scan} (\text{OBJECT:} ([\text{RUZ0096}]. [\text{dbo}] ...$

2.2.4 lname fname MAX

- **P.** položek = 1269
- **CPU time** = 15 ms
- elapsed time = 18 ms
- logical reads = 686
- physical reads = 0

2.2.5 Velikost haldy

- Total Pages: 1753
- Total Pages (MB): 13.7
- Used Pages: 1751
- Used Pages (MB): 13.7

2.2.6 Velikost indexu

- Total Pages: 1874
- Total Pages (MB): 14.6
- Used Pages: 1623
- Used Pages (MB): 12.7