BD - Guião 10

p1g6

10.1

#	Query	Rows	Cost	Pag. Reads	Time (ms)	Index used	Index Op.
1	`select * from Production.WorkOrder;`	72591	0,488	540	886	WorkOrderID	Clustered Index Scan
2	`select * from Production.WorkOrder where WorkOrderID=1234;`	1	0,004	8	83	WorkOrderID	Clustered Index Seek
3.1	`SELECT * FROM Production.WorkOrder WHERE WorkOrderID between 10000 and 10010;`	11,9	0,003	14	172	WorkOrderID	Clustered Index Seek
3.2	`SELECT * FROM Production.WorkOrder WHERE WorkOrderID between 1 and 72591;`	72591	0,488	524	1009	WorkOrderID	Clustered Index Seek
4	`SELECT * FROM Production.WorkOrder WHERE StartDate = '2007-06-25';`	72591	0,523	1115	431	WorkOrderID	Clustered Index Scan
5	`SELECT * FROM Production.WorkOrder WHERE ProductID = 757;`	11,4	0,037	32	109	ProductID (+ WorkOrderID)	Index Seek (NonClustered) (+ Key Lookup (Clustered))

6.1	**SELECT** WorkOrderID, StartDate **FROM** Production.WorkOrder **WHERE** ProductID = 757**;**	11,4	0,037	32	139	ProductID (+ WorkOrderID)	Index Seek (NonClustered) (+ Key Lookup (Clustered))
6.2	**SELECT** WorkOrderID, StartDate **FROM** Production.WorkOrder **WHERE** ProductID = 945**;**	1105	0,474	542	114	ProductID	Clustered Index Scan
6.3	**SELECT** WorkOrderID **FROM** Production.WorkOrder **WHERE** ProductID = 945 **AND** StartDate = '2006-01-04**;**	1,8	0,474	544	37	ProductID + StartDate	Clustered Index Scan
7	**SELECT** WorkOrderID, StartDate **FROM** Production.WorkOrder **WHERE** ProductID = 945 **AND** StartDate = '2006-01-04'**;**	1,8	0,474	544	1007	ProductID + StartDate	Clustered Index Scan
8	**SELECT** WorkOrderID, StartDate **FROM** Production.WorkOrder **WHERE** ProductID = 945 AND StartDate = '2006-01-04'**;**	1,8	0,474	544	123	ProductID + StartDate	Clustered Index Scan

10.2

a)

```
CREATE TABLE mytemp (
        rid BIGINT /*IDENTITY (1, 1)*/ NOT NULL,
        at1 INT NULL,
        at2 INT NULL,
        at3 INT NULL,
        lixo varchar(100) NULL
);
CREATE CLUSTERED INDEX rid ON mytemp(rid);
```

b)

Resultado da execução:

```
        Inserted      50000 total records
        Milliseconds used: 64860
```

Executando o comando

```
SELECT AVG(avg_fragmentation_in_percent) AS avg_frag,
      AVG(avg_page_space_used_in_percent) AS avg_page_sp
FROM sys.dm_db_index_physical_stats(db_id('AdventureWorks2012'),
      object_id('Frag'), NULL , NULL, 'DETAILED');
```

Obtêm-se o resultado de:

```
avg_frag       = 8,69993587937153 (%)
avg_page_sp  = 43,6683861915486 (%)
```

c)

Para o parametro fillFactor=65, obteve-se o seguinte resultado:

```
Inserted      50000 total records
Milliseconds used: 165147
```

Para o parametro fillFactor=80, obteve-se o seguinte resultado:

```
Inserted      50000 total records
Milliseconds used: 166557
```

Para o parametro fillFactor=90, obteve-se o seguinte resultado:

```
Inserted      50000 total records
Milliseconds used: 172383
```

d)

Resultado da execução:

```
Inserted      50000 total records
Milliseconds used: 160667
```

e)

Resultado da execução:

```
Inserted      50000 total records
Milliseconds used: 198146
```

O uso de índices melhora o tempo de consulta, contudo aumenta o tempo de inserção. Por esta razão, a inserção com índices (198146ms) foi consideravelmente maior do que a inserção sem índices (160667).

10.3

a)

i) O funcionário com determinado número ssn;

Tabela	**Índices**
EMPLOYEE	Ssn - *unique clustered index*
DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Pnumber - *unique clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*

ii) O(s) funcionário(s) com determinado primeiro e último nome;

Tabela	**Índices**
EMPLOYEE	Fname, Lname - *composite clustered index*
DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Pnumber - *unique clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*

iii) Os funcionários que trabalham para determinado departamento;

Tabela	**Índices**
EMPLOYEE	Dno - *clustered index*
DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Pnumber - *unique clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*

iv) Os funcionários que trabalham para determinado projeto;

Tabela	**Índices**
EMPLOYEE	Ssn - *unique clustered index*
DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Pnumber - *unique clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*

v) Os dependentes de determinado funcionário;

Tabela	**Índices**
EMPLOYEE	Ssn - *unique clustered index*

DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Pnumber - *unique clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*

vi) Os projetos associados a determinado departamento;

Tabela	**Índices**
EMPLOYEE	Ssn - *unique clustered index*
DEPARTMENT	Dnumber - *unique clustered index*
DEPT_LOCATIONS	Dnumber, Dlocation - *composite clustered index* Dlocation, Dnumber - *composite non-clustered index*
PROJECT	Dnum - *clustered index* Pnumber - *unique non-clustered index*
WORKS_ON	Pno, Essn - *composite clustered index*
DEPENDENT	Essn, Dependent_name - *composite clustered index*