Lab 08

Grupo **P2G2**

Membros	Número Mecanográfico
David Araújo	93444
Miguel Nogueira	93082

Problema 8.1

#	Query	Rows	Cost	Pag. Reads	Time (ms)	Index used	Index Op.	Index Creation SQL
1	`SELECT * FROM Production.WorkOrder`	72591	0.473	570	438	WorkOderID	Clustered Index Scan	N/A
2	`SELECT * FROM Production.WorkOrder WHERE WorkOrderID=1234`	1	0.003	16	38	WorkOrderID	Clustered Index Seek	N/A
3.1	`SELECT * FROM Production.WorkOrder WHERE WorkOrderID between 10000 and 10010`	11	0.003	16	48	WorkOrderID	Clustered Index Seek	N/A
3.2	`SELECT * FROM Production.WorkOrder WHERE WorkOrderID between 1 and 72591`	72591	0.474	580	1302	WorkOrderID	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([WorkOrderID]) INCLUDE ([ProductID], [OrderQty], [StockedQty], [ScrappedQty], [StartDate], [EndDate], [DueDate], [ScrapReasonID], [ModifiedDate])`

#	Query	Rows	Cost	Pag. Reads	Time (ms)	Index used	Index Op.	Index Creation SQL
4	`SELECT * FROM Production.WorkOrder WHERE StartDate = '2007-06-25'`	55	0.003	46	99	StartDate	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([StartDate]) INCLUDE ([WorkOrderID], [ProductID], [OrderQty], [StockedQty], [ScrappedQty], [EndDate], [DueDate], [ScrapReasonID], [ModifiedDate])`
5	`SELECT * FROM Production.WorkOrder WHERE ProductID = 757`	9	0.003	72	34	ProductID	Index Seek (Non Clustered)	N/A
6.1	`SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 757`	9	0.003	220	42	ProductID Covered (StartDate)	Index Seek (Non Clustered)	N/A
6.2	`SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945`	1105	0.005	18	17	ProductID	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([ProductID]) INCLUDE ([WorkOrderID], [StartDate])`
6.3	`SELECT WorkOrderID FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'`	1	0.003	46	2	ProductID, StartDate	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([ProductID], [StartDate]) INCLUDE ([WorkOrderID])`

#	Query	Rows	Cost	Pag. Reads	Time (ms)	Index used	Index Op.	Index Creation SQL
7	`SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'`	1	0.003	212	33	ProductID, StartDate	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([ProductID], [StartDate]) INCLUDE ([WorkOrderID])`
8	`SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'`	1	0.003	46	9	ProductID, StartDate	Index Seek (Non Clustered)	`CREATE NONCLUSTERED INDEX [index] ON [Production].[WorkOrder] ([ProductID], [StartDate]) INCLUDE ([WorkOrderID])`

Problema 8.2

a)

```
CREATE TABLE mytemp (
    rid BIGINT /*IDENTITY (1, 1)*/ NOT NULL,
    at1 INT NULL,
    at2 INT NULL,
    at3 INT NULL,
    lixo VARCHAR(100) NULL,
    PRIMARY KEY CLUSTERED (rid)
);
```

b)

Fillfactor	Milliseconds	Page fulness	Total Fragmentation
65	31397	70.03%	98.90%

c)

```
CREATE TABLE mytemp (
    rid BIGINT /*IDENTITY (1, 1)*/ NOT NULL,
    at1 INT NULL,
    at2 INT NULL,
    at3 INT NULL,
    lixo VARCHAR(100) NULL,
    PRIMARY KEY CLUSTERED (rid) WITH (FILLFACTOR=65/*80 ... 90*/)
);
```

Fillfactor	Milliseconds	Page fulness	Total Fragmentation
65	**43027**	70.03%	98.90%
80	**45133**	70.03%	98.90%
90	**42677**	70.03%	98.90%

d)

```
CREATE TABLE mytemp (
    rid BIGINT IDENTITY (1, 1) NOT NULL,
    at1 INT NULL,
    at2 INT NULL,
    at3 INT NULL,
    lixo VARCHAR(100) NULL,
    PRIMARY KEY CLUSTERED (rid) WITH (FILLFACTOR=65/*80 ... 90*/)
);
```

Fillfactor	Milliseconds	Page fulness	Total Fragmentation
65	**33667**	70.03%	98.90%
80	**32220**	70.03%	98.90%
90	**32123**	70.03%	98.90%

e)

```
create index at1 on mytemp(at1);
create index at2 on mytemp(at2);
create index at3 on mytemp(at3);
create index lixo on mytemp(lixo);
```

Fillfactor	Milliseconds
65	**75764**
80	**75164**
90	**72764**

Problema 8.3

i)

Uma vez que **Ssn** é *chave primária* de **EMPLOYEE**, é conveniente usarmos um **Cluster Index** com a especialização **Unique**.

```
CREATE UNIQUE CLUSTERED INDEX IxSsn ON EMPLOYEE(Ssn);
```

ii)

Como que queremos utilizar **mais que um** atributo para selecionar, teremos de usar a especilização **Composite** no nosso **Cluster Index**.

```
CREATE COMPOSITE CLUSTERED INDEX IxNames ON EMPLOYEE(Fname, Lname,);
```

iii)

Como cada funcionário já possui um atributo que identifica o departamento a que está associado (**Dno**), mas este pode ser repetido, não podemos utilizar nenhuma especialização.

```
CREATE CLUSTERED INDEX IxDno ON EMPLOYEE(Dno);
```

iv)

Como no tabela **WORKS_ON** temos uma associação de **Ssn** com **Pno**, podemos especializar com um **COMPOSITE** um **Cluster Index** de forma a selecionar estes dois atributos nesta tabela.

```
CREATE COMPOSITE CLUSTERED INDEX IxSsnPno ON WORKS_ON(Essn,Pno,);
```