

9.1

#	Query	Rows	Cost	Pag. Reads	Time(ms)	Index used	Index Op.
1	select * from Production.WorkOrder	72591	.484	531	1171	WorkOrderID (PK)	Clustered Index Scan
2	select * from Production.WorkOrder where WorkOrderID=1234	1	.00328	216	1	WorkOrderID (PK)	Clustered Index Scan
3	select * from Production.WorkOrder where WorkOrderID=1234	11	.0033	216	1	WorkOrderID (PK)	Clustered Index Scan
	SELECT * FROM Production.WorkOrder WHERE WorkOrderID between 1 and 72591;	72591	0,0393	556	21	WorkOrderID (PK)	Clustered Index Scan
4	SELECT * FROM Production.WorkOrder WHERE StartDate = '2007-06-25'	72591	0.474	1914	14	WorkOrderID (PK)	Clustered Index Scan
5	Query: SELECT * FROM Production.WorkOrder WHERE ProductID = 757	9	0.340	240	4	ProductID	Non Clustered
6	SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 757	9	0.003	26	1	ProductID Covered (StartDate)	Non Clustered
	SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945	1105	0.006	224	1	ProductID Covered (StartDate)	Non Clustered
	SELECT WorkOrderID FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'	1	0.006	226	1	ProductID Covered (StartDate)	Non Clustered
7	SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'	1	0.008	63	3	ProductID and StartDate	Non Clustered
8	SELECT WorkOrderID, StartDate FROM Production.WorkOrder WHERE ProductID = 945 AND StartDate = '2006-01-04'	1	0.003	222	1	Composite (ProductID, StartDate)	Non Clustered

9.2

	Tempo de inserção (ms)	% Frag.	% Ocupação	Fill Factor	identity
b)	119130	99.66	67.93	Na	nao
c)	123746	99.20	67.28	40	nao
	122420	98.72	68.06	80	nao
	123460	98.95	68.13	95	nao
	122420	0.34	99.61	40	sim
	85233	0.34	99.61	80	sim
	86323	0.34	99.61	95	sim

	Tempo (ms)
d) Sem indices	81236
Com todos os indices	247820

R: Não vale a pena criar um índice para todos os atributos de uma tabela, pois sem índices o tempo de inserção é mais pequeno. Os índices devem ser tratados como uma ajuda bastante valiosa, mas não se deve abusar deles pois pode acabar por ter o efeito inverso ao esperado.

## 9.3

a)

i O funcionário com determinado número ssn;

EMPLOYEE	Ssn - unique clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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;

EMPLOYEE	Fname, Lname - composite clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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;

EMPLOYEE	Dno - clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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;

EMPLOYEE	Ssn - unique clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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;

EMPLOYEE	Ssn - unique clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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;

EMPLOYEE	Ssn - unique clustered index
DEPARTMENT	Dnumber - unique clustered index
DEPT_LOCATIONS	Dnumber, Dlocation - composite 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