# Creation of tblEmployee table

CREATE TABLE tblEmployee

(

EmployeeNumber INT NOT NULL,

EmployeeFirstName VARCHAR(50) NOT NULL,

EmployeeMiddleName VARCHAR(50) NULL,

EmployeeLastName VARCHAR(50) NOT NULL,

EmployeeGovernmentID CHAR(10) NULL,

DateOfBirth DATE NOT NULL

)

# Adding additional columns

ALTER TABLE tblEmployee

ADD Department VARCHAR(10);

SELECT \* FROM tblEmployee

INSERT INTO tblEmployee

VALUES (132, 'Dylan', 'A', 'Word', 'HN513777D', '19920914', 'Customer Relations')

ALTER TABLE tblEmployee

DROP COLUMN Department

ALTER TABLE tblEmployee

ADD Department VARCHAR(15)

ALTER TABLE tblEmployee

ALTER COLUMN Department VARCHAR(20)

ALTER TABLE tblEmployee

ALTER COLUMN Department VARCHAR(19)

SELECT LEN( 'Customer Relations')

INSERT INTO tblEmployee([EmployeeFirstName],[EmployeeMiddleName],

[EmployeeLastName],[EmployeeGovernmentID],[DateOfBirth],[Department],[EmployeeNumber])

VALUES ('Jossef', 'H', 'Wright', 'TX593671R', '19711224', 'Litigation',131)

INSERT INTO tblEmployee

VALUES (1, 'Dylan', 'A', 'Word', 'HN513777D', '19920914', 'Customer Relations'),

(2,'Jossef', 'H', 'Wright', 'TX593671R', '19711224', 'Litigation')

# WHERE and LIKE

select \* from tblEmployee

where [EmployeeLastName] <> 'Word'

select \* from tblEmployee

where [EmployeeLastName] like '\_W%'

Select \* from tblEmployee

where [EmployeeLastName] like '[r-t]%'

Select \* from tblEmployee

where [EmployeeLastName] like '[^rst]%'

-- % = 0-infinity characters

-- \_ = 1 character

-- [A-G] = In the range A-G.

-- [AGQ] = A, G or Q.

-- [^AGQ] = NOT A, G or Q.

select \* from tblEmployee

where EmployeeLastName like '[%]%'

select \* from tblEmployee

where EmployeeLastName like '`%%' ESCAPE '`'

# SELECTing only part of a table – numbers

select \* from tblEmployee

where not EmployeeNumber>200

select \* from tblEmployee

where EmployeeNumber!=200

select \* from tblEmployee

where EmployeeNumber>=200 and EmployeeNumber<=209

select \* from tblEmployee

where not (EmployeeNumber>=200 and EmployeeNumber<=209)

select \* from tblEmployee

where EmployeeNumber<200 or EmployeeNumber>209

select \* from tblEmployee

where EmployeeNumber between 200 and 209

select \* from tblEmployee

where EmployeeNumber not between 200 and 209

select \* from tblEmployee

where EmployeeNumber in (200, 204, 208)

# Summarising an ordering data

select \* from tblEmployee

where DateOfBirth between '19760101' and '19861231'

select \* from tblEmployee

where DateOfBirth >= '19760101' and DateOfBirth < '19870101'

select \* from tblEmployee

where year(DateOfBirth) between 1976 and 1986 -- DO NOT USE.

SELECT year(DateOfBirth) as YearOfDateOfBirth, count(\*) as NumberBorn

FROM tblEmployee

GROUP BY year(DateOfBirth)

SELECT \* FROM tblEmployee

where year(DateOfBirth) = 1967

SELECT year(DateOfBirth) as YearOfDateOfBirth, count(\*) as NumberBorn

FROM tblEmployee

WHERE 1=1

GROUP BY year(DateOfBirth)

-- non-deterministic each time order will be different

SELECT year(DateOfBirth) as YearOfDateOfBirth, count(\*) as NumberBorn

FROM tblEmployee

WHERE 1=1

GROUP BY year(DateOfBirth)

ORDER BY year(DateOfBirth) DESC

-- deterministic

Order of execution is as below so select should have year(date of birth)

FROM tblEmployee

WHERE 1=1

GROUP BY year(DateOfBirth)

SELECT year(DateOfBirth) as YearOfDateOfBirth, count(\*) as NumberBorn

# Criteria on summarised data

select left(EmployeeLastName,1) as Initial, count(\*) as CountOfInitial

from tblEmployee

group by left(EmployeeLastName,1)

order by count(\*) DESC --left(EmployeeLastName,1)

select top(5) left(EmployeeLastName,1) as Initial, count(\*) as CountOfInitial

from tblEmployee

group by left(EmployeeLastName,1)

order by count(\*) DESC --left(EmployeeLastName,1) top 5 is also valid without ()

select left(EmployeeLastName,1) as Initial, count(\*) as CountOfInitial

from tblEmployee

where DateOfBirth > '19860101'

group by left(EmployeeLastName,1)

having count(\*)>=20

order by CountOfInitial DESC

The order of the clauses (in capitals) are:

SELECT, FROM, WHERE , GROUPBY, HAVING, ORDERBY (you can access alias here)

The WHERE clause can reduce the number of rows remaining only before the GROUP BY takes place, and the HAVING can reduce the number of rows after the grouping.

**Changing blank strings to NULLs**

Update tblEmployee

Set EmployeeMiddleName = NULL

Where EmployeeMiddleName = ''

# Exercise

SELECT DATENAME(moth, DateofBirth) as MonthName, Count(\*) as NumberEmployees,

COUNT(EmployeeMiddleName) as NumberOfMiddleNames,

count(\*)-count(EmployeeMiddleName) as NoMiddleName,

format(min(DateOfBirth),'dd-MM-yy') as EarliestDateOfBirth,

format(max(DateOfBirth),'D') as LatestDateOfBirth

FROM tblEmployee

GROUP BY DATENAME(MONTH,DateOfBirth), DATEPART(MONTH,DateOfBirth)

ORDER BY DATEPART(MONTH,DateOfBirth)

# Transaction Table

create table tblTransaction (

Amount smallmoney NOT NULL,

DateOfTransaction smalldatetime NULL,

[EmployeeNumber] [int] not null

)

# Different Types of JOIN

select tblEmployee.EmployeeNumber, EmployeeFirstName, EmployeeLastName, sum(Amount) as SumOfAmount

from tblEmployee left join tblTransaction

on tblEmployee.EmployeeNumber = tblTransaction.EmployeeNumber

GROUP BY tblEmployee.EmployeeNumber, EmployeeFirstName, EmployeeLastName

ORDER BY EmployeeNumber

select \* from tblEmployee

select \* from tblTransaction where EmployeeNumber = 1046

# Creating a third table

select Department as NumberOfDepartments

into tblDepartment2

from

(select Department, count(\*) as NumberPerDepartment

from tblEmployee

GROUP BY Department) as newTable

--derived table

select distinct Department, convert(varchar(20), N'') as DepartmentHead

into tblDepartment

from tblEmployee

drop table tblDepartment

select \* from tblDepartment

alter table tblDepartment

alter column DepartmentHead varchar(30) null

# JOINING three tables

select DepartmentHead, sum(Amount) as SumOfAmount

from tblDepartment

left join tblEmployee

on tblDepartment.Department = tblEmployee.Department

left join tblTransaction

on tblEmployee.EmployeeNumber = tblTransaction.EmployeeNumber

group by DepartmentHead

order by DepartmentHead

insert into tblDepartment(Department,DepartmentHead)

values ('Accounts', 'James')

select D.DepartmentHead, Sum(T.Amount) as SumOfAmount

from tblDepartment as D

left join tblEmployee as E

on D.Department = E.Department

left join tblTransaction T

on E.EmployeeNumber = T.EmployeeNumber

group by D.DepartmentHead

order by D.DepartmentHead

# Missing data

select E.EmployeeNumber as ENumber, E.EmployeeFirstName,

E.EmployeeLastName, T.EmployeeNumber as TNumber,

sum(T.Amount) as TotalAmount

from tblEmployee as E

left join tblTransaction as T

on E.EmployeeNumber = T.EmployeeNumber

where T.EmployeeNumber IS NULL

group by E.EmployeeNumber, T.EmployeeNumber, E.EmployeeFirstName,

E.EmployeeLastName

order by E.EmployeeNumber, T.EmployeeNumber, E.EmployeeFirstName,

E.EmployeeLastName

-- derived table

select ENumber, EmployeeFirstName, EmployeeLastName

from (

select E.EmployeeNumber as ENumber, E.EmployeeFirstName,

E.EmployeeLastName, T.EmployeeNumber as TNumber,

sum(T.Amount) as TotalAmount

from tblEmployee as E

left join tblTransaction as T

on E.EmployeeNumber = T.EmployeeNumber

group by E.EmployeeNumber, T.EmployeeNumber, E.EmployeeFirstName,

E.EmployeeLastName) as newTable

where TNumber is null

order by ENumber, TNumber, EmployeeFirstName,

EmployeeLastName

-- RIGHT JOIN

select \*

from (

select E.EmployeeNumber as ENumber, E.EmployeeFirstName,

E.EmployeeLastName, T.EmployeeNumber as TNumber,

sum(T.Amount) as TotalAmount

from tblEmployee as E

right join tblTransaction as T

on E.EmployeeNumber = T.EmployeeNumber

group by E.EmployeeNumber, T.EmployeeNumber, E.EmployeeFirstName,

E.EmployeeLastName) as newTable

where ENumber is null

order by ENumber, TNumber, EmployeeFirstName,

EmployeeLastName

# Deleting data

-- Version 1

begin transaction

select count(\*) from tblTransaction

delete tblTransaction

from tblEmployee as E

right join tblTransaction as T

on E.EmployeeNumber = T.EmployeeNumber

where E.EmployeeNumber is null

select count(\*) from tblTransaction

rollback transaction

select count(\*) from tblTransaction

-- Version 2

begin transaction

select count(\*) from tblTransaction

delete tblTransaction

from tblTransaction

where EmployeeNumber IN

(select TNumber

from (

select E.EmployeeNumber as ENumber, E.EmployeeFirstName,

E.EmployeeLastName, T.EmployeeNumber as TNumber,

sum(T.Amount) as TotalAmount

from tblEmployee as E

right join tblTransaction as T

on E.EmployeeNumber = T.EmployeeNumber

group by E.EmployeeNumber, T.EmployeeNumber, E.EmployeeFirstName,

E.EmployeeLastName) as newTable

where ENumber is null)

select count(\*) from tblTransaction

rollback tran

select count(\*) from tblTransaction

# Updating data

select \* from tblEmployee where EmployeeNumber = 194

select \* from tblTransaction where EmployeeNumber = 3

select \* from tblTransaction where EmployeeNumber = 194

begin tran

-- select \* from tblTransaction where EmployeeNumber = 194

update tblTransaction

set EmployeeNumber = 194

output inserted.EmployeeNumber, deleted.EmployeeNumber

from tblTransaction

where EmployeeNumber in (3, 5, 7, 9)

insert into tblTransaction

go

delete tblTransaction

from tblTransaction

where EmployeeNumber = 3

-- select \* from tblTransaction where EmployeeNumber = 194

rollback tran