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DBMS - LAB

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Experiment 1

TITLE: DDL (Data Definition Language) commands

Objective: To understand the concept of designing issue related to the database with creating, populating the tables.

1. Create the tables described below:

Table name: CLIENT_MASTER
Description: used to store client information.

Column name	Data type	Size
CLIENTNO	Varchar	6
NAME	Varchar	20
ADDRESS 1	Varchar	30
ADDRESS 2	Varchar	30
CITY	Varchar	15
PINCODE	Integer	
STATE	Varchar	15
BALDUE	decimal	10,2

Table Name:

PRODUCT_MASTER
Description: used to store product information

Column name	Data type	Size
PRODUCTNO	Varchar	6
DESCRIPTION	Varchar	15
PROFITPERCENT	Decimal	4,2
UNIT MEASURE	Varchar	10

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QTYONHAND	Integer	

SALESMAN_MASTER
Description: Used to store salesman information working for the company.

Column Name	Data type	Size
SALESMANNO	Varchar	6
SALESMANNAME	Varchar	20
ADDRESS 1	Varchar	30
ADDRESS 2	Varchar	30
CITY	Varchar	20
PINCODE	Integer	
STATE	Varchar	20
SALAMT	Real	
TGTTOGET	Decimal	
YTDSALES	Double	6,2
REMARKS	Varchar	60

```
CREATE DATABASE dbms_lab;

USE dbms_lab;

CREATE TABLE ClientMASTER(ClientNO varchar(6), NAME varchar(20), CITY
Varchar (15), PINCODE Integer ,STATE Varchar (15),BALDUE decimal (10,2));

CREATE TABLE  ProductMASTER (PRODUCTNO varchar(6), DESCRIPTION
Varchar(15), PROFITPERCENT Decimal (4,2) ,UNITMEASURE Varchar
(10),QTYONHAND Integer,REORDERL_VL Integer , SELLPRICE Decimal(8,2),
CostPrice Decimal (8,2));

CREATE TABLE SalesmanMASTER(SALESMANNO Varchar(6), SALESMANNAME
Varchar(20),ADDRESS1 Varchar(30),ADDRESS2 Varchar(30) , CITY Varchar(20) ,
```

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PINCODE Integer ,STATE Varchar(20) , SALAMT Real, TGTTOGET Decimal , YTDSALES Double(6,2) , REMARKS Varchar(60));

insert into ClientMASTER values

("C00001","Ivan bayross" , "Mumbai", 400054," Maharashtra", 15000),

("C00002"," Mamta muzumdar" , "Madras", 780001," Tamil nadu", 0),

("C00003","Chhaya bankar" , "Mumbai", 400057," Maharashtra", 5000),

("C00004","Ashwini joshi" , "Bangalore ",560001 ," Karnataka", 0),

("C00005","Hansel colaco" , "Mumbai", 400060," Maharashtra", 2000),

("C00006","Deepak sharma" , "Mangalore", 560050," Karnataka", 0);

insert into ProductMASTER values

("P00001","T-Shirt" , 5 , "Piece" , 200 , 50 , 350 , 250),

("P0345","Shirt" , 6 , "Piece" , 150 , 50 , 500 , 350),

("P06734","Cotton jeans" , 5 , "Piece" , 100 , 20 , 600 , 450),

("P07865","Jeans" , 5 , "Piece" , 100 , 20 , 750 , 500),

("P07868 ","Trousers" , 2 , "Piece" , 150 , 50 , 850 , 550),

("P07885","Pull Overs" , 2.5 , "Piece" , 80 , 30 , 350*2 , 450),

("P07965","Denim jeans" , 4 , "Piece" , 100 , 40 , 350 , 250),

("P07975","Lycra tops" , 5 , "Piece" , 70 , 30 , 300 , 175),

("P08865","Skirts" , 5 , "Piece" , 75 , 30 , 450 , 300);

insert into SalesmanMASTER values ("S00001","Aman", "A/14", "Worli", "Mumbai", 400002,"Maharashtra",3000,100,50,"Good"),

("S00001","Omkar", "65", "Nariman", "Mumbai", 400001,"Maharashtra",3000,200,100,"Good"),

("S00001","Raj", "P-7", "Bandra", "Mumbai", 400032,"Maharashtra",3000,200,100,"Good"),

("S00001","Ashish", "A/5", "Jihu", "Mumbai", 400044,"Maharashtra",3500,200,150,"Good");

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select * from ClientMASTER;

select * from ProductMASTER;

select * from SalesmanMASTER;

OUTPUT :-

1) CLIENT MASTER

ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	15000.00
C00002	Mamta muzumdar	Madras	780001	Tamil nadu	0.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	Mumbai	400060	Maharashtra	2000.00
C00006	Deepak sharma	Mangalore	560050	Karnataka	0.00

2) PRODUCT MASTER

PRODUCTNO	DESCRIPTION	PROFITPERCENT	UNITMEASURE	QTYONHAND	REORDERL_VL	SELLPRICE	CostPrice
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirt	6.00	Piece	150	50	500.00	350.00
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00
P07865	Jeans	5.00	Piece	100	20	750.00	500.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07965	Denim jeans	4.00	Piece	100	40	350.00	250.00

3) SALESMAN MASTER

SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALAMT	TGTTOGET	YTDSALES	REMARI
S00001	Aman	A/14	Worli	Mumbai	400002	Maharashtra	3000	100	50.00	Good
S00001	Omkar	65	Nariman	Mumbai	400001	Maharashtra	3000	200	100.00	Good
S00001	Raj	P-7	Bandra	Mumbai	400032	Maharashtra	3000	200	100.00	Good
S00001	Ashish	A/5	Jihu	Mumbai	400044	Maharashtra	3500	200	150.00	Good

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Experiment 2
Title: DML commands with constraints

Objective: - To understand the concept of different DML commands

A .SELECT NAME from ClientMASTER;

NAME
Ivan bayross
Mamta muzumdar
Chhaya bankar
Ashwini joshi
Hansel colaco

B.SELECT * from ClientMASTER;

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ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	15000.00
C00002	Mamta muzumdar	Madras	780001	Tamil nadu	0.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	Mumbai	400060	Maharashtra	2000.00

C. Retrieve the list of names,city and the state of all the clients.

SELECT NAME from ClientMASTER;

SELECT CITY from ClientMASTER;

SELECT STATE from ClientMASTER;

NAME
Ivan bayross
Mamta muzumdar
Chhaya bankar
Ashwini joshi
Hansel colaco

CITY
Mumbai
Madras
Mumbai
Bangalore
Mumbai

STATE
Maharashtra
Tamil nadu
Maharashtra
Karnataka
Maharashtra

d. List the various products available from the Product_Master table.

SELECT DESCRIPTION from productMASTER;

DESCRIPTION
T-Shirt
Shirt
Cotton jeans
Jeans
Trousers

e. List all the clients who are located in Mumbai.

SELECT * from ClientMASTER where city = "Mumbai";

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ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	15000.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00005	Hansel colaco	Mumbai	400060	Maharashtra	2000.00

f. Find the names of salesman who have a salary equal to Rs.3000.

SELECT SALESMANNAME,SALAMT FROM salesmanmaster WHERE SALAMT=3000;

SALESMANNAME	SALAMT
Aman	3000
Omkar	3000
Raj	3000

1.Exercise on updating records in a table

a. Change the city of ClientNo ‘C00005’ to ‘Bangalore’.
UPDATE ClientMASTER SET CITY = "Bangalore" where ClientNO = "C00005";

ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	15000.00
C00002	Mamta muzumdar	Madras	780001	Tamil nadu	0.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	Bangalore	400060	Maharashtra	2000.00
C00006	Deepak sharma	Mangalore	560050	Karnataka	0.00

b. Change the BalDue of ClientNo ‘C00001’ to Rs.1000.
UPDATE ClientMASTER SET BALDUE = "1000" where ClientNO = "C00001";

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ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	1000.00
C00002	Mamta muzumdar	Madras	780001	Tamil nadu	0.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	Bangalore	400060	Maharashtra	2000.00
C00006	Deepak sharma	Mangalore	560050	Karnataka	0.00

c. Change the cost price of 'Trousers' to rs.950.00. d. Change the city of the salesman to Pune.
UPDATE ProductMASTER SET SELLPRICE = "950.00" where DESCRIPTION = "Trousers";

PRODUCTNO	DESCRIPTION	PROFITPERCENT	UNITMEASURE	QTYONHAND	REORDERL_VL	SELLPRICE	CostPrice
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirt	6.00	Piece	150	50	500.00	350.00
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00
P07865	Jeans	5.00	Piece	100	20	750.00	500.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07965	Denim jeans	4.00	Piece	100	40	350.00	250.00

d. Change the city of the salesman to Pune.
UPDATE SalesmanMASTER SET CITY = "Pune" where SALESMANNO = "S00001";

SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALAMT	TGTTOGET	YTDSALES	REMARKS
S00001	Aman	A/14	Worli	Pune	400002	Maharashtra	3000	100	50.00	Good
S00001	Omkar	65	Nariman	Pune	400001	Maharashtra	3000	200	100.00	Good
S00001	Raj	P-7	Bandra	Pune	400032	Maharashtra	3000	200	100.00	Good
S00001	Ashish	A/5	Jihu	Pune	400044	Maharashtra	3500	200	150.00	Good

2. Exercise on deleting records in a table

a. Delete all salesman from the Salesman_Master whose salaries are equal to Rs.3500.
delete from salesmanmaster where SALAMT = 3500;

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SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALAMT	TGTTOGET	YTDSALES	REMARKS
S00001	Aman	A/14	Worli	Pune	400002	Maharashtra	3000	100	50.00	Good
S00001	Omkar	65	Nariman	Pune	400001	Maharashtra	3000	200	100.00	Good
S00001	Raj	P-7	Bandra	Pune	400032	Maharashtra	3000	200	100.00	Good

b. Delete all products from Product_Master where the quantity on hand is equal to 100.
delete from productmaster where QTYONHAND = 100;

PRODUCTNO	DESCRIPTION	PROFITPERCENT	UNITMEASURE	QTYONHAND	REORDERL_VL	SELLPRICE	CostPrice
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirt	6.00	Piece	150	50	500.00	350.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07975	Lycra tops	5.00	Piece	70	30	300.00	175.00
P08865	Skirts	5.00	Piece	75	30	450.00	300.00

c . Delete from Client_Master where the column state holds the value ‘Tamil Nadu’

delete from clientmaster where STATE = " Tamil nadu";

ClientNO	NAME	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	400054	Maharashtra	1000.00
C00003	Chhaya bankar	Mumbai	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	Bangalore	400060	Maharashtra	2000.00
C00006	Deepak sharma	Mangalore	560050	Karnataka	0.00

4. Exercise on altering the table structure
a. Add a column called ‘Telephone’ of data type integer to the Client_Master table.

ALTER TABLE clientMASTER
add TELEPHONE int;
DESC clientMASTER;

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Field	Type	Null	Key	Default	Extra
ClientNO	varchar(6)	YES		NULL	
NAME	varchar(20)	YES		NULL	
CITY	varchar(15)	YES		NULL	
PINCODE	int	YES		NULL	
STATE	varchar(15)	YES		NULL	
BALDUE	decimal(10,2)	YES		NULL	

a. Change the size off SellPrice column in Product _Master to 10, 2.

ALTER TABLE productMASTER
MODIFY SELLPRICE decimal(10,2);
DESC productMASTER;

Field	Type	Null	Key	Default	Extra
PRODUCTNO	varchar(6)	YES		NULL	
DESCRIPTION	varchar(15)	YES		NULL	
PROFITPERCENT	decimal(4,2)	YES		NULL	
UNITMEASURE	varchar(10)	YES		NULL	
QTYONHAND	int	YES		NULL	
REORDERL_VL	int	YES		NULL	
SELLPRICE	decimal(10,2)	YES		NULL	
CostPrice	decimal(8,2)	YES		NULL	

5. Exercise on deleting the table structure along with the data a. Destroy the table Client_Master along with its data.

DROP TABLE clientmaster;

SHOW TABLES;

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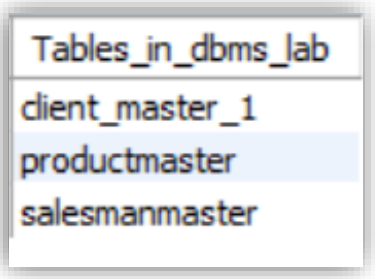
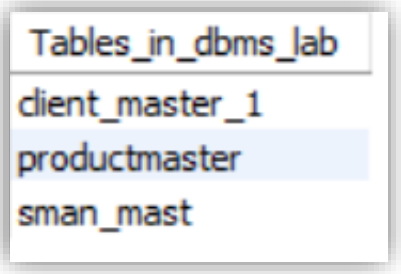


Tables_in_dbms_lab
client_master_1
productmaster
salesmanmaster

6. Exercise on renaming the table
a. Change the name of the Salesman_Master to sman_mast.

ALTER TABLE salesmanmaster RENAME TO sman_mast;

SHOW TABLES;



Tables_in_dbms_lab
client_master_1
productmaster
sman_mast

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EXPERIMENT-3
TITLE: DDL (Data Definition Language) commands with Data Constraints

Objective: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key and the Foreign Key

```
use dbms_lab;
CREATE TABLE CLIENT_MASTER_1
(
ClientNO varchar(6) PRIMARY KEY,
NAME varchar(20) NOT NULL,
CITY Varchar (15),
ADDRESS1 Varchar(30),
ADDRESS2 Varchar(30),
PINCODE Integer ,
STATE Varchar (15),
BALDUE decimal (10,2),
constraint ClientNO check ( ClientNO LIKE "C%" )
```

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```
);


CREATE TABLE  PRODUCT_MASTER_1
(
PRODUCTNO varchar(6) PRIMARY KEY ,
DESCRIPTION Varchar(15) NOT NULL ,
PROFITPERCENT Decimal (4,2) NOT NULL ,
UNITMEASURE Varchar (10) NOT NULL ,
QTYONHAND Integer NOT NULL ,
REORDERL_VL Integer NOT NULL  ,
SELLPRICE Decimal(8,2)  NOT NULL ,
CostPrice Decimal (8,2)  NOT NULL ,
CONSTRAINT PRODUCTNO CHECK (PRODUCTNO LIKE "P%" )
);
CREATE TABLE SALESMAN_MASTER_1(
SALESMANNO Varchar(6) PRIMARY KEY,
SALESMANNAME Varchar(20) NOT NULL ,
ADDRESS1 Varchar(30) NOT NULL ,
ADDRESS2 Varchar(30) ,
CITY Varchar(20) ,
PINCODE Integer ,
STATE Varchar(20) ,
SALAMT Real NOT NULL,
TGTTOGET Decimal NOT NULL ,
YTDSALES Double(6,2) NOT NULL ,
REMARKS Varchar(60)  ,
CONSTRAINT SALESMANNO CHECK (SALESMANNO LIKE "S%" )
);


insert into  CLIENT_MASTER_1 (CLIENTNO, NAME ,CITY,PINCODE ,STATE , BALDUE )
values
```

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("C00001","Ivan bayross" , "Mumbai", 400054," Maharashtra", 15000),

("C00002"," Mamta muzumdar" , "Madras", 780001," Tamil nadu", 0),

("C00003","Chhaya bankar" , "Mumbai", 400057," Maharashtra", 5000),

("C00004","Ashwini joshi" , "Bangalore ",560001 ," Karnataka", 0),

("C00005","Hansel colaco" , "Mumbai", 400060," Maharashtra", 2000),

("C00006","Deepak sharma" , "Mangalore", 560050," Karnataka", 0);

insert into PRODUCT_MASTER_1 values

("P00001","T-Shirt" , 5 , "Piece" , 200 , 50 , 350 , 250),

("P0345","Shirt" , 6 , "Piece" , 150 , 50 , 500 , 350),

("P06734","Cotton jeans" , 5 , "Piece" , 100 , 20 , 600 , 450),

("P07865","Jeans" , 5 , "Piece" , 100 , 20 , 750 , 500),

("P07868 ","Trousers" , 2 , "Piece" , 150 , 50 , 850 , 550),

("P07885","Pull Overs" , 2.5 , "Piece" , 80 , 30 , 350*2 , 450),

("P07965","Denim jeans" , 4 , "Piece" , 100 , 40 , 350 , 250),

("P07975","Lycra tops" , 5 , "Piece" , 70 , 30 , 300 , 175),

("P08865","Skirts" , 5 , "Piece" , 75 , 30 , 450 , 300);

insert into SALESMAN_MASTER_1 values

("S00001","Aman", "A/14", "Worli", "Mumbai",
400002,"Maharashtra",3000,100,50,"Good"),

("S00002","Omkar", "65", "Nariman", "Mumbai",
400001,"Maharashtra",3000,200,100,"Good"),

("S00003","Raj", "P-7", "Bandra", "Mumbai",
400032,"Maharashtra",3000,200,100,"Good"),

("S00004","Ashish", "A/5", "Jihu", "Mumbai",
400044,"Maharashtra",3500,200,150,"Good");

SELECT * FROM CLIENT_MASTER_1;

SELECT * FROM PRODUCT_MASTER_1;

SELECT * FROM SALESMAN_MASTER_1;

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ClientNO	NAME	CITY	ADDRESS1	ADDRESS2	PINCODE	STATE	BALDUE
C00001	Ivan bayross	Mumbai	NULL	NULL	400054	Maharashtra	15000.00
C00002	Mamta muzumdar	Madras	NULL	NULL	780001	Tamil nadu	0.00
C00003	Chhaya bankar	Mumbai	NULL	NULL	400057	Maharashtra	5000.00
C00004	Ashwini joshi	Bangalore	NULL	NULL	560001	Karnataka	0.00
C00005	Hansel colaco	Mumbai	NULL	NULL	400060	Maharashtra	2000.00
C00006	Deepak sharma	Mangalore	NULL	NULL	560050	Karnataka	0.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

PRODUCTNO	DESCRIPTION	PROFITPERCENT	UNITMEASURE	QTYONHAND	REORDERL_VL	SELLPRICE	CostPrice
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirt	6.00	Piece	150	50	500.00	350.00
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00
P07865	Jeans	5.00	Piece	100	20	750.00	500.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07965	Denim jeans	4.00	Piece	100	40	350.00	250.00
P07975	Lycra tops	5.00	Piece	70	30	300.00	175.00
P08865	Skirts	5.00	Piece	75	30	450.00	300.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALAMT	TGTTOGET	YTDSALES	REMAR
S00001	Aman	A/14	Worli	Mumbai	400002	Maharashtra	3000	100	50.00	Good
S00002	Omkar	65	Nariman	Mumbai	400001	Maharashtra	3000	200	100.00	Good
S00003	Raj	Raj	Bandra	Mumbai	400032	Maharashtra	3000	200	100.00	Good
S00004	Ashish	A/5	Jihu	Mumbai	400044	Maharashtra	3500	200	150.00	Good
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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EXPERIMENT-4
TITLE: DDL (Data Definition Language) commands with Data Constraints

Objective: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key, The Foreign Key and constraints.

```
use dbms_lab;
CREATE TABLE AUTHOR
(
Author_ID varchar(5) PRIMARY KEY,
Lastname varchar(15) NOT NULL ,
FirstName varchar(15) NOT NULL ,
Email varchar(40) ,
City varchar(15) ,
Country varchar(15)
);

insert into AUTHOR values
( "A001" , "Tagore" , "Rabindranath" , "RT1990@gmail.com" , "Kolkata","India" ),
( "A002" , "Tolstoy" , "Leo" , "LT1990@gmail.com" , "Egypt","Africa" ),
( "A003" , "William" , "Shakespeare" , "WS1990@gmail.com" , "London","UK"),
```

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```
( "A004" , "Henry" , "Potter" , "HP2911@gmail.com" , "New York" , "USA" );

CREATE TABLE BOOK
(
Book_ID varchar(5) PRIMARY KEY,
Book_Title VARCHAR (50) NOT NULL,
Copies INT,
CONSTRAINT Book_ID CHECK ( Book_ID LIKE "B%" ),
CONSTRAINT Copies CHECK ( Copies  >  2 )
);

insert into BOOK values
( "B001" , "ATOMIC HABITS", 1000 ),
( "B002" , "IKIGAI" , 1000 ),
( "B003" , "RICH DAD POOR DAD" , 10000)
( "B004" , "PSYCHOLOGY OF MONEY" , 2000);

CREATE TABLE AUTHOR_LIST
(
   Author_ID varchar(5) ,
   FOREIGN KEY (Author_ID) REFERENCES AUTHOR (Author_ID),
   Book_ID varchar(5) ,
   FOREIGN KEY (Book_ID) REFERENCES BOOK (Book_ID),
   Role varchar(15)
);

INSERT INTO AUTHOR_LIST values
( "A001" , "B001" , "Author" ),
( "A002" , "B002" , "Co-Author" ),
```

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("A003" , "B003" , "Writer"),

("A004" , "B004" , "Author");

select * from AUTHOR;

Author_ID	Lastname	FirstName	Email	City	Country
A001	Tagore	Rabindranath	RT1990@gmail.com	Kolkata	India
A002	Tolstoy	Leo	LT1990@gmail.com	Egypt	Africa
A003	William	Shakespeare	WS1990@gmail.com	London	UK
A004	Henry	Potter	HP2911@gmail.com	New York	USA
NULL	NULL	NULL	NULL	NULL	NULL

select * from BOOK;

Book_ID	Book_Title	Copies
B001	ATOMIC HABITS	4500
B002	IKIGAI	3000
B003	RICH DAD POOR DAD	10000
B004	PSYCHOLOGY OF MONEY	2000
NULL	NULL	NULL

select * from AUTHOR_LIST;

Author_ID	Book_ID	Role
A001	B001	Author
A002	B002	Co-Author
A003	B003	Writer
A004	B004	Author

Q) Alter structure of table AUTHOR_LIST add the field Publisher data type of 30 Character.

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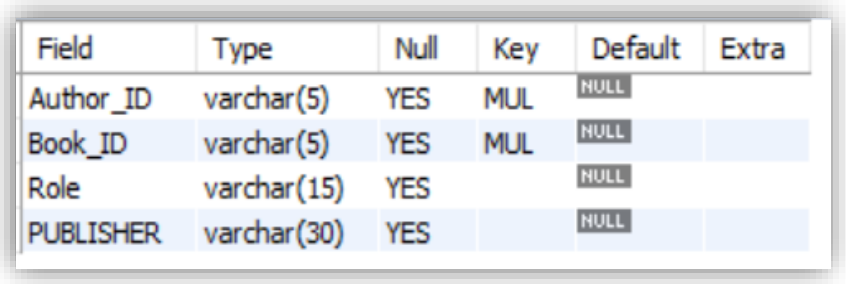
alter table AUTHOR_LIST add PUBLISHER varchar(30);



Field	Type	Null	Key	Default	Extra
Author_ID	varchar(5)	YES	MUL	NULL	
Book_ID	varchar(5)	YES	MUL	NULL	
Role	varchar(15)	YES		NULL	
PUBLISHER	varchar(30)	YES		NULL	

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EXPERIMENT- 5,6
Use of Inbuilt functions and relational algebra operation

Objective: To understand the use of inbuilt function and relational algebra with sql query.

CODE:-

```
use dbms_lab;
CREATE TABLE SUPPLIER
(
scode varchar(10) PRIMARY KEY ,
sname varchar(20) ,
scity varchar(20) ,
turnover decimal(10,2)
);

CREATE TABLE PART
(
pcode varchar(10) PRIMARY KEY,
weigh decimal(4,2) ,
color varchar(10) ,
cost decimal(10,2) ,
sellingprice decimal(8,3)
);
CREATE TABLE SUPPLIER_PART
(
  scode varchar(10) ,
  FOREIGN KEY ( scode ) REFERENCES SUPPLIER ( scode ),
```

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```
 pcode varchar(10),
 FOREIGN KEY ( pcode ) REFERENCES PART ( pcode ),
 qty int
);
INSERT INTO SUPPLIER values
( "S001" , "ABC" , "Bombay" , 100 ),
( "S002" , "DEF" , "Delhi" , 50 ),
( "S003" , "GHI" , "Bombay" , 50 ),
( "S004" , "JKL" , "Ahmedabad" , 3000 ),
( "S005" , "MNO" , "Surat" , null );

 INSERT INTO PART values
 ( "P001" , 10 ,"Black" , 20, 100 ),
 ( "P002" , 20 ,"Blue" , 30 , 90 ),
 ( "P003" , 30 ,"Pink" , 40, 200 ),
 ( "P004" , 40 , "Violet" , 50 , null ),
 ( "P005" , 50 , "Green" , 100 , 1000 );

 INSERT INTO SUPPLIER_PART values
 ( "S001" , "P001" , 20 ),
 ( "S002" , "P002" , 50 ),
 ( "S003" , "P003" , 200 ),
 ( "S004" , "P004" , 300 ),
 ( "S005" , "P005"  , 100 );
```

1. Get the supplier number and part number in ascending order of supplier number.

```
select scode,pcode from SUPPLIER_PART order by scode asc;
```

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scode	pcode
S001	P001
S002	P002
S003	P003
S004	P004
S005	P005

2. Get the details of supplier who operate from Bombay with turnover 50.

```
select * from SUPPLIER where scity = "Bombay" and turnover = 50;
```

scode	sname	scity	turnover
S003	GHI	Bombay	50.00
NULL	NULL	NULL	NULL

3. Get the total number of supplier.

```
select COUNT(scode) from SUPPLIER;
```

COUNT(scode)
5

```
-- 4. Get the part number weighing between 25 and 35.
select pcode from PART where weigh > 25 and weigh < 35;
```

pcode
P003
NULL

```
-- 5. Get the supplier number whose turnover is null.
select scode from SUPPLIER where turnover IS NULL;
```

scode
S005
NULL

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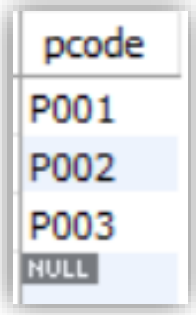
-- 6. Get the part number that cost 20, 30 or 40 rupees.

select pcode from PART where cost = 20 or cost = 30 or cost = 40;



pcode
P001
P002
P003
NULL

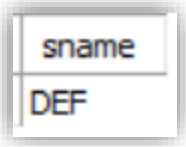
-- 7. Get the total quantity of part 2 that is supplied.

select qty from SUPPLIER_PART where pcode = "P002";

qty
50

-- 8. Get the name of supplier who supply part 2.

select sname from SUPPLIER ,SUPPLIER_PART where SUPPLIER.scode = SUPPLIER_PART.scode and pcode = "P002";

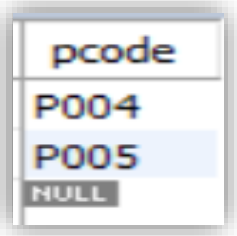


sname
DEF

-- 9. Get the part number whose cost is greater than the average cost.

select pcode from PART

where cost > (SELECT AVG(cost) from PART) ;



pcode
P004
P005
NULL

-- 10. Get the supplier number and turnover in descending order of turnover.

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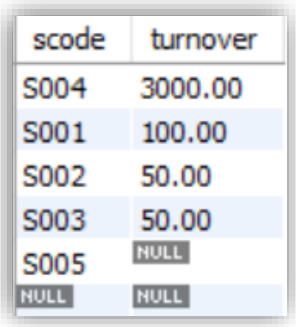
select scode, turnover from SUPPLIER order by turnover desc;



scode	turnover
S004	3000.00
S001	100.00
S002	50.00
S003	50.00
S005	NULL
NULL	NULL

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EXPERIMENT 7-8

Title: Use of Inbuilt functions and relational algebra operation
Objective: To understand the use of inbuilt function and relational algebra with SQL query.

```
use dbms_lab;
create table EMPTABLE
(
   EmpNo int(10) primary Key     , ENAME varchar(25),
       JOB varchar(20), MGR int(10),
       HIREDATE date , SAL int(10),  COMM int(20),
   DEPTNO int(20) ,Foreign key (DEPTNO) references DEPT_TABLE(DEPTNO)
);

INSERT INTO EMPTABLE (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM,
DEPTNO) VALUES
  (7369, 'SMITH', 'CLERK', 7902, '1980-12-17', 500, 800, 20),
  (7499, 'ALLEN', 'SALESMAN', 7698, '1981-02-20', 1600, 300, 30),
  (7521, 'WARD', 'SALESMAN', 7698, '1981-02-22', 1250, 500, 30),
  (7566, 'JONES', 'MANAGER', 7839, '1981-04-02', 2975, NULL, 20),
  (7654, 'MARTIN', 'SALESMAN', 7698, '1981-09-28', 1250, 1400, 30),
  (7698, 'BLAKE', 'MANAGER', 7839, '1981-05-01', 2850, NULL, 30),
  (7782, 'CLARK', 'MANAGER', 7839, '1981-06-09', 2450, NULL, 10),
  (7788, 'SCOTT', 'ANALYST', 7566, '1982-12-09', 3000, NULL, 20),
  (7839, 'KING', 'PRESIDENT', NULL, '1981-11-17', 5000, NULL, 10),
  (7844, 'TURNER', 'SALESMAN', 7698, '1981-09-08', 1500, 0, 30),
  (7876, 'ADAMS', 'CLERK', 7788, '1983-01-12', 1100, NULL, 20),
  (7900, 'JAMES', 'CLERK', 7698, '1981-12-03', 950, NULL, 30),
  (7902, 'FORD', 'ANALYST', 7566, '1981-12-03', 3000, NULL, 20),
```

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(7934, 'MILLER', 'CLERK', 7782, '1982-01-23', 1300, NULL, 10);

create table DEPT_TABLE(DEPTNO int(20) primary key, DNAME varchar(25), Loc varchar(25));

insert into DEPT_TABLE values

(10,'Accounting', 'New York'),

(20, 'Research', 'Dallas'),

(30, 'Sales', 'Chicago'),

(40, 'Operation', 'Boston');

1. List the details of the emps whose Salaries more than the employee BLAKE.
   select * from EMPTABLE where SAL > (select SAL from EMPTABLE where ENAME = "BLAKE");

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

2. List the emps whose Jobs are same as ALLEN.

   select ENAME from EMPTABLE where job = (select JOB from EMPTABLE where ENAME = "ALLEN");

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ENAME
ALLEN
WARD
MARTIN
TURNER

3. List the Emps whose Sal is same as FORD or SMITH in desc order of Names.
   select ENAME from EMPTABLE where SAL = (select SAL from EMPTABLE where ENAME = "FORD") or
   SAL = (select SAL from EMPTABLE where ENAME = "SMITH") order by ENAME desc;

ENAME
SMITH
SCOTT
FORD

4. List the emps Whose Jobs are same as MILLER or Sal is more than ALLEN.
   select ENAME from EMPTABLE where JOB = (select JOB from EMPTABLE where ENAME = "MILLER")
   or SAL > (select SAL from EMPTABLE where ENAME = "ALLEN");

ENAME
SMITH
JONES
BLAKE
CLARK
SCOTT
KING
ADAMS
JAMES
FORD
MILLER

5. Find the highest paid employee of sales department.

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SELECT * FROM EMPTABLE WHERE SAL = (SELECT MAX(SAL) FROM EMPTABLE WHERE
DEPTNO = (SELECT DEPTNO FROM DEPT_TABLE WHERE DNAME = "SALES"))
AND DEPTNO = 30;

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

6. List the employees who are senior to most recently hired employee working under king.
   SELECT * FROM EMPTABLE WHERE HIREDATE < (SELECT MAX(HIREDATE) FROM EMPTABLE WHERE MGR IN (SELECT EmpNo
   FROM EMPTABLE WHERE ENAME = 'KING'));

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	500	800	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

7. List the names of the emps who are getting the highest sal dept wise.
   select E.ENAME,E.DEPTNO from EMPTABLE E where E.SAL in
   (select max(SAL) from EMPTABLE group by DEPTNO) ;

ename	deptno
BLAKE	30
SCOTT	20
KING	10
FORD	20

8. List the emps whose sal is equal to the average of max and minimum

select * from EMPTABLE where SAL =(select (max(SAL)+min(SAL))/2 from EMPTABLE);

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	EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

9. List the emps who joined in the company on the same date.

SELECT * FROM EMPTABLE E WHERE HIREDATE IN (SELECT HIREDATE FROM EMPTABLE WHERE E.EMPNO <> EMPNO);

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7900	JAMES	CLERK	7698	1981-12-03	950	NULL	30
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

10. Find out the emps who joined in the company before their Managers.

select * from EMPTABLE e where hiredate < (select hiredate from EMPTABLE where

empno = e.mgr)

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	500	800	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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EXPERIMENT-9
TITLE: Group by & having clause

Objective: To understand the use of group by and having clause.
Write the SQL Queries for the following queries (use EMP and DEPT table of Exp 8).

1. List the Deptno where there are no emps.

   select DEPTNO from DEPT_TABLE where DEPTNO not in (select DEPTNO from EMPTABLE);

DEPTNO
40
NULL

2. List the No.of emp's and Avg salary within each department for each job.

   select count(*) , avg(SAL) , DEPTNO , JOB from EMPTABLE group by DEPTNO , JOB;

count(*)	avg(SAL)	DEPTNO	JOB
4	1400.0000	30	SALESMAN
1	2975.0000	20	MANAGER
1	2850.0000	30	MANAGER
1	2450.0000	10	MANAGER
2	3000.0000	20	ANALYST
1	5000.0000	10	PRESIDENT

3. Find the maximum average salary drawn for each job except for 'President'.

   select max(sal) from EMPTABLE where sal in (select avg(sal) from EMPTABLE group by job) and job!="PRESIDENT";

max(_avg)
3000.0000

4. List the department details where at least two emps are working.

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select * from DEPT_TABLE where DEPTNO in (select DEPTNO from EMPTABLE group by DEPTNO having count(EMPNO) >=2);

DEPTNO	DNAME	Loc
10	Accounting	New York
20	Research	Dallas
30	Sales	Chicago
NULL	NULL	NULL

5. List the no. of emps in each department where the no. is more than 3.

   select deptno , count(empno) from EMPTABLE group by deptno having count(empno)>3;

count(empno)
5
6

6. List the names of the emps who are getting the highest sal dept wise.

   select * from EMPTABLE having sal in (select max(sal) from EMPTABLE group by deptno);

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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EXPERIMENT -10

TITLE : Joins in SQL

AIM : To execute and verify the SQL commands using Join.
OBJECTIVE : SQL joins are used to query data from two or more tables, based on a relationship between certain columns in these tables.

1. List the details of the emps whose Salaries more than the employee BLAKE.

   select ename , sal from emptable natural join dept_table where

   sal > (select sal from emptable where ename = "blake") ;

ename	sal
JONES	2975
SCOTT	3000
KING	5000
FORD	3000

2. List the emps whose Jobs are same as ALLEN.

   SELECT e.* FROM emptable e JOIN emptable b ON e.JOB = b.JOB AND b.ENAME = 'ALLEN';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300
7521	WARD	SALESMAN	7698	1981-02-22	1250	500
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0

3. List the Emps whose Sal is same as FORD or SMITH in desc order of Names.

   SELECT e.* FROM EMPTABLE e

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JOIN EMPTABLE b ON e.SAL=b.SAL WHERE (e.ENAME="FORD" OR e.ENAME="SMITH") OR (b.ENAME="FORD" OR b.ENAME="SMITH") ORDER BY e.ENAME DESC;

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	500	800	20
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20

4. List the emps Whose Jobs are same as MILLER or Sal is more than ALLEN.

SELECT e.* JOIN emptable b ON (e.JOB=b.JOB OR e.SAL > b.SAL) WHERE b.ENAME = 'ALLEN' OR e.ENAME = 'MILLER';

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10

5. Find the highest paid employee of sales department.

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SELECT e.ENAME, e.DEPTNO FROM emptable e JOIN (SELECT d.DEPTNO,MAX(e.SAL) AS SAL FROM emptable e JOIN dept_table d ON e.DEPTNO = d.DEPTNO GROUP BY d.DEPTNO) b ON e.SAL = b.SAL AND

e.DEPTNO = b.DEPTNO;

ENAME	DEPTNO
BLAKE	30
SCOTT	20
KING	10
FORD	20

6. List the employees who are senior to most recently hired employee working under king.
   SELECT e.* FROM emptable e JOIN emptable b ON e.HIREDATE < b.HIREDATE AND b.ENAME = 'KING';

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	500	800	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30

7. List the names of the emps who are getting the highest sal dept wise.

   SELECT e.ENAME , e.DEPTNO FROM emptable e JOIN (SELECT d.DEPTNO, MAX(e.SAL) AS SAL FROM emptable e JOIN dept_table d ON e.DEPTNO = d.DEPTNO GROUP BY d.DEPTNO) b ON e.SAL = b.SAL AND
   e.DEPTNO = b.DEPTNO;

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ENAME	DEPTNO
BLAKE	30
SCOTT	20
KING	10
FORD	20

8. List the emps whose sal is equal to the average of max and minimum

SELECT e.* FROM emptable e
JOIN (SELECT MAX(SAL) AS MAX,MIN(SAL) AS MIN FROM emptable) b ON e.SAL = (b.MAX + b.MIN)/2;

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO

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9.List the emps who joined in the company on the same date.

SELECT e.* FROM emptable e JOIN emptable b
ON e.HIREDATE = b.HIREDATE WHERE e.EMPNO <> b.EMPNO;

EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7902	FORD	ANALYST	7566	1981-12-03	3000	NULL	20
7900	JAMES	CLERK	7698	1981-12-03	950	NULL	30

10.Find out the emps who joined in the company before their Managers.

SELECT e.* FROM emptable e JOIN emptable b ON e.MGR = b.EMPNO AND e.HIREDATE < b.HIREDATE;

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EmpNo	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	500	800	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10