

DBMS Lab File

(2024)

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| Made by – | |
| Name  Course  Sap Id | Satvik Raj  B. tech CSE  500119624 |

# Experiment 3: To understand DDL and DML Command

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

## Create the tables forCompany database as per ER diagram of Exp 2.

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| Create TABLE employee (  Fname VARCHAR(15) NOT NULL,  Minit CHAR(1),  Lname VARCHAR(15) NOT NULL,  Ssn CHAR(9) NOT NULL,  Bdate DATE,  Address VARCHAR(30),  Sex CHAR(1),  Salary DECIMAL(10,2),  Super\_ssn CHAR(9),  Dno INT,  PRIMARY KEY (Ssn),  FOREIGN KEY (Super\_ssn) REFERENCES employee(Ssn)  ); |  |

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| CREATE TABLE department (  Dname VARCHAR(15) NOT NULL,  Dnumber INT NOT NULL,  Mgr\_ssn CHAR(9) NOT NULL,  Mgr\_start\_date DATE,  PRIMARY KEY (Dnumber),  UNIQUE (Dname),  FOREIGN KEY (Mgr\_ssn) REFERENCES employee(Ssn)  ); |  |

ALTER TABLE employee ADD FOREIGN KEY (Dno) REFERENCES DEPARTMENT(Dnumber);

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| CREATE TABLE dept\_locations(  Dnumber INT NOT NULL,  Dlocation VARCHAR(15) NOT NULL,  PRIMARY KEY (Dnumber, Dlocation),  FOREIGN KEY (Dnumber) REFERENCES DEPARTMENT(Dnumber)  ); |  |

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| CREATE TABLE project(  Pname VARCHAR(15) NOT NULL,  Pnumber INT NOT NULL,  Plocation VARCHAR(15),  Dnum INT NOT NULL,  PRIMARY KEY (Pnumber),  UNIQUE (Pname),  FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber)  ); |  |

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| CREATE TABLE works\_on(  Essn CHAR(9) NOT NULL,  Pno INT NOT NULL,  Hours DECIMAL(3,1),  PRIMARY KEY (Essn, Pno),  FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn),  FOREIGN KEY (Pno) REFERENCES PROJECT(Pnumber)  ); |  |

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| CREATE TABLE dependent(  Essn CHAR(9) NOT NULL,  Dependent\_name VARCHAR(15) NOT NULL,  Sex CHAR,  Bdate DATE,  Relationship VARCHAR(8),  PRIMARY KEY (Essn, Dependent\_name),  FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn)  ); |  |

## Insert the following data into their respective tables of Company database.

INSERT INTO employee (Fname, Minit, Lname, Ssn, Bdate, Address, Sex, Salary, Super\_ssn) VALUES

('James', '', 'Borg', '888665555', '1937-11-10', '450 Stone, Houston TX', 'M', 55000.00, NULL),

('Franklin', '', 'Wong', '333445555', '1965-12-08', '638 Voss, Houston TX', 'M', 40000.00, '888665555'),

('Jennifer', '', 'Wallace', '987654321', '1941-06-20', '291 Berry, Bellaire TX', 'F', 43000.00, '888665555'),

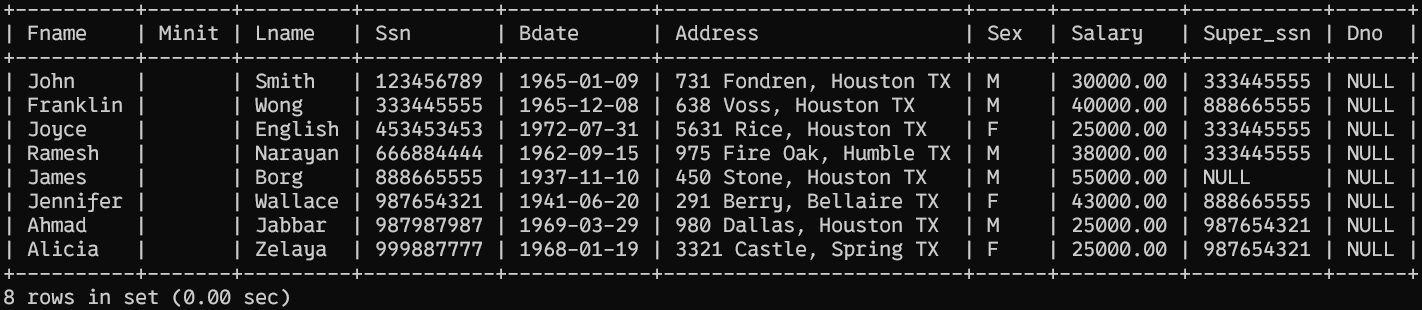
('Joyce', '', 'English', '453453453', '1972-07-31', '5631 Rice, Houston TX', 'F', 25000.00, '333445555'),

('Alicia', '', 'Zelaya', '999887777', '1968-01-19', '3321 Castle, Spring TX', 'F', 25000.00, '987654321'),

('Ramesh', '', 'Narayan', '666884444', '1962-09-15', '975 Fire Oak, Humble TX', 'M', 38000.00, '333445555'),

('Ahmad', '', 'Jabbar', '987987987', '1969-03-29', '980 Dallas, Houston TX', 'M', 25000.00, '987654321'),

('John', '', 'Smith', '123456789', '1965-01-09', '731 Fondren, Houston TX', 'M', 30000.00, '333445555');

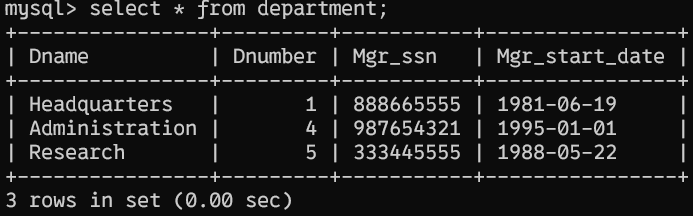


INSERT INTO DEPARTMENT VALUES

('Headquarters',1,'888665555','1981-06-19'),

('Research', 5, '333445555','1988-05-22'),

('Administration',4,'987654321','1995-01-01');



UPDATE employee SET Dno = '5' WHERE (Ssn = '123456789');

UPDATE employee SET Dno = '5' WHERE (Ssn = '333445555');

UPDATE employee SET Dno = '5' WHERE (Ssn = '453453453');

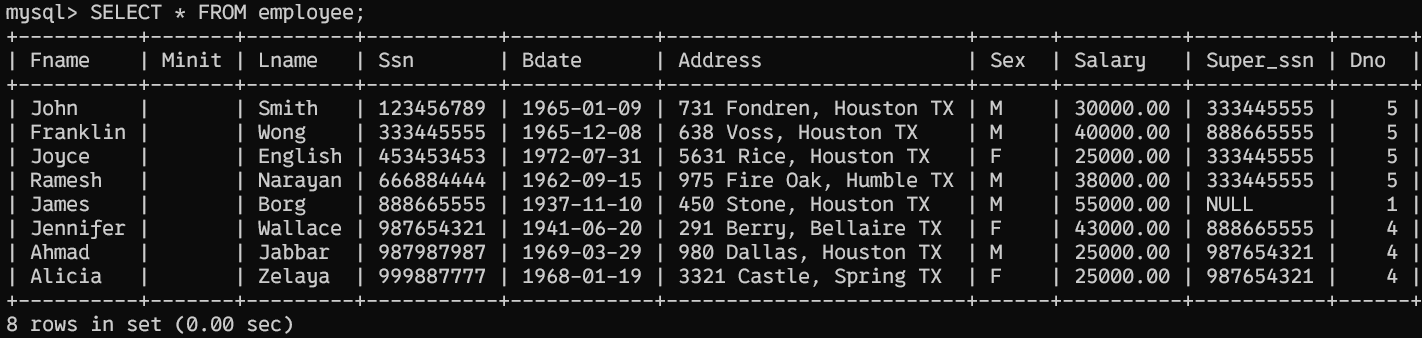
UPDATE employee SET Dno = '5' WHERE (Ssn = '666884444');

UPDATE employee SET Dno = '1' WHERE (Ssn = '888665555');

UPDATE employee SET Dno = '4' WHERE (Ssn = '987654321');

UPDATE employee SET Dno = '4' WHERE (Ssn = '987987987');

UPDATE employee SET Dno = '4' WHERE (Ssn = '999887777');



INSERT INTO project (Pname, Pnumber, Plocation, Dnum) VALUES

('ProductX', 1, 'Bellaire', 5),

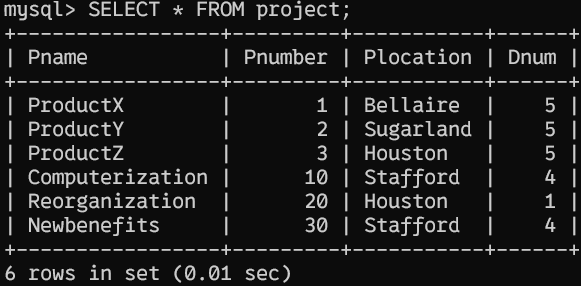
('ProductY', 2, 'Sugarland', 5),

('ProductZ', 3, 'Houston', 5),

('Computerization', 10, 'Stafford', 4),

('Reorganization', 20, 'Houston', 1),

('Newbenefits', 30, 'Stafford', 4);



|  |  |
| --- | --- |
| INSERT INTO works\_on (Essn, Pno, Hours) VALUES  ('123456789', 1, 32.5),  ('123456789', 2, 7.5),  ('666884444', 3, 40.0),  ('453453453', 1, 20.0),  ('453453453', 2, 20.0),  ('333445555', 2, 10.0),  ('333445555', 3, 10.0),  ('333445555', 10, 10.0),  ('333445555', 20, 10.0),  ('999887777', 30, 30.0),  ('999887777', 10, 10.0),  ('987987987', 10, 35.0),  ('987987987', 30, 5.0),  ('987654321', 30, 20.0),  ('987654321', 20, 15.0),  ('888665555', 20, NULL); |  |

INSERT INTO dependent (Essn, Dependent\_name, Sex, Bdate, Relationship) VALUES

('333445555','Alice','F','1986-04-04','Daughter'),

('333445555','Theodore','M','1983-10-25','Son'),

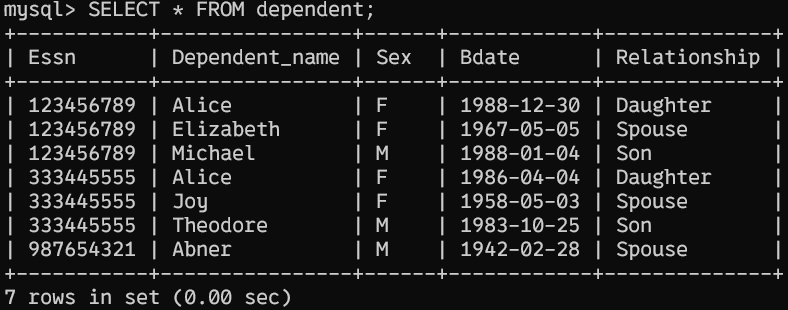
('333445555','Joy','F','1958-05-03','Spouse'),

('987654321','Abner','M','1942-02-28','Spouse'),

('123456789','Michael','M','1988-01-04','Son'),

('123456789','Alice','F','1988-12-30','Daughter'),

('123456789','Elizabeth','F','1967-05-05','Spouse');



|  |  |
| --- | --- |
| INSERT INTO dept\_locations VALUES  (1,'Houston'),  (4,'Stafford'),  (5,'Bellaire'),  (5,'Houston'),  (5,'Sugarland'); |  |

# Experiment 4:  To understand and apply the concept of 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.

1. **Create the tables described below:**
   1. **Table name: CLIENT\_MASTER**

**Description:** used to store client information

|  |  |
| --- | --- |
| CREATE TABLE CLIENT\_MASTER(  `CLIENTNO` varchar(6) NOT NULL,  `NAME` varchar(20) NOT NULL,  `ADDRESS 1` varchar(30),  `ADDRESS 2` varchar(30),  `CITY` varchar(15),  `PINCODE` INT,  `STATE` varchar(15),  `BALDUE` Decimal(10,2),  CONSTRAINT CHK\_CLIENTNO CHECK (`CLIENTNO` LIKE 'c%'),  PRIMARY KEY(`CLIENTNO`)  ); |  |

* 1. **Table Name: PRODUCT\_MASTER**

**Description:**used to store product information

|  |  |
| --- | --- |
| CREATE TABLE PRODUCT\_MASTER(  `PRODUCTNO` varchar(6),  `DESCRIPTION` varchar(15) NOT NULL,  `PROFITPERCENT` Decimal(4,2) NOT NULL,  `UNIT MEASURE` varchar(10) NOT NULL,  `QTYONHAND` INT NOT NULL,  `REORDERLVL` INT NOT NULL,  `SELLPRICE` Decimal(8,2) NOT NULL,  `COSTPRICE` Decimal(8,2) NOT NULL,  PRIMARY KEY(PRODUCTNO),  CONSTRAINT CHK\_PRODUCTNO CHECK (`PRODUCTNO` LIKE 'P%')  ); |  |

* 1. **Table Name: SALESMAN\_MASTER**

**Description:** used to store salesman information working for the company.

|  |  |
| --- | --- |
| CREATE TABLE SALESMAN\_MASTER(  `SALESMANNO` varchar(6),  `SALESMANNAME` varchar(20) NOT NULL,  `ADDRESS 1` varchar(30) NOT NULL,  `ADDRESS 2` varchar(30),  `CITY` varchar(20),  `PINCODE` INT,  `STATE` varchar(20),  `SALAMT` real NOT NULL,  `TGTTOGET` Decimal(6,2) NOT NULL,  `YTDSALES` Double NOT NULL,  `REMARKS` varchar(60) ,  CONSTRAINT CHK\_NOZERO CHECK(TGTTOGET > 0 AND SALAMT > 0),  PRIMARY KEY(SALESMANNO)  ); |  |

1. **Insert the following data into their respective tables:**

INSERT INTO CLIENT\_MASTER (`CLIENTNO`, `NAME`, `ADDRESS 1`, `ADDRESS 2`, `CITY`, `PINCODE`, `STATE`, `BALDUE`) VALUES

('C00001','Ivan bayross',NULL,NULL,'Mumbai',400054,'Maharashtra',15000 ),

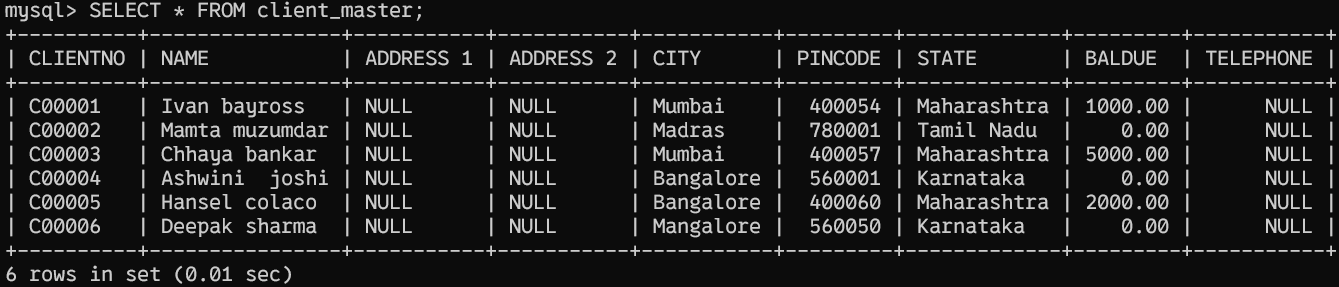
('C00002','Mamta muzumdar',NULL,NULL,'Madras',780001,'Tamil Nadu',0 ),

('C00003','Chhaya bankar',NULL,NULL,'Mumbai',400057,'Maharashtra',5000 ),

('C00004','Ashwini joshi',NULL,NULL,'Bangalore',560001,'Karnataka',0 ),

('C00005','Hansel colaco',NULL,NULL,'Mumbai',400060,'Maharashtra',2000 ),

('C00006','Deepak sharma',NULL,NULL,'Mangalore',560050,'Karnataka',0 );



INSERT INTO PRODUCT\_MASTER (PRODUCTNO, DESCRIPTION, PROFITPERCENT,`UNIT MEASURE` , QTYONHAND, REORDERLVL, SELLPRICE, COSTPRICE) VALUES

('P00001','T-Shirt',5,'Piece',200,50,350,250),

('P0345','Shirts',6,'Piece',150,50,500,350),

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

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

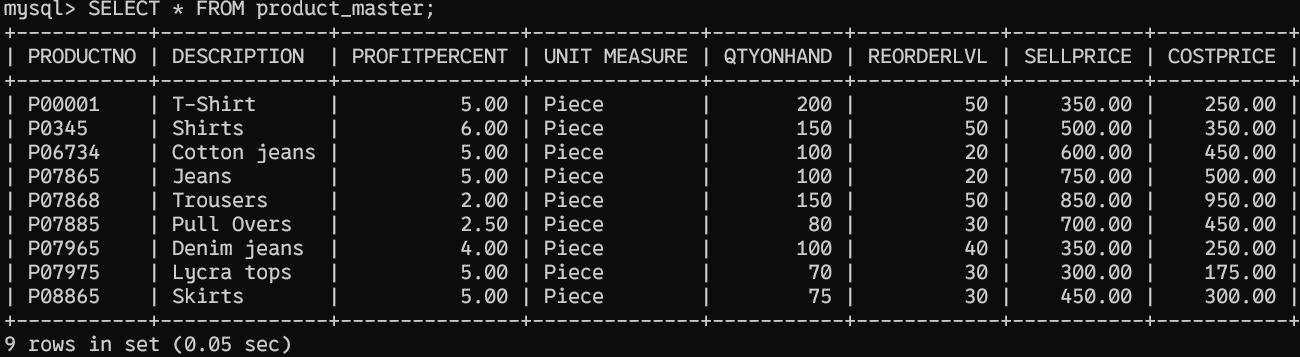
('P07868','Trousers',2,'Piece',150,50,850,550),

('P07885','Pull Overs',2.5,'Piece',8/0,30,700,450),

('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);



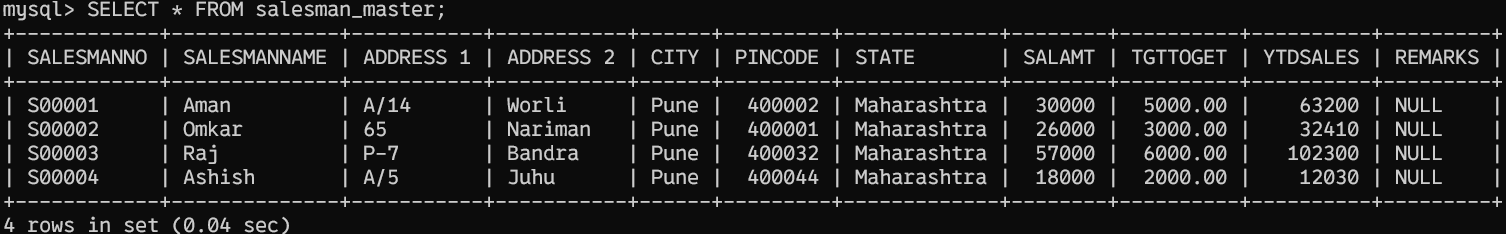
INSERT INTO SALESMAN\_MASTER(SALESMANNO, SALESMANNAME, `ADDRESS 1`, `ADDRESS 2`, CITY, PINCODE, STATE, SALAMT, TGTTOGET, YTDSALES, REMARKS) VALUES

('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 30000, 5000.00, 63200, NULL),

('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 26000, 3000.00, 32410, NULL),

('S00003','Raj','P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 57000, 6000.00, 102300, NULL),

('S00004','Ashish','A/5','Juhu','Mumbai',400044,'Maharashtra',18000,2000.00,12030,NULL);



1. **Exercise on retrieving records from a table.**
   * 1. Find out the names of all the clients.

|  |
| --- |
| SELECT CLIENT\_MASTER.NAME FROM CLIENT\_MASTER; |
|  |

* + 1. Retrieve the entire contents of the Client\_Master table.

|  |
| --- |
| SELECT \* FROM CLIENT\_MASTER; |
|  |

* + 1. Retrieve the list of names, city and the state of all the clients.

|  |
| --- |
| SELECT CLIENT\_MASTER.NAME, CLIENT\_MASTER.CITY, CLIENT\_MASTER.STATE FROM CLIENT\_MASTER; |
|  |

* + 1. List the various products available from the Product\_Master table.

|  |
| --- |
| SELECT \* FROM PRODUCT\_MASTER; |
|  |

* + 1. List all the clients who are located in Mumbai.

|  |
| --- |
| SELECT \* FROM CLIENT\_MASTER WHERE CLIENT\_MASTER.CITY = 'Mumbai'; |
|  |

* + 1. Find the names of salesman who have a salary equal to Rs.30000.

|  |
| --- |
| SELECT \* FROM SALESMAN\_MASTER WHERE SALESMAN\_MASTER.SALAMT = 30000; |
|  |

1. **Exercise on updating records in a table**
   * 1. Change the city of ClientNo ‘C00005’ to ‘Bangalore’.

UPDATE CLIENT\_MASTER SET CLIENT\_MASTER.CITY = 'Banglore' WHERE CLIENT\_MASTER.CLIENTNO = 'C00005';

* + 1. Change the BalDue of ClientNo ‘C00001’ to Rs.1000.

UPDATE CLIENT\_MASTER SET CLIENT\_MASTER.BALDUE = 1000 WHERE CLIENT\_MASTER.CLIENTNO = 'C00001';

* + 1. Change the cost price of ‘Trousers’ to rs.950.00.

UPDATE PRODUCT\_MASTER SET PRODUCT\_MASTER.COSTPRICE = 950 WHERE PRODUCT\_MASTER.PRODUCTN = 'P07868';

* + 1. Change the city of the salesman to Pune.

UPDATE SALESMAN\_MASTER SET SALESMAN\_MASTER.CITY = 'Pune';

1. **Exercise on deleting records in a table**
   * 1. Delete all salesman from the Salesman\_Master whose salaries are equal to Rs.3500.

DELETE FROM SALESMAN\_MASTER WHERE SALESMAN\_MASTER.SALAMT = 3500;

* + 1. Delete all products from Product\_Master where the quantity on hand is equal to 100.

DELETE FROM PRODUCT\_MASTER WHERE PRODUCT\_MASTER.QTYONHAND = 100;

* + 1. Delete from Client\_Master where the column state holds the value ‘Tamil Nadu’.

DELETE FROM CLIENT\_MASTER WHERE CLIENT\_MASTER.STATE = 'Tamil Nadu';

1. **Exercise on altering the table structure**
   * + 1. Add a column called ‘Telephone’ of data type integer to the Client\_Master table.

ALTER TABLE CLIENT\_MASTER ADD COLUMN `TELEPHONE` BIGINT UNSIGNED;

* + - 1. Change the size off SellPrice column in Product \_Master to 10, 2.

ALTER TABLE PRODUCT\_MASTER MODIFY COLUMN `SELLPRICE` DECIMAL(10,2);

1. **Exercise on deleting the table structure along with the data**
   * + 1. Destroy the table Client\_Master along with its data.

DROP TABLE CLIENT\_MASTER;

# Experiment 5: To understand and use SQL Sub-Query

**Objective:** To understand the use of sql subquery.

**1. Create the following table.**

Supplier-(scode,sname,scity,turnover)

Part-(pcode,weigh,color,cost,sellingprice)

Supplier\_Part-(scode,pcode,qty)

I/O-

USE DBMS;

CREATE TABLE Supplier(

SCODE INT PRIMARY KEY,

SNAME VARCHAR(30),

SCITY VARCHAR(30),

TURNOVER DECIMAL(10,3)

);

CREATE TABLE PART(

PCODE INT PRIMARY KEY,

WEIGH NUMERIC,

COLOR VARCHAR(10),

COST NUMERIC,

SELLPRICE NUMERIC

);

CREATE TABLE SupplierPart (

SCODE INT,

PCODE INT,

QTY INT,

PRIMARY KEY(SCODE,PCODE),

foreign key (SCODE) REFERENCES SUPPLIER(SCODE),

foreign key (PCODE) REFERENCES PART(PCODE)

);

**2. Populate the table**

INSERT INTO Supplier VALUES

(1, "Ishita","Doon",100.00),

(2, "Sarthak","Saharanpur",120.00),

(3, "Sam","Kanpur",130.00),

(4, "Rudy","Gurugram",60.00),

(5, "Akash","Ayodhaya",70.00),

(6,"Prerna","Doon",100.00),

(7,'Aman','Mumbai',100.00 ),

(8,'Omkar','Mumbai',40.00 ),

(9,'Raj', 'Mumbai',120.00 ),

(10,'Ashish',"Delhi",300.00);

insert into PART VALUES

(500123,20,"Black",300.00,4300.00),

(500124,24,"Blue",200.00,2500.00),

(500125,45,"Brown",3005.00,4000.00),

(500126,34,"Peach",1200.00,1500.00),

(500127,68,"Pink",4000.00,5000.00),

(500183,45,"Burgendi",3400.00,4500.00);

INSERT INTO SUPPLIERPART VALUES

(1,500123,24),

(1,500124,34),

(2,500126,58),

(3,500125,2),

(10,500127,76),

(5,500183,34),

(4,500183,87),

(6,500124,120),

(8,500127,35),

(7,500125,10),

(9,500183,23),

(6,500127,65);

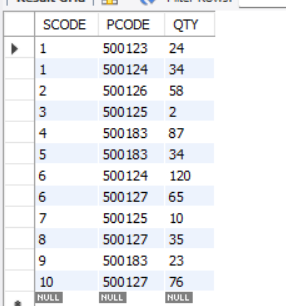
Select \* from supplier;



Select \* from part;



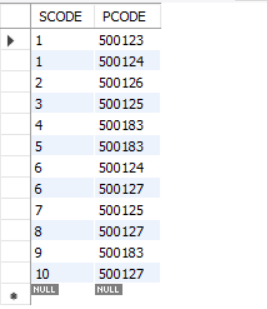
Select \* from supplierpart;



**3. Write appropriate SQL Statement for the following:**

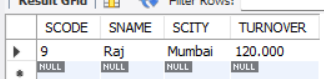
-- Get the supplier number and part number in ascending order of supplier number.

SELECT SCODE,PCODE FROM SUPPLIERPART ORDER BY SCODE ASC;



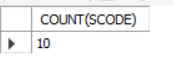
-- Get the details of supplier who operate from Bombay/Mumbai with turnover 120.

SELECT \* FROM SUPPLIER WHERE SCITY="Mumbai" and TURNOVER=120;



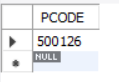
-- Get the total number of supplier.

SELECT COUNT(SCODE) FROM SUPPLIER ;



-- Get the part number weighing between 25 and 35.

SELECT PCODE FROM PART WHERE WEIGH BETWEEN 25 AND 35;



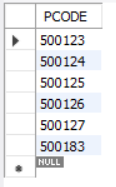
-- Get the supplier number whose turnover is null.

SELECT SCODE FROM SUPPLIER WHERE TURNOVER IS NULL; -- IS NULL IS CORRECT AND NOT =NULL



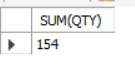
-- Get the part number that cost 20, 30 or 40 rupees.

SELECT PCODE FROM PART WHERE COST=200 OR 300 OR 400; -- USE IN(200,300,400)



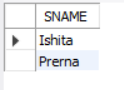
-- Get the total quantity of part 500124 that is supplied.

SELECT SUM(QTY) FROM SUPPLIERPART WHERE PCODE=500124 ;



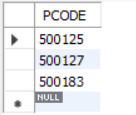
-- Get the name of supplier who supply part 500124

SELECT SNAME FROM SUPPLIER WHERE SCODE IN (SELECT SCODE FROM SUPPLIERPART WHERE PCODE = 500124);-- NESTED QUERIES



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

SELECT PCODE FROM PART WHERE COST > (SELECT AVG(COST) FROM PART);



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

SELECT SCODE,TURNOVER FROM SUPPLIER ORDER BY TURNOVER DESC;

