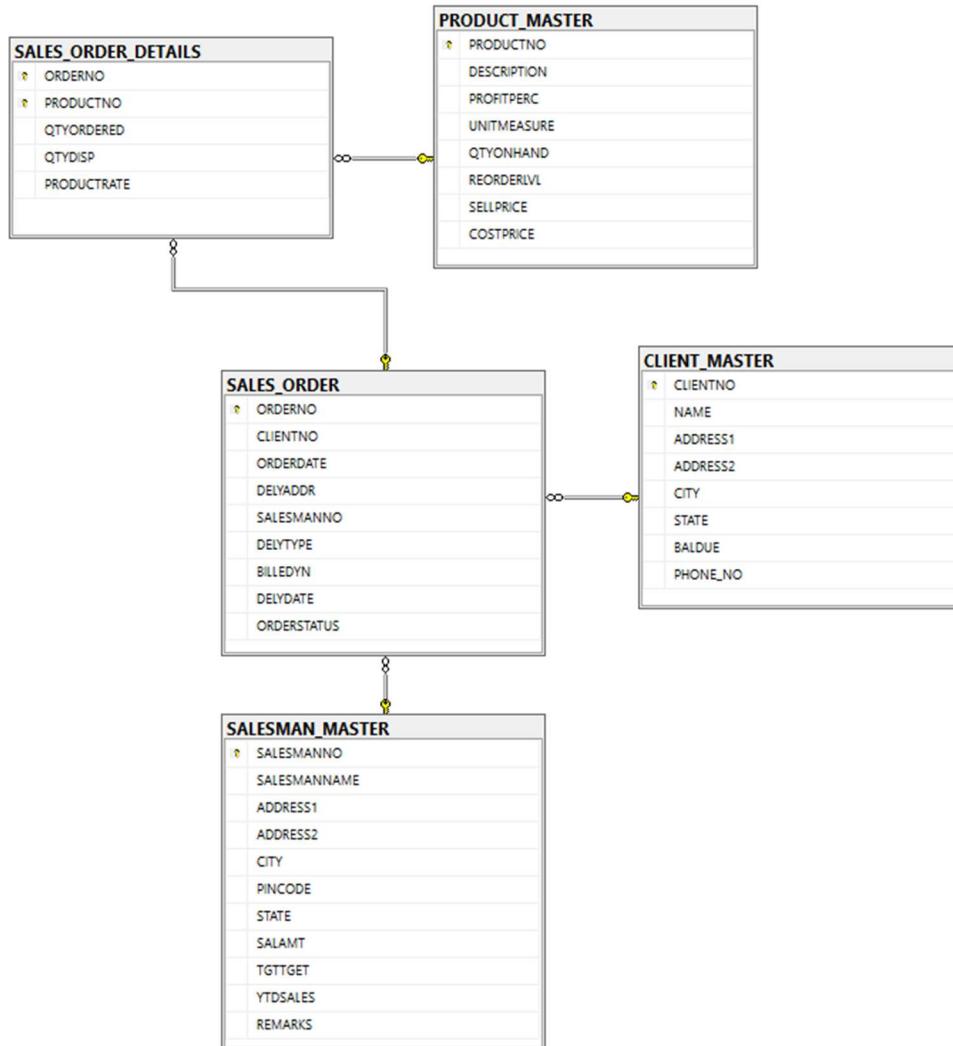


Week1 - SQL commands

Database Creation

```
CREATE DATABASE SALESDB;
```



Create tables

```
CREATE TABLE CLIENT_MASTER (
    CLIENTNO VARCHAR(6) PRIMARY KEY,
    NAME VARCHAR(20) NOT NULL,
    ADDRESS1 VARCHAR(30),
    ADDRESS2 VARCHAR(30),
    CITY VARCHAR(15),
```

```
PINCODE NUMERIC(8),  
STATE VARCHAR(15),  
BALDUE NUMERIC(10,2),  
CONSTRAINT CM_CLIENTNO_CHK CHECK (CLIENTNO LIKE 'C%'));
```

```
CREATE TABLE PRODUCT_MASTER (  
PRODUCTNO VARCHAR(6) PRIMARY KEY,  
DESCRIPTION VARCHAR(15) NOT NULL,  
PROFITPERC NUMERIC(4,2) NOT NULL,  
UNITMEASURE VARCHAR(10) NOT NULL,  
QTYONHAND NUMERIC(8) NOT NULL,  
REORDERLVL NUMERIC(8) NOT NULL,  
SELLPRICE NUMERIC(8,2) NOT NULL,  
COSTPRICE NUMERIC(8,2) NOT NULL,  
CONSTRAINT PM_PRODUCTNO_CHK CHECK (PRODUCTNO LIKE 'P%'),  
CONSTRAINT PM_SELLPRICE_CHK CHECK (SELLPRICE <> 0),  
CONSTRAINT PM_COSTPRICE_CHK CHECK (COSTPRICE <> 0));
```

```
CREATE TABLE SALESMAN_MASTER (  
SALESMANNO VARCHAR(6) PRIMARY KEY,  
SALESMANNAME VARCHAR(20) NOT NULL,  
ADDRESS1 VARCHAR(30) NOT NULL,  
ADDRESS2 VARCHAR(30),  
CITY VARCHAR(20),  
PINCODE NUMERIC(8),  
STATE VARCHAR(20),  
SALAMT NUMERIC(8,2) NOT NULL,  
TGTTGET NUMERIC(6,2) NOT NULL,
```

```
YTDSALES NUMERIC(6,2) NOT NULL,  
REMARKS VARCHAR(60),  
CONSTRAINT SM_SALESMANNO_CHK CHECK (SALESMANNO LIKE 'S%'),  
CONSTRAINT SM_SALAMT_CHK CHECK (SALAMT <> 0));
```

```
CREATE TABLE SALES_ORDER (   
    ORDERNO VARCHAR(6) PRIMARY KEY,  
    CLIENTNO VARCHAR(6),  
    ORDERDATE DATE,  
    DELYADDR VARCHAR(25),  
    SALESMANNO VARCHAR(6),  
    DELYTYPE CHAR(1),  
    BILLEDYN CHAR(1),  
    DELYDATE DATE,  
    ORDERSTATUS VARCHAR(10),  
    CONSTRAINT SO_ORDERNO_CHK CHECK (ORDERNO LIKE 'O%'),  
    CONSTRAINT SO_DELYTYPE_CHK CHECK (DELYTYPE IN ('P','F')),  
    CONSTRAINT SO_BILLEDYN_CHK CHECK (BILLEDYN IN ('Y','N')),  
    CONSTRAINT SO_ORDERSTATUS_CHK  
        CHECK (ORDERSTATUS IN ('In Process','Fulfilled','Backorder','Cancelled')),  
    CONSTRAINT SO_CLIENTNO_FK  
        FOREIGN KEY (CLIENTNO) REFERENCES CLIENT_MASTER(CLIENTNO),  
    CONSTRAINT SO_SALESMANNO_FK  
        FOREIGN KEY (SALESMANNO) REFERENCES SALESMAN_MASTER(SALESMANNO));
```

```
CREATE TABLE SALES_ORDER_DETAILS (   
    ORDERNO VARCHAR(6),  
    PRODUCTNO VARCHAR(6),
```

```

QTYORDERED NUMERIC(8),
QTYDISP NUMERIC(8),
PRODUCTRATE NUMERIC(10,2),
CONSTRAINT SOD_PK PRIMARY KEY (ORDERNO, PRODUCTNO),
CONSTRAINT SOD_ORDERNO_FK
FOREIGN KEY (ORDERNO) REFERENCES SALES_ORDER(ORDERNO),
CONSTRAINT SOD_PRODUCTNO_FK
FOREIGN KEY (PRODUCTNO) REFERENCES PRODUCT_MASTER(PROPERTYNO));

```

Insert values into tables

```

INSERT INTO CLIENT_MASTER VALUES ('C00001','Ivan Bayross','12 Hill Road','Bandra West','Mumbai',400054,'Maharashtra',15000);

INSERT INTO CLIENT_MASTER VALUES ('C00002','Ramesh Rao','45 MG Road','Andheri East','Mumbai',400069,'Maharashtra',9000);

INSERT INTO CLIENT_MASTER VALUES('C00003','Anita Shah','22 Ashram Road','Navrangpura','Ahmedabad',380009,'Gujarat',12000);

INSERT INTO CLIENT_MASTER VALUES ('C00004','Suresh Iyer','18 Cathedral Road','Alwarpet','Chennai',600018,'Tamil Nadu',6000);

INSERT INTO CLIENT_MASTER VALUES ('C00005','Amit Verma','10 Taj Road','Sadar Bazaar','Agra',282001,'Uttar Pradesh',5000);

INSERT INTO CLIENT_MASTER VALUES ('C00006','Arjun Mehta','30 RC Dutt Road','Alkapuri','Vadodara',390007,'Gujarat',18000);

INSERT INTO CLIENT_MASTER VALUES ('C00007','Sneha Patil','55 FC Road','Shivajinagar','Pune',411005,'Maharashtra',7000);

INSERT INTO CLIENT_MASTER VALUES ('C00008','Akash Singh','14 Church Road','Panaji Market','Panaji',403001,'Goa',9500);

INSERT INTO PRODUCT_MASTER VALUES ('P00001','T-Shirts',5,'Piece',200,50,350,250);

INSERT INTO PRODUCT_MASTER VALUES ('P00002','Trouser',10,'Piece',150,40,2500,1800);

INSERT INTO PRODUCT_MASTER VALUES ('P00003','Pull Overs',8,'Piece',100,30,3000,2200);

```

```
INSERT INTO PRODUCT_MASTER VALUES ('P00004','1.44 drive',6,'Piece',60,20,1400,900);  
INSERT INTO PRODUCT_MASTER VALUES ('P00005','Jeans',12,'Piece',180,60,2800,2000);  
INSERT INTO PRODUCT_MASTER VALUES ('P00006','Shirt',7,'Piece',250,70,1800,1200);  
INSERT INTO PRODUCT_MASTER VALUES ('P00007','Jacket',15,'Piece',90,30,5000,3500);  
INSERT INTO PRODUCT_MASTER VALUES ('P00008','Cap',4,'Piece',300,100,500,300);
```

```
INSERT INTO SALESMAN_MASTER VALUES ('S00001','Aman','A/14 Sea  
View','Worli','Mumbai',400018,'Maharashtra',3000,100,50,'Good');  
INSERT INTO SALESMAN_MASTER VALUES ('S00002','Rahul','22 Karol Bagh','Central  
Delhi','Delhi',110005,'Delhi',4000,150,120,'Excellent');  
INSERT INTO SALESMAN_MASTER VALUES ('S00003','Neeraj','10 JP Road','Andheri  
West','Mumbai',400053,'Maharashtra',4500,200,170,'Very Good');  
INSERT INTO SALESMAN_MASTER VALUES ('S00004','Kiran','45 MG  
Road','Indiranagar','Bangalore',560038,'Karnataka',3800,140,90,'Average');  
INSERT INTO SALESMAN_MASTER VALUES ('S00005','Suresh','11 Cathedral  
Rd','Alwarpet','Chennai',600018,'Tamil Nadu',3200,120,60,'Good');  
INSERT INTO SALESMAN_MASTER VALUES ('S00006','Vikas','Sector 18','Atta  
Market','Noida',201301,'UP',3600,130,80,'Good');  
INSERT INTO SALESMAN_MASTER VALUES ('S00007','Manoj','Road No 2','Banjara  
Hills','Hyderabad',500034,'Telangana',4200,160,110,'Very Good');  
INSERT INTO SALESMAN_MASTER VALUES ('S00008','Rohit','77 Paud  
Road','Kothrud','Pune',411038,'Maharashtra',3900,145,95,'Average');
```

```
INSERT INTO SALES_ORDER VALUES ('O19001','C00001','2002-06-12','Bandra  
West','S00001','F','N','2002-07-20','In Process');  
INSERT INTO SALES_ORDER VALUES ('O19002','C00002','2026-01-28','Andheri  
East','S00002','P','Y','2002-04-25','Fulfilled');  
INSERT INTO SALES_ORDER VALUES ('O19003','C00003','2002-05-  
15','Navrangpura','S00001','F','N','2002-05-30','Backorder');  
INSERT INTO SALES_ORDER VALUES ('O19004','C00006','2002-03-  
18','Alkapuri','S00003','P','Y','2002-03-28','Fulfilled');
```

```

INSERT INTO SALES_ORDER VALUES ('O19005','C00007','2002-06-05','Shivajinagar','S00004','F','N','2002-06-20','In Process');

INSERT INTO SALES_ORDER VALUES ('O19006','C00008','2002-04-22','Panaji Market','S00002','P','Y','2002-04-30','Fulfilled');

INSERT INTO SALES_ORDER VALUES ('O19007','C00004','2002-05-02','Alwarpet','S00005','F','Y','2002-05-15','Fulfilled');

INSERT INTO SALES_ORDER VALUES ('O19008','C00005','2002-06-18','Sadar Bazaar','S00006','P','N','2002-07-01','Cancelled');

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19001','P00001',4,4,525);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19001','P00002',2,2,2500);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19002','P00003',3,3,3000);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19003','P00003',2,1,3000);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19004','P00004',6,6,1400);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19004','P00005',3,3,2800);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19005','P00003',4,2,3000);

INSERT INTO SALES_ORDER_DETAILS VALUES ('O19007','P00008',10,10,500);

```

Answer following queries with the help of above schema

1. Display the names of all the clients

```
SELECT NAME FROM CLIENT_MASTER;
```

	NAME
1	Ivan Bayross
2	Ramesh Rao
3	Anita Shah
4	Suresh Iyer
5	Amit Verma
6	Arjun Mehta
7	Sneha Patil
8	Akash Singh

2. Display all the clients who are located in Mumbai.

```
SELECT * FROM CLIENT_MASTER WHERE CITY = 'Mumbai';
```

	CLIENTNO	NAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	BALDUE
1	C00001	Ivan Bayross	12 Hill Road	Bandra West	Mumbai	400054	Maharashtra	15000.00
2	C00002	Ramesh Rao	45 MG Road	Andheri East	Mumbai	400069	Maharashtra	9000.00

3. Display all the products whose selling price is > 2000 and < 5000.

```
SELECT * FROM PRODUCT_MASTER WHERE SELLPRICE > 2000 AND SELLPRICE < 5000;
```

	PRODUCTNO	DESCRIPTION	PROFITPERC	UNITMEASURE	QTYONHAND	REORDERLVL	SELLPRICE	COSTPRICE
1	P00002	Trouser	10.00	Piece	150	40	2500.00	1800.00
2	P00003	Pull Overs	8.00	Piece	100	30	3000.00	2200.00
3	P00005	Jeans	12.00	Piece	180	60	2800.00	2000.00

4. Display Name, City and State of Clients not in the state of Maharashtra.

```
SELECT NAME, CITY, STATE FROM CLIENT_MASTER WHERE STATE <> 'Maharashtra';
```

	NAME	CITY	STATE
1	Anita Shah	Ahmedabad	Gujarat
2	Suresh Iyer	Chennai	Tamil Nadu
3	Amit Verma	Agra	Uttar Pradesh
4	Arjun Mehta	Vadodara	Gujarat
5	Akash Singh	Panaji	Goa

5. Display all the information of client_no C0001 and C0002.

```
SELECT * FROM CLIENT_MASTER WHERE CLIENTNO IN ('C00001','C00002');
```

	CLIENTNO	NAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	BALDUE
1	C00001	Ivan Bayross	12 Hill Road	Bandra West	Mumbai	400054	Maharashtra	15000.00
2	C00002	Ramesh Rao	45 MG Road	Andheri East	Mumbai	400069	Maharashtra	9000.00

6. Change the selling price of '1.44 drive' to Rs. 1150.50.

```
UPDATE PRODUCT_MASTER SET SELLPRICE = 1150.50 WHERE DESCRIPTION = '1.44 drive';
```

7. Delete the record of client_no C0005.

C00005 is already used in SALES_ORDER

SQL will NOT allow deleting a parent row if child rows exist

```
DELETE FROM SALES_ORDER_DETAILS WHERE ORDERNO IN (SELECT ORDERNO FROM
SALES_ORDER WHERE CLIENTNO = 'C00005');
```

```
DELETE FROM SALES_ORDER WHERE CLIENTNO = 'C00005';
```

```
DELETE FROM CLIENT_MASTER WHERE CLIENTNO = 'C00005';
```

8. Display the clients who stay in a city whose second letter is 'a'.

```
SELECT * FROM CLIENT_MASTER WHERE CITY LIKE '_a%';
```

	CLIENTNO	NAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	BALDUE
1	C00006	Arjun Mehta	30 RC Dutt Road	Alkapuri	Vadodara	390007	Gujarat	18000.00
2	C00008	Akash Singh	14 Church Road	Panaji Market	Panaji	403001	Goa	9500.00

9. Count the number of products having price greater than or equal to 1500.

```
SELECT COUNT(*) AS PRODUCT_COUNT FROM PRODUCT_MASTER WHERE SELLPRICE >= 1500;
```

	PRODUCT_COUNT
1	5

10. Display qtyordered, qtydisp and balancedqty (not in table).

```
SELECT QTYORDERED,QTYDISP,(QTYORDERED - QTYDISP) AS BALANCEDQTY FROM SALES_ORDER_DETAILS;
```

	QTYORDERED	QTYDISP	BALANCEDQTY
1	4	4	0
2	2	2	0
3	3	3	0
4	2	1	1
5	6	6	0
6	3	3	0
7	4	2	2
8	10	10	0

Write Commands to do following

1. Make Client_no as primary key in client_master.

```
ALTER TABLE CLIENT_MASTER ADD CONSTRAINT CM_PK PRIMARY KEY (CLIENTNO);
```

2. Add a new column phone_no in the client_master table.

```
ALTER TABLE CLIENT_MASTER ADD PHONE_NO VARCHAR(15);
```

3. Add the not null constraint in the product_master table with the column description, profit percent, sell price and cost price.

```
ALTER TABLE PRODUCT_MASTER ALTER COLUMN DESCRIPTION VARCHAR(15) NOT NULL;  
ALTER TABLE PRODUCT_MASTER ALTER COLUMN PROFITPERC NUMERIC(4,2) NOT NULL;  
ALTER TABLE PRODUCT_MASTER ALTER COLUMN SELLPRICE NUMERIC(8,2) NOT NULL;  
ALTER TABLE PRODUCT_MASTER ALTER COLUMN COSTPRICE NUMERIC(8,2) NOT NULL;
```

4. Change size of name column to 60 in client_master table.

```
ALTER TABLE CLIENT_MASTER ALTER COLUMN NAME VARCHAR(60);
```

5. Remove pincode column from table.

```
ALTER TABLE CLIENT_MASTER DROP COLUMN PINCODE;
```

Define in 1 or 2 lines and give one example also

1. Recursive Relationship.

Recursive relationships represent a self-referencing structure where an entity in a table is related to another entity within the same table. This creates a parent-child hierarchy that can extend across multiple levels.

Example: Each employee record refers to another employee as a manager using MANAGER_ID, forming a parent-child relationship within the same table.

```
SELECT e1.EMP_NAME, e2.EMP_NAME AS MANAGER  
FROM EMPLOYEE e1  
JOIN EMPLOYEE e2  
ON e1.MANAGER_ID = e2.EMP_ID;
```

2. Composite Key

A composite key is a combination of multiple columns, and these columns are used to identify all the rows that are involved uniquely. Even though a single column can't identify any row uniquely, a combination of over one column can uniquely identify any record.

Example: STUDENT_COURSE table uses a composite key made of STUDENT_ID and COURSE_ID to uniquely identify each enrollment record. It ensures that the same student cannot enroll in the same course more than once, while allowing enrollment in multiple different courses.

```
CREATE TABLE STUDENT_COURSE (
    STUDENT_ID INT, COURSE_ID VARCHAR(10), ENROLL_DATE DATE,
    CONSTRAINT PK_STUDENT_COURSE PRIMARY KEY (STUDENT_ID, COURSE_ID));
```

3. The 'like' operator with pattern matching.

The LIKE operator is used to search for specific patterns in character data using wildcards such as % and _. It helps in filtering rows based on partial text matches.

Example: Display the Customer data whose city name ends with “pur”.

```
SELECT * FROM CLIENT_MASTER WHERE CITY LIKE '%pur';
```

4. Drop Table command.

The DROP TABLE command permanently removes a table and all its data from the database. Once dropped, the table cannot be recovered unless a backup exists.

```
DROP TABLE OLD_CUSTOMER_RECORDS;
```

5. Full Outer Join.

FULL OUTER JOIN returns all records from both tables, matching rows where possible and displaying NULL values where no match exists. It is useful when data from both tables must be included regardless of matching conditions.

Example: Display all employees and all departments, including employees without departments and departments without employees.

```
SELECT e.EMP_NAME, d.DEPT_NAME
FROM EMPLOYEE e
FULL OUTER JOIN DEPARTMENT d
ON e.DEPT_ID = d.DEPT_ID;
```

Write queries for following descriptions: (Joins)

Find out the products, which have been sold to 'Ivan Bayross'.

```
SELECT DISTINCT p.PRODUCTNO, p.DESCRIPTION FROM CLIENT_MASTER c JOIN  
SALES_ORDER so ON c.CLIENTNO = so.CLIENTNO JOIN SALES_ORDER_DETAILS sod ON  
so.ORDERNO = sod.ORDERNO JOIN PRODUCT_MASTER p ON sod.PRODUCTNO =  
p.PRODUCTNO WHERE c.NAME = 'Ivan Bayross';
```

	PRODUCTNO	DESCRIPTION
1	P00001	T-Shirts
2	P00002	Trouser

2. Finding out the products and their quantities that will have to be delivered in the current month.

```
SELECT p.PRODUCTNO, p.DESCRIPTION, sod.QTYORDERED FROM SALES_ORDER so  
JOIN SALES_ORDER_DETAILS sod ON so.ORDERNO = sod.ORDERNO  
JOIN PRODUCT_MASTER p ON sod.PRODUCTNO = p.PRODUCTNO  
WHERE MONTH(so.DELYDATE) = MONTH(GETDATE())  
AND YEAR(so.DELYDATE) = YEAR(GETDATE());
```

	PRODUCTNO	DESCRIPTION	QTYORDERED
1	P00001	T-Shirts	4
2	P00002	Trouser	2

3. Listing the ProductNo and description of constantly sold (i.e. rapidly moving) products.

```
SELECT p.PRODUCTNO, p.DESCRIPTION FROM PRODUCT_MASTER p  
JOIN SALES_ORDER_DETAILS sod ON p.PRODUCTNO = sod.PRODUCTNO  
GROUP BY p.PRODUCTNO, p.DESCRIPTION  
HAVING COUNT(sod.PRODUCTNO) > 1;
```

	PRODUCTNO	DESCRIPTION
1	P00003	Pull Overs

4. Finding the names of clients who have purchased 'Trousers'.

```
SELECT DISTINCT c.NAME FROM CLIENT_MASTER c  
JOIN SALES_ORDER so ON c.CLIENTNO = so.CLIENTNO  
JOIN SALES_ORDER_DETAILS sod ON so.ORDERNO = sod.ORDERNO
```

```

JOIN PRODUCT_MASTER p ON sod.PRODUCTNO = p.PRODUCTNO
WHERE p.DESCRIPTION = 'Trouser';

```

	NAME
1	Ivan Bayross

5. Listing the products and orders from customers who have ordered less than 5 units of 'Pull Overs'.

```

SELECT c.NAME, so.ORDERNO, p.PRODUCTNO, p.DESCRIPTION, sod.QTYORDERED
FROM CLIENT_MASTER c
JOIN SALES_ORDER so ON c.CLIENTNO = so.CLIENTNO
JOIN SALES_ORDER_DETAILS sod ON so.ORDERNO = sod.ORDERNO
JOIN PRODUCT_MASTER p ON sod.PRODUCTNO = p.PRODUCTNO
WHERE p.DESCRIPTION = 'Pull Overs' AND sod.QTYORDERED < 5;

```

	NAME	ORDERNO	PRODUCTNO	DESCRIPTION	QTYORDERED
1	Ramesh Rao	O19002	P00003	Pull Overs	3
2	Anita Shah	O19003	P00003	Pull Overs	2
3	Sneha Patil	O19005	P00003	Pull Overs	4

Write queries for following descriptions: (Subqueries)

1. Finding the non-moving products i.e. products not being sold.

```

SELECT * FROM PRODUCT_MASTER WHERE PRODUCTNO NOT IN (SELECT DISTINCT
PRODUCTNO FROM SALES_ORDER_DETAILS);

```

	PRODUCTNO	DESCRIPTION	PROFITPERC	UNITMEASURE	QTYONHAND	REORDERLVL	SELLPRICE	COSTPRICE
1	P00006	Shirt	7.00	Piece	250	70	1800.00	1200.00
2	P00007	Jacket	15.00	Piece	90	30	5000.00	3500.00

2. Finding the name and complete address for the customer who has placed Order number 'O19001'.

```

SELECT NAME, ADDRESS1, ADDRESS2, CITY, STATE FROM CLIENT_MASTER
WHERE CLIENTNO = (SELECT CLIENTNO FROM SALES_ORDER WHERE ORDERNO = 'O19001');

```

	NAME	ADDRESS1	ADDRESS2	CITY	STATE
1	Ivan Bayross	12 Hill Road	Bandra West	Mumbai	Maharashtra

3. Finding the clients who have placed orders before the month of May'02.

```
SELECT * FROM CLIENT_MASTER WHERE CLIENTNO IN ( SELECT CLIENTNO FROM  
SALES_ORDER WHERE ORDERDATE < '2002-05-01');
```

	CLIENTNO	NAME	ADDRESS1	ADDRESS2	CITY	STATE	BALDUE	PHONE_NO
1	C00002	Ramesh R...	45 MG Road	Andheri East	Mumbai	Maharash...	9000.00	NULL
2	C00006	Arjun Mehta	30 RC Dutt Ro...	Alkapuri	Vadoda...	Gujarat	18000....	NULL
3	C00008	Akash Sin...	14 Church Road	Panaji Market	Panaji	Goa	9500.00	NULL

Write Commands to do following

1. Display system date as Saturday, February 11, 2012

```
SELECT FORMAT(CAST('2012-02-11' AS DATE), 'dddd, MMMM dd, yyyy') AS SystemDate;
```

	SystemDate
1	Saturday, February 11, 2012

2. Display Balance Due from Client master as \$99,999.99

```
SELECT FORMAT(BALDUE, 'C', 'en-US') as BalanceDue FROM CLIENT_MASTER;
```

	BalanceDue
1	\$15,000.00
2	\$9,000.00
3	\$12,000.00
4	\$6,000.00
5	\$18,000.00
6	\$7,000.00
7	\$9,500.00

3. Display message as 'Salesman Aman sold goods of 50 while given target was 100.

```
SELECT 'Salesman ' + SALESMANNAME + ' sold goods of ' + CAST(YTDSALES AS VARCHAR) +  
'while given target was' + CAST(TGTTGET AS VARCHAR) + '.' AS MESSAGE FROM  
SALESMAN_MASTER WHERE SALESMANNAME = 'Aman';
```

	Message
1	Salesman Aman sold goods of 50 while given targ...

4. Display your Age in Years

```
SELECT DATEDIFF(YEAR, '2003-01-01', GETDATE()) AS AgeInYears;
```

	AgeInYears
1	23

