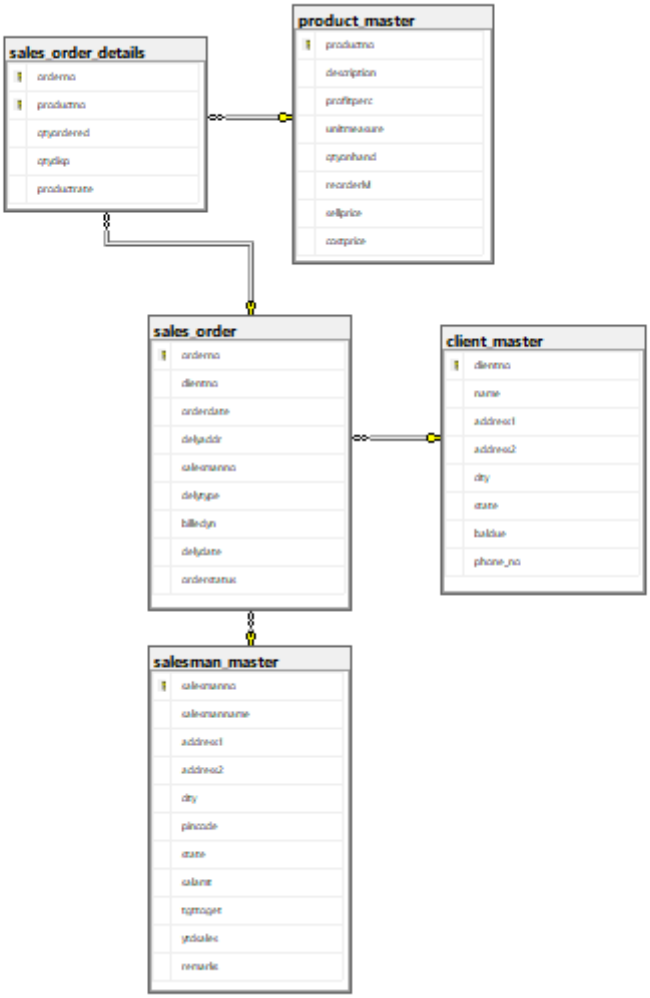
WEEK 1 ASSIGNMENT (KATTA SAI RUTVIK)

Schema diagram



1.Create Tables

1.1 client_master

```
create table client_master (
   clientno   varchar(6) primary key
              check (clientno like 'C%'),
   name       varchar(20) not null,
   address1   varchar(30),
   address2   varchar(30),
   city       varchar(15),
   pincode    decimal(8,0),
   state      varchar(15),
   baldue     decimal(10,2)
);
```

1.2 product_master

```
create table product_master (
   productno      varchar(6) primary key
                  check (productno like 'P%'),
   description    varchar(15) not null,
   profitperc     decimal(4,2) not null,
   unitmeasure    varchar(10) not null,
   qtyonhand      decimal(8,0) not null,
   reorderlvl     decimal(8,0) not null,
   sellprice      decimal(8,2) not null
                  check (sellprice > 0),
   costprice      decimal(8,2) not null
                  check (costprice > 0)
);
```

1.3 salesman_master

```
create table salesman_master (
   salesmanno     varchar(6) primary key
                  check (salesmanno like 'S%'),
   salesmanname   varchar(20) not null,
   address1       varchar(30),
   address2       varchar(30),
   city           varchar(20),
   pincode        decimal(8,0),
   state          varchar(20),
   salamt         decimal(8,2) not null
                  check (salamt > 0),
   tgttoget       decimal(6,2) not null,
   ytdsales       decimal(6,2) not null,
   remarks        varchar(60)
);
```

1.4 sales_order

```
create table sales_order (
   orderno      varchar(6) primary key
                check (orderno like 'O%'),
   clientno     varchar(6),
   orderdate    date,
   delyaddr     varchar(25),
   salesmanno   varchar(6),
   delytype     char(1)
                check (delytype in ('P','F')),
   billedyn     char(1)
                check (billedyn in ('Y','N')),
   delydate     date,
   orderstatus  varchar(15)
                check (orderstatus in
                ('In Process','Fulfilled','Backorder','Cancelled')),
   constraint fk_so_client
      foreign key (clientno)
      references client_master(clientno),
   constraint fk_so_salesman
      foreign key (salesmanno)
      references salesman_master(salesmanno)
);
```

1.5 sales_order_details

```
create table sales_order_details (
   orderno      varchar(6),
   productno    varchar(6),
   qtyordered   decimal(8,0),
   qtydisp      decimal(8,0),
   productrate  decimal(10,2),
   constraint pk_sod
      primary key (orderno, productno),
   constraint fk_sod_order
      foreign key (orderno)
      references sales_order(orderno),
   constraint fk_sod_product
      foreign key (productno)
      references product_master(productno)
);
```

2. Insertion Commands

2.1 client_master

```
insert into client_master values
('C0001','Ivan Bayross','Mumbai','Mumbai',400054,'Maharashtra',15000);

insert into client_master values
('C0002','Ramesh','MG Road','Bangalore',560001,'Karnataka',2000);

insert into client_master values
('C0003','Anita','BTM Layout','Bangalore',560076,'Karnataka',3500);

insert into client_master values
('C0004','Suresh','Ameerpet','Hyderabad',500016,'Telangana',1800);

insert into client_master values
('C0005','Neha','Andheri','Mumbai',400058,'Maharashtra',2600);

insert into client_master values
('C0006','Ravi','Salt Lake','Kolkata',700091,'West Bengal',4200);

insert into client_master values
('C0007','Pooja','Indiranagar','Bangalore',560038,'Karnataka',3100);

insert into client_master values
('C0008','Arjun','Anna Nagar','Chennai',600040,'Tamil Nadu',2900);

insert into client_master values
('C0009','Kiran','Baner','Pune',411045,'Maharashtra',3700);

insert into client_master values
('C0010','Meena','Civil Lines','Jaipur',302006,'Rajasthan',2200);

insert into client_master values
('C0011','Rahul','Sector 18','Noida',201301,'Uttar Pradesh',4100);

insert into client_master values
('C0012','Sneha','Banjara Hills','Hyderabad',500034,'Telangana',3300);
```

2.2 product_master

```
insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0001','Shirts',5.00,'Piece',200,50,350,250);


insert into product_master
```

```
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0002','Jeans',8.00,'Piece',150,40,1200,900);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0003','TShirt',6.00,'Piece',300,60,600,450);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0004','Shoes',10.00,'Pair',100,20,2500,2000);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0005','Watch',12.00,'Piece',80,15,5000,4200);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0006','Bag',7.00,'Piece',120,25,1800,1400);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0007','Cap',4.00,'Piece',250,70,300,200);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0008','Belt',5.50,'Piece',180,45,700,500);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0009','Jacket',9.00,'Piece',90,20,3500,2800);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
```

```
values
('P0010','Socks',3.00,'Pair',400,100,150,100);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0011','Wallet',6.50,'Piece',140,30,900,650);

insert into product_master
(productno, description, profitperc, unitmeasure, qtyonhand, reorderlvl, sellprice,
costprice)
values
('P0012','Sandals',8.50,'Pair',110,25,1600,1200);
```

2.3 salesman_master

```
insert into salesman_master
(salesmanno, salesmanname, address1, address2, city, pincode, state, salamt, tgttoget,
ytdsales, remarks)
values
('S0001','Aman','Link
Road','Andheri','Mumbai',400058,'Maharashtra',8000,5000,7500,'Good');

insert into salesman_master
(salesmanno, salesmanname, address1, address2, city, pincode, state, salamt, tgttoget,
ytdsales, remarks)
values
('S0002','Ramesh','Ring
Road','Kukatpally','Hyderabad',500072,'Telangana',9000,6000,8200,'Good');

insert into salesman_master
(salesmanno, salesmanname, address1, address2, city, pincode, state, salamt, tgttoget,
ytdsales, remarks)
values
('S0003','Sunita','FC Road','Shivaji
Nagar','Pune',411005,'Maharashtra',9500,7000,8800,'Excellent');

insert into salesman_master
values
('S0004','Kiran','BTM Layout','2nd
Stage','Bangalore',560076,'Karnataka',8500,5200,7900,'Average');

insert into salesman_master
values
('S0005','Neelam','Sector 18','Near Mall','Noida',201301,'Uttar
Pradesh',8800,6400,8100,'Good');

insert into salesman_master
```

```
values
('S0006','Arvind','Salt Lake','Sector V','Kolkata',700091,'West
Bengal',9200,6800,9000,'Excellent');

insert into salesman_master
values
('S0007','Pooja','Indiranagar','100 ft
Road','Bangalore',560038,'Karnataka',8700,6100,8300,'Good');

insert into salesman_master
values
('S0008','Rahul','Baner','Near IT
Park','Pune',411045,'Maharashtra',8900,6500,8600,'Average');

insert into salesman_master
values
('S0009','Sneha','Banjara Hills','Road No
12','Hyderabad',500034,'Telangana',9400,7200,9100,'Excellent');

insert into salesman_master
values
('S0010','Vikas','Civil Lines','C
Scheme','Jaipur',302006,'Rajasthan',8600,5400,8000,'Average');

insert into salesman_master
values
('S0011','Meena','Anna Nagar','East','Chennai',600040,'Tamil
Nadu',9700,7600,9300,'Excellent');

insert into salesman_master
values
('S0012','Rohit','Sector 15','Near
Metro','Gurgaon',122001,'Haryana',9900,7800,9500,'Outstanding');
```

2.4 sales_order

```
insert into sales_order
(orderno, clientno, orderdate, delyaddr, salesmanno, delytype, billedyn, delydate,
orderstatus)
values
('O19001','C0001','2024-01-05','Mumbai','S0001','P','Y','2024-01-10','Fulfilled');

insert into sales_order values
('O19002','C0002','2024-01-08','Bangalore','S0002','F','N','2024-01-15','In Process');

insert into sales_order values
('O19003','C0003','2024-01-10','Bangalore','S0003','P','Y','2024-01-18','Fulfilled');

insert into sales_order values
```

('O19004','C0004','2024-01-12','Hyderabad','S0004','F','N','2024-01-20','Backorder');

insert into sales_order values
('O19005','C0005','2024-01-15','Mumbai','S0005','P','Y','2024-01-22','Fulfilled');

insert into sales_order values
('O19006','C0006','2024-01-18','Kolkata','S0006','F','N','2024-01-25','In Process');

insert into sales_order values
('O19007','C0007','2024-01-20','Bangalore','S0007','P','Y','2024-01-28','Fulfilled');

insert into sales_order values
('O19008','C0008','2024-01-22','Chennai','S0008','F','N','2024-01-30','Cancelled');

insert into sales_order values
('O19009','C0009','2024-01-25','Pune','S0009','P','Y','2024-02-02','Fulfilled');

insert into sales_order values
('O19010','C0010','2024-01-27','Jaipur','S0010','F','N','2024-02-05','In Process');

insert into sales_order values
('O19011','C0011','2024-01-28','Noida','S0011','P','Y','2024-02-06','Fulfilled');

insert into sales_order values
('O19012','C0012','2024-01-30','Hyderabad','S0012','F','N','2024-02-08','Backorder');

2.5 sales_order

insert into sales_order_details values
('O19001','P0001',10,10,350);

insert into sales_order_details values
('O19002','P0002',5,4,1200);

insert into sales_order_details values
('O19003','P0003',8,8,600);

insert into sales_order_details values
('O19004','P0004',3,2,2500);

insert into sales_order_details values
('O19005','P0005',2,2,5000);

insert into sales_order_details values
('O19006','P0006',6,5,1800);

insert into sales_order_details values
('O19007','P0007',12,12,300);

```
insert into sales_order_details values
('O19008','P0008',7,6,700);

insert into sales_order_details values
('O19009','P0009',4,4,3500);

insert into sales_order_details values
('O19010','P0010',20,18,150);

insert into sales_order_details values
('O19011','P0011',5,5,900);

insert into sales_order_details values
('O19012','P0012',6,5,1600);
```

Answer above queries with the help of above schema

1. Display the names of all the clients

```
select name from client_master;
```

	name
1	Van Brosys
2	Ramesh
3	Anita
4	Suresh
5	Neha
6	Ravi
7	Pooja
8	Arjun
9	Kiran
10	Meena
11	Rahul

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	C0001	Van Brosys	Mumbai	Mumbai	Mumbai	400054	Maharashtra	15000.00
2	C0005	Neha	Andheri	West	Mumbai	400058	Maharashtra	2600.00

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	P0004	Shoes	10.00	Pair	100	20	2500.00	2000.00
2	P0009	Jacket	9.00	Piece	90	20	3500.00	2800.00

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	Ramesh	Bangalore	Karnataka
2	Anita	Bangalore	Karnataka
3	Suresh	Hyderabad	Telangana
4	Ravi	Kolkata	West Bengal
5	Pooja	Bangalore	Karnataka
6	Arjun	Chennai	Tamil Nadu
7	Meena	Jaipur	Rajasthan
8	Rahul	Noida	Uttar Pradesh
9	Sneha	Hyderabad	Telangana

5. Display all the information of client no C0001 and C0002

```
select * from client_master
where clientno in ('C0001','C0002');
```

Results | Messages

	clientno	name	address1	address2	city	pincode	state	baldue
1	C0001	Van Brosys	Mumbai	Mumbai	Mumbai	400054	Maharashtra	15000.00
2	C0002	Ramesh	MG Road	Near Metro	Bangalore	560001	Karnataka	2000.00

6. Change the selling price of ‘P0001’ to Rs. 1150.50

```
update product_master
set sellprice = 1150.50
where productno = 'P0001';
```

7. Delete the record of client no C0005

```
Msg 547, Level 16, State 0, Line 1
The DELETE statement conflicted with the REFERENCE constraint "fk_so_client". The conflict occurred in datab
The statement has been terminated.

Completion time: 2026-01-02T15:36:11.8659368+05:30
```

For the above problem solution is

```
alter table sales_order_details
drop constraint fk_sod_order;

alter table sales_order_details
add constraint fk_sod_order
foreign key (orderno)
references sales_order(orderno)
on delete cascade;

alter table sales_order
drop constraint fk_so_client;

alter table sales_order
add constraint fk_so_client
foreign key (clientno)
references client_master(clientno)
on delete cascade;

delete from client_master
where clientno = 'C0005';
```

Results | Messages

clientno	name	address1	address2	city	pincode	state	baldue

orderno	clientno	orderdate	delyaddr	salesmanno	delytype	billedyn	delydate	orderstatus

orderno	productno	qtyordered	qtydisp	productrate

8. Display the client name whose second letter is ‘a’

```
select name
from client_master
where name like '_a%';
```

	name
1	Van Brosys
2	Ramesh
3	Ravi
4	Rahul

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 balanceqty (not in table)

```
select qtyordered,
      qtydisp,
      (qtyordered - qtydisp) as balanceqty
from sales_order_details;
```

	qtyordered	qtydisp	balanceqty
1	10	10	0
2	5	4	1
3	8	8	0
4	3	2	1
5	6	5	1
6	12	12	0
7	7	6	1
8	4	4	0
9	20	18	2
10	5	5	0
11	6	5	1

Write commands to do following

1.Make Client_no as primary key in client_master.

alter table client_master
add constraint pk_client primary key (clientno)

Since primary key is already present, we get error

```
Msg 1779, Level 16, State 0, Line 1
Table 'client_master' already has a primary key defined on it.
Msg 1750, Level 16, State 0, Line 1
Could not create constraint or index. See previous errors.

Completion time: 2026-01-02T17:18:35.7739967+05:30
```

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

alter table client_master
add phone_no varchar(15);

```
Commands completed successfully.

Completion time: 2026-01-02T17:24:19.6213471+05:30
```

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 decimal(4,2) not null;

alter table product_master
alter column sellprice decimal(8,2) not null;

alter table product_master
alter column costprice decimal(8,2) not null;

```
Commands completed successfully.

Completion time: 2026-01-02T17:25:21.7097429+05:30
```

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

alter table client_master
alter column name varchar(60);

```
Commands completed successfully.

Completion time: 2026-01-02T17:28:34.3983551+05:30
```

5.Remove pincode column from table

alter table client_master
drop column pincode;

```
Commands completed successfully.

Completion time: 2026-01-02T17:30:00.8417748+05:30
```

Define in 1 or 2 lines and give one example also

1.Recursive Relationship

Definition:
A recursive relationship occurs when a table has a relationship with itself, where a foreign key refers to the primary key of the same table.

Example:
create table employee (
employee_id int primary key,
employee_name varchar(20),
manager_id int,
foreign key (manager_id) references employee(employee_id)
);

Explanation:
Here, manager_id is a foreign key that refers to employee_id of the same table, showing that an employee can manage another employee in the same table.

2. Composite Key

Definition:
A composite key is a primary key formed using two or more columns that together uniquely identify a record.

Example:
```
create table sales_order_details (
orderno varchar(6),
productno varchar(6),
qtyordered decimal(8,0),
primary key (orderno, productno)
);
```

Explanation:
Neither orderno nor productno alone can uniquely identify a row, but together they form a composite primary key.

3. LIKE Operator with Pattern Matching

Definition:
The LIKE operator is used to search for a specific pattern in a column using wildcards such as `%` and _.

Example:
```
select *
from client_master
where name like 'A%';
```

Explanation:
`A%` means the name starts with the letter A.

Example:
```
select *
from client_master
where city like '_a%';
```

Explanation:
`_a%` means the second letter of the city name is `a`.

4. DROP TABLE Command

Definition:
The DROP TABLE command permanently removes a table along with its data and structure from the database.

Example:
drop table sales_order_details;

Explanation:
This command deletes the entire sales_order_details table from the database.

Example:
drop table if exists sales_order_details;

Explanation:
This deletes the table only if it exists, avoiding an error.

5. Full Outer Join

Definition:
A Full Outer Join returns all rows from both tables, including matching and non-matching rows, and displays NULL where there is no match.

Example:
```
select c.clientno, c.name, o.orderno, o.orderdate
from client_master c
full outer join sales_order o
on c.clientno = o.clientno;
```

Explanation:
This query shows all clients and all orders. Clients without orders and orders without matching clients are also displayed with NULL values.

Write queries for the following descriptions (JOINS)

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

```
select distinct p.productno, p.description
from product_master p
```

```
join sales_order_details sod
on p.productno = sod.productno
join sales_order so
on sod.orderno = so.orderno
join client_master c
on so.clientno = c.clientno
where c.name = 'Ivan Bayross';
```

Results | Messages

	productno	description
1	P0001	Shirts

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

```
select p.description, sod.qtyordered
from product_master p
join sales_order_details sod
on p.productno = sod.productno
join sales_order so
on sod.orderno = so.orderno
where month(so.delydate) = month(getdate())
and year(so.delydate) = year(getdate());
```

Results | Messages

	description	qtyordered
1	Jeans	5
2	TShirt	8
3	Shoes	3
4	Bag	6
5	Cap	12
6	Belt	7

3. List the ProductNo and description of constantly sold (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;
```

Results | Messages

productno	description

4. Find 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 = 'Trousers';
```

Results | Messages

name

Previously there was no data for trousers, so updation is done to demonstrate the query

```
update product_master

set description = 'Trousers'

where productno = 'P0002';
```

Results | Messag

	name
1	Ramesh

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

```
select p.description, so.orderno
from product_master p
join sales_order_details sod
on p.productno = sod.productno
join sales_order so
on sod.orderno = so.orderno
where p.description = 'Pull Overs'
and sod.qtyordered < 5;
```

Results | Messages

	description	orderno
1	Pull Overs	O19003

Write queries for the following descriptions (SUBQUERIES)

1. Find non-moving products (products not being sold).

```
select *
from product_master
where productno not in
(
select productno
from sales_order_details
);
```

Results | Messages

	productno	description	profitperc	unitmeasure	qtyonhand	reorderlvl	sellprice	costprice
1	P0005	Watch	12.00	Piece	80	15	5000.00	4200.00

2. Find the name and complete address of the customer who placed order number ‘019001’.

```
select name, address1, address2, city, state
from client_master
where clientno =
(
select clientno
from sales_order
where orderno = '019001'
);
```

Results | Messages

	name	address1	address2	city	state
1	Ivan Bayross	Mumbai	Mumbai	Mumbai	Maharashtra

Results | Messages

name	address1	address2	city	state

3. Find the clients who placed orders before the month of May ’02.

```
select *
from client_master
where clientno in
(
select clientno
from sales_order
where orderdate < '2002-05-02'
);
```

Results | Messages

	clientno	name	address1	address2	city	state	baldue	phone_no
1	C0001	Ivan Bayross	Mumbai	Mumbai	Mumbai	Maharashtra	15000.00	NULL
2	C0002	Ramesh	MG Road	Near Metro	Bangalore	Karnataka	2000.00	NULL
3	C0003	Anita	BTM Layout	2nd Stage	Bangalore	Karnataka	3500.00	NULL
4	C0004	Suresh	Ameerpet	Main Road	Hyderabad	Telangana	1800.00	NULL
5	C0006	Ravi	Salt Lake	Sector V	Kolkata	West Bengal	4200.00	NULL
6	C0007	Pooja	Indiranagar	100 ft Road	Bangalore	Karnataka	3100.00	NULL
7	C0008	Arjun	Anna Nagar	East	Chennai	Tamil Nadu	2900.00	NULL
8	C0009	Kiran	Baner	Near IT Park	Pune	Maharashtra	3700.00	NULL
9	C0010	Meena	Civil Lines	C Scheme	Jaipur	Rajasthan	2200.00	NULL
10	C0011	Rahul	Sector 18	Near Mall	Noida	Uttar Pradesh	4100.00	NULL
11	C0012	Sneha	Banjara Hills	Road No 12	Hyderabad	Telangana	3300.00	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');

Results | Messages

	(No column name)
1	Saturday, February 11, 2012

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

select format(baldue, '$#,##0.00')
from client_master;

Results | Messages

	(No column name)
1	$15,000.00
2	$2,000.00
3	$3,500.00
4	$1,800.00
5	$4,200.00
6	$3,100.00
7	$2,900.00
8	$3,700.00
9	$2,200.00
10	$4,100.00
11	$3,300.00

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(tgttoget as varchar)

```
from salesman_master
where salesmanname = 'Aman';
```

Results | Messages

	(No column name)
1	Salesman Aman sold goods of 7500.00 while given ...

4. Display your Age in Years

```
select datediff(year, '2003-01-01', getdate()) as age_in_years;
```

Results | Messages

	age_in_years
1	23