---Class 1

--Q.What is data?
--Collection of meaningful information.
--OR
--Collection record information.

--Q. What is database(DBMS)?
--it is collection of data in file format.
--ex:Excel,word file,text file, notepad , notepad++ etc.

--it stores less amount of data
--no relationship between two files or tables

--Q.What is RDBMS(Relational data base management system)?
--it is collection of table related information.
--it stores huge amount of data and to extract the data we have a simple language i.e. SQL
--There is relation between two or more tables.

--Q.what is table ?
--it is collection of rows and columns.

--SQL statements
--There are four types of SQL statements
--1.DDL(Data Definition language) -- Table level operation.-
Create. Alter, Drop, Truncate, Rename

--2.DML(Data Manipulation Language) --Data stored inside the table-
Insert, Update, Delete

--3.DCL(Data Control Language)- Grant, Revoke

--4.TCL(Transaction Control Language) - Commit, Rollback

--5.DQL(Data Control Language)- Select

--Class 2

--SQL is not a case sensitive language
--The meaning 'A' is always same 'a'
--for ex: 'AMAR' it has same meaning of 'amar'

--Data types
--Type of data/value of an object can hold is known as data type.
--A].Numeric data type

--1.BIT
--it stores value 0 or 1

--2.TINYINT
--It will store the value ranging from 0 to 255

--3.SMALLINT
--it will store value ranging -32768 to 32767

--4.Decimal
--an exact fixed point number

--5. INT
--it stores an integer value i.e. ranging from -2147483648 to 2147483647

--B].Approximate numeric data type
--1.Float
--it will store floating point number range is -1.8E to 308 to 1.8E to 308
--for Ex: 8.2345, 0.9876 etc
--2.Real
--it will also store an floating point numbers -3.40E to 38 to 3.40E to 38

--C].String or charecter data type
--1.char - 0-9,a-z,A-Z and Special symbol it will store data as 1 bit
--Static memory allocation and it is having size of 8000 chars
--for ex: char(20) -- AMAR - 4 char reaming 16 blocks of memory waisted because it has been fixed

--2.varchar - - 0-9,a-z,A-Z and Special symbol
--It is dynamic memory allocation and it will store data as 1 bit
--for ex: varchar(20) -- AMAR - 4 char reaming 16 blocks of memory it will releasse has been fixed

```
declare @val1 varchar(8000)='AMARPatil';
print @val1
print datalength(@val1)
print len(@val1)
```

--3.nchar
--It is static memory allocation and it can store 4000 charecters (1 char it will occupy 2bytes)

```
declare @value nchar(4000) = 'AMAR'
print @value
print datalength(@value)
print len(@value)
```

-4.nvarchar
--It is dynamic memory allocation and it can store 4000 charecters (1 char it will occupy 2bytes).

```
declare @value1 nvarchar(4000) = 'AMAR'
print @value1
print datalength(@value1)
print len(@value1)
```

--D].data and Time data type
--1.date
--It will allow you to insert the date in mulptiple formats
--For Ex: YYYY/MM/DD,DD/MM/YYYY,YYYY/DD/MM etc

```
select GETDATE()

declare @date1 date = getdate()
print @date1
```

--2.time
--it will allow you to insert the time in below format

--HH:MM:SS:MS

```
declare @time time  = getdate()
print @time
```

--3.Datetime
--It will allow you to insert date and time together.
--YYYY/MM/DD HH:MM AM/PM

```
declare @datetime datetime  = getdate()
print @datetime
```

--Create

--This Is DDL SQL statement and used to create database and Table.

--Q.How to create Database ?

```
Create database Python_35
```

--Q.How to create Table?

```
Create table FirstTable(
FID int,
FirstName varchar(20),
LastName varchar(20),
City varchar(20),
Age int);
```

--In SQL if you want to terminate SQL statement then use ; at the end of statement.

--SELECT

--Select statement is used to select the data which you have written

--Q.How to fetch the complete data from a table?
select * from FirstTable;

--Q. how to select a particular column from table?
select firstname,age from FirstTable

--* - it will indicate we are selecting complete data from table----

---

--Day 3

--Q.How will you insert the data into the table?
--INSERT
--Insert Statement is used to insert the data into the table.
--By two ways we can insert the data into the table
--METHOD-I
--We have to insert the data sequence wise how we have created the table
insert into FirstTable values(1,'Praveen','Patil','Pune',30);

insert into FirstTable values(1,'Praveen','Patil','Pune'); --Erorr -Column name or number of supplied values does not match table definition.

select * from FirstTable

--METHOD-II
--We dont have restrictions to insert the data as per column sequence defined in table.
--While inserting the data we have to mention column names in insert statement.
insert into FirstTable (FID,FirstName) values (2,'Amit')

insert into FirstTable (FirstName,FID,Age,LastName) values ('Puneet',3,24,'sharma');

insert into FirstTable (Age,FID,FirstName,LastName) values (35,4,'Puskar','Verma')
insert into FirstTable (Age,FID,FirstName,LastName) values (27,5,'Meena','Patil')

select * from FirstTable

```
create table employee
(EID int,
FirstName varchar(20),
LastName varchar(20),
Loc varchar(20),
Dept varchar(20),
salary int)

insert into employee values (1,'Rohan','Mane','Sangali','HR',15000)
insert into employee values (2,'Sheetal','Chavan','Parbhani','Finance',25000)
insert into employee values (3,'Amit','Patil','Latur','HR',16000)
insert into employee values (4,'Riya','Verma','Pune','Account',20000)
insert into employee values (5,'Sita','Sharma','Patna','HR',15000)
insert into employee values (6,'Kirti','Gold','Solapur','Staffing',35000)
insert into employee values (7,'Sohan','Jadhav','Miraj','Account',45000)
insert into employee values (8,'Priyanka','Sharma','Nagpur','Finance',46000)
insert into employee values (9,'Virat','Patil','Jaipur','Staffing',34000)
insert into employee values (10,'Sohil','Khan','Mumbai','HR',33000)
insert into employee values (11,'Ronit','Patil','Miraj','Admin',NULL)

select * from employee;
```

```
--Day 4

--Clauses/filters
--We have Clauses in Sql to perform filter related information
--1.Where
--2.order by
--3.group by
--4.having

select * from FirstTable

--1.Where
--Where clause is used with comparison operator,arithmatic and logical operators.
--It used to filter the specific condition or we can select a particlar records from table.

--Operators
--1.Comaprision Operator
--2.Logical Operator
--3.Arithmatic operator
--4.IN and NOT IN
--5.Between and NOT BETWEEN
--6.LIKE

--1.Comaprision Operator
--it is used to compare the condition provided in filter clauses or where clause.
-- = - equal to
-- > - greater than
-- < - less than
-- >= - greater than equal to
-- <= - less than equal to
-- != or <> -not equal to
```

```
create table employee
(EID int,
FirstName varchar(20),
LastName varchar(20),
Loc varchar(20),
Dept varchar(20),
salary int)

insert into employee values (1,'Rohan','Mane','Sangali','HR',15000)
insert into employee values (2,'Sheetal','Chavan','Parbhani','Finance',25000)
insert into employee values (3,'Amit','Patil','Latur','HR',16000)
insert into employee values (4,'Riya','Verma','Pune','Account',20000)
insert into employee values (5,'Sita','Sharma','Patna','HR',15000)
insert into employee values (6,'Kirti','Gold','Solapur','Staffing',35000)
insert into employee values (7,'Sohan','Jadhav','Miraj','Account',45000)
insert into employee values (8,'Priyanka','Sharma','Nagpur','Finance',46000)
insert into employee values (9,'Virat','Patil','Jaipur','Staffing',34000)
insert into employee values (10,'Sohil','Khan','Mumbai','HR',33000)
insert into employee values (11,'Ronit','Patil','Miraj','Admin',NULL)


select * from employee where dept = 'HR'
select * from employee where EID > 5
select * from employee where EID < 4
select * from employee where EID >= 7
select * from employee where EID <= 4
select * from employee where EID <> 7  --not equal to
select * from employee where EID != 7  --not equal to
```

--Logical Operator

--these operators are used to compare two inputs logically and provide the result.
--1.AND
--It will be just like multiplication

--AND oeartion

--A	B	O/P
--0	0	0
--0	1	0
--1	0	0
--1	1	1

--A	B	O/P
--False	False	False
--False	True	False
--True	False	False
--True	True	True

```
select * from employee where eid = 1 and dept = 'Finance'
select * from employee where EID =5 and loc ='Patna'
```

--2.OR
--It will work like addition
--OR operation

--A	B	O/P
--0	0	0
--0	1	1
--1	0	1
--1	1	1

--A	B	O/P
--False	False	False
--False	True	True
--True	False	True
--True	True	True

```
select * from employee where eid = 11 or dept = 'Finance'
select * from employee

select * from employee where EID =5 or salary > 40000 or loc ='Pune'
```

--IN and NOT IN operator

--This operator will allow you to navigate or point out the values which maintained or mentioned inside the in clause.
--Not In operator will perform vice-versa operation as compared to IN operator.

```
select * from employee where eid => 1,2 -- incorrect syntax because comparison operator will allow you to insert only one condition.

select * from employee where eid in (1,3,4,5)
select * from employee where eid not in (1,3,4,5)

select * from employee where loc in ('Pune','sangali','Miraj')
select * from employee where loc not in ('Pune','sangali','Miraj')
```

--Between and Not between

--This operator/ clause is used to display the values or records between the range you have specified.
--This operator works along with AND operator.

```
select * from employee where EID between 2 and 6

select * from employee where Loc between 'A' and 'N'   --A to N

--Not Between
select * from employee where EID not between 2 and 6

select * from employee where Loc not between 'A' and 'N'  -- excluding A to N cities name  <=N
```

--LIKE
--LIKE operator is used to search for a specified pattern in a column.
--Mostly like operator is used in where clause.
--Like operator used wildcards for searching a pattern
--1. % - Represents zero,one or multiple charecters or numbers./ A substitute for Zero or more characters
--2. _ - Represents one or single charecters./A A substitue for exactly one character.
--3.[Charlist] - Any single charecter in charlist ex: [ABC]
--4.[^Charlist] -any charecter not in charlist

--ex: Seeta,meeta,geeta sena, sona siya

--'S%' - start with 'S' chareter and it will display all the names which starts with S.
--'%S' - End with 'S' charetcer and it will display all the names which END with S.
--'%S%' -Anywhere inside record/column if 'S' charetcer and it will display all the names which starts or ends or anywhere inside into a column.

```
select * from employee where FirstName like 's%' ---at the start of name s

select * from employee where FirstName like '%A' -- at the end of name a

select * from employee where FirstName like '%A%' --anywhere inside or start or end.

--Display the name whose third letter starts with r
select * from employee where FirstName like '__r%' --Kirti,Virat

--Display the name which starts with s and ends with A
select * from employee where FirstName like 's%a'
```

--.Arithmetic operator
--these operators used to perform mathematical operation like +,-,*,/ and %

```
select * from employee

select *,MonthlyIcrement =salary+1000  from employee

select *,lossofpay = 2*(salary/30) from employee

select *,AnnualPackage =salary*12 from employee
```

--NULL Values
--A column with a NULL value is column with NO value
--NULL value is different from 0(zero) and blank/empty space.

```
select * from employee where salary = NULL
```

--Q.How to test the NULL values from column?
--There are two ways to check the NULL values from column
--1.IS NULL
--2.IS NOT NULL

```
select * from employee where salary = NULL  -- Blank /not possible to check by using comparison/logical/arithmetic operator
```

```
select * from employee where salary is NULL

select * from employee where salary is not NULL


--2.DML(Data Manipulation Language)
--UPDATE
--Update statement is used to update complete column data or specific record if condition is provided.
-- By using update statement you can only play with table data.

--synatx:
--UPDATE TABLE_NAME SET COLUMN_NAME ='VALUE' where COLUMN_NAME
='CONDITION'



create table UPDATE_DELETE (U_ID int, UNAME varchar(20) ,ULOC varchar(20))

insert into UPDATE_DELETE values (1,'Sagar','PUNE')
insert into UPDATE_DELETE values (2,'Amit','Sangli')
insert into UPDATE_DELETE values (3,'Sarika','Bijapur')
insert into UPDATE_DELETE values (4,'Rohan','Mumbai')
insert into UPDATE_DELETE values (5,'Amrita','Palampur')


select * from UPDATE_DELETE

update UPDATE_DELETE SET ULOC ='Pune' where U_ID >=2

update UPDATE_DELETE SET ULOC ='Jaipur' where U_ID =5

update UPDATE_DELETE SET UNAME ='Sohan' where U_ID =4

--DELETE
--Delete statement is used to delete the data from table row by row.
--By using DELETE statement it is not possible to delete the structure.
--We can delete the table data at one time or row by row by specifying an condition.

--syntax:
--DELETE TABLE_NAME where COULMN_NAME ='CONDITION'

select * from UPDATE_DELETE

delete UPDATE_DELETE -- it will delete the complete data from table.

delete UPDATE_DELETE where U_ID =5

delete UPDATE_DELETE where U_ID <=2
```

.Data Definition Language(DDL) - DR.CAT
--Along with DDL statements "TABLE" Keyword is mandatory.

--DROP
--DROP statement will delete the table structure as well as table data.
--Drop statement we can drop or delete the database.

--syntax:
--DROP TABLE TABLE_NAME
--DROP DATABASE DATABASE_NAME

DROP table UPDATE_DELETE -- it will delete table data as well as table structure.

--Q.Diffrence between Delete and Drop?

--Truncate
--Truncate statement allow you to delete the records from a table at once.
--It won't delete the structure of the table
--In Truncate you can't delete the data Row-By-Row by specifying a condition.

--syntax : truncate table table_name

create table Truncate1 (U_ID int, UNAME varchar(20) ,ULOC varchar(20))

insert into Truncate1 values (1,'Sagar','PUNE')
insert into Truncate1 values (2,'Amit','Sangli')
insert into Truncate1 values (3,'Sarika','Bijapur')
insert into Truncate1 values (4,'Rohan','Mumbai')
insert into Truncate1 values (5,'Amrita','Palampur')

select * from Truncate1

truncate table truncate1

--Q. What is the difference between Delete, Drop and Truncate?
--Q. What is the difference between DML and DDL statements?
--Q.How will you delete the data from a table at once?

--ALTER
--Alter statement is used to perform operation on table level attributes/Columns.
--By using Alter
--We can ADD one or More columns.
--We can delete one more columns.
--We can change the data type for a particular column.
--We can increase or decrese the size of particular column.

Create table ALTER_OPERATION(AID int not Null , ANAME varchar(20))
drop table ALTER_OPERATION

```
insert into ALTER_OPERATION values (1,'Amit')
insert into ALTER_OPERATION values (2,'sumit')
insert into ALTER_OPERATION values (3,'rohit')
insert into ALTER_OPERATION values (4,'anil')
insert into ALTER_OPERATION values (5,'anil123456')

select * from ALTER_OPERATION

--Adding a single column into a table

alter table ALTER_OPERATION ADD loc varchar(20)

---Adding multiple columns in a table
alter table alter_operation add Pincode int,city varchar(20)

--Dropping/Deleting single column from table
alter table alter_operation drop column city

--Dropping/Deleting multiple columns from table
alter table alter_operation drop column loc,pincode


--to increse or decrease the size of a column

alter table alter_operation alter column aname varchar(10)

alter table alter_operation alter column aname varchar(15)
```

--Rename

```
sp_rename 'table_name.col_name','New_col_name'

sp_rename 'study.city', 'Loc'; -- change col name

sp_rename 'New_study', 'study'; --change table name
```

```
--Functions
--1.min()
--2.max()
--3.count()
--4.TOP
--5.sum()
--6.avg()
--7.Distinct()

--1.MIN()
--This function will return the minimum value from a selected column

select * from employee order by salary Desc
select min(salary) as minsal from employee --numbers === 0 to 9

select min(FirstName) from employee  -- text value === A to Z

--2.MAX()
--This function will return maximum value from selected column
select * from employee order by salary Desc


--3.Count()
--This function is used to count the number of records from table or column.
--Count function always accepts one argument.
--It won't count NULL values from the table or column.

select count(*) as EmpCount from employee
select * from employee
select count(loc) from employee

--Q.In count function NULL value can be considered?
--NO, Null value is not considered in count function.
select count(8888) --- 1
select count('SCODEEN') --1

select count() ---- error - The count function requires 1 argument(s).

select count('A','B') ---
select count('SCODEEN') + count(8888) ---2
select count(SCODEEN)  --Invalid column name 'SCODEEN'.

insert into employee values(11,'Ashok',NULL,NULL,NULL,21000)

--4.TOP()
--This function is used to display the top records from table as per specified
count.
--This function is very useful when we have large amount of data in table .

select Top 3 * from employee -- it will display the top 3 records from table.


--5.Sum
--this function add all recorfds from a column.
--it will return the total sum value in numeric expression.
--It will ignore NULL values from column.
select * from employee
select sum(salary) as totalsary from employee
```

```
select sum(loc) as totalsary from employee --exception : Operand data type
varchar is invalid for sum operator.

--6.avg()
--This function is used to find the avg of the column.
--It will ignore the NULL values.

select sum(salary) as totalsary from employee
select count(salary) from employee
select avg(salary) as AVGSAL from employee

--NOTE: In count,sum, and Avg function NULL values are ignored.

--7.Distinct
--This function is used to find the unique records from column.
select * from employee

select distinct(Dept) from employee

select count(distinct(Dept)) from employee

select count(*) from employee where Dept ='Account'

select distinct(salary) from employee


-----------------------------------------------------------------
--Group by
--Group  by statements are used in conjection with aggregate functions to group
result-set by one or more columns.
--MIN,MAX,Count,AVG,SUM,
--Syntax:
--select column_name , aggregate_Function(column_name) from Table_NAME
--where Column_name <Condition>
--group by Column_name



--Q.Find the sum of salary of each department?
select department,sum(salary) as DeptSal from employee
group by department

--Q.Display the department name with highest salary?
--Q.In group where we can use 'WHERE' clause and Why?
```

```
--HAVING Clause
--Having clause is added in SQL because the WHERE clause not used with aggreagate
function.
--Syntax:
--select column_name , aggregate_Function(column_name) from Table_NAME
--where Column_name <Condition>
--group by Column_name
--HAVING Aggregate_Function(Column_NAME) operator Value.

--Q. How to display the department wise total salary is greater  than 70000?
select department,SUM(salary) from employee
--where SUM(salary) > 70000
group by department
having SUM(salary) > 70000

--By Using Group by and Having Clause we can identify the duplicate records from
table.
--To identify the duplicate from Table
-------------------------------------------------------------------------
```

--Constraints
--Constraints are used to maintain the accuracy and integrity of the data.
--1.Primary Key
--2.Foreign Key
--3.NOT NULL key
--4.Unique Key
--5.Check Key
--6.Default key

--1.Primary Key --PK
--NOT NULL + UNIQUE
--It will always identifies unique record into column of the table.
--PK is used in general with numeric values .

```
Create table student(S_ID int primary key,
STUDENT_NAME varchar(20),
LOC varchar(20))

insert into student values (1,'praveen','pune')
insert into student values (2,'Rohan','mumbai')
insert into student values (3,'Rohan','mumbai')
insert into student values (NULL,'veen','pune')

select * from student
```

--Auto Increment
--It will automatically insert or increment the unique values into table once you define the auto increment.

--It will allow you to specify the range of values by which you want to create a unique values.
--Syntax : Column_name IDENTITY(start,diff)

```
create table BankAccount(Account int identity, --11128871,11128872,11128873
AccName varchar(20),
Branch varchar(20),
City varchar(20))

--or
create table BankAccount1(Account int primary key identity(11128870,1), --
11128871,11128872,11128873
AccName varchar(20),
Branch varchar(20),
City varchar(20))


insert into BankAccount values ('Shon','KR PURAM','Banglore')
insert into BankAccount values ('Rohan','SP Road','Pune')
insert into BankAccount values ('Amit','Katraj','Pune')
insert into BankAccount values ('Mansi','Miyapur','HYD')
insert into BankAccount values ('Sagar','Shivaji Nagar','Sangli')

select * from BankAccount
```

--3.NOT NULL
--NOT NULL constraint restrict you to insert NULL values into a column.
--If you define NOT NULL constraint on column then you cant insert the NULL values in it.
--It will allow duplicates.

```
create table NOTNULL (NID int , FirstName varchar(20) NOT NULL, AGE int NOT NULL)

insert into NOTNULL values (1,'Amrita',27)
insert into NOTNULL values (2,'Amrita',27)
insert into NOTNULL values (3,NULL,27)

select * from NOTNULL
```

--4.Unique
--It ensures that all the values in a column should be unique or diffrent value.
--It will accept one NULL value into the column.

```
create table UNIQUE_TEST (U_ID int Unique , FirstName varchar(20) NOT NULL unique, AGE int
NOT NULL)

insert into UNIQUE_TEST values (1,'Amrita',27)
insert into UNIQUE_TEST values (2,'Sangita',27)
insert into UNIQUE_TEST values (NULL,'Arpita',23)

insert into UNIQUE_TEST values (NULL,'mehir',23)

select * from UNIQUE_TEST
```

--2.Foreign Key(FK)
--A FK is column or collection o columns in one table that referes to the primary key in another table.
--NULL value can be allowed in foreign key column.

```
create table department(DID int primary key identity, Dept varchar(20))

insert into department values('CIVIL')
insert into department values('Mech')
insert into department values('IT')
insert into department values('ECE')

select * from department

create table student (S_ID int primary key identity,S_NAME varchar(20),
DID int foreign key references department(DID) )

insert into student values ('Praveen',2)
insert into student values ('amit',2)
insert into student values ('Ronit',1)
insert into student values ('Meena',4)
insert into student values ('shanmuka',3)
insert into student values ('monika',Null)
insert into student values ('monika',7)

select * from student
```

--5.Check key
--It ensures that all values in a column statisfies a specific condition.
--Check constarints is used to restrict the value of a column.
--It is just like condition checking before inserting the data into column.

```
Create table CHECK_KEY(
C_ID int primary key ,
C_Name varchar(10) NOT NULL UNIQUE,
C_AGE int check(C_AGE >18))

insert into CHECK_KEY values(1,'Sumit',19)
--The below statment through an exception while inserting the data
insert into CHECK_KEY values(2,'Ronit',17)
--Exception/Error
--The INSERT statement conflicted with the CHECK constraint
"CK__CHECK_KEY__C_AGE__440B1D61".
--The conflict occurred in database "Testing18", table "dbo.CHECK_KEY", column 'C_AGE'.
```

--6.Default constarint
--Set a default value to column when value is not defined/inserted/specified.

```
Create table DEFAULT_VALUE(
D_ID int primary key,
D_name varchar(10) NOT NULL Unique,
D_City varchar(10),
D_AGE int check(D_age >=20),
D_LOC varchar(20) default 'Balaji Nagar')

select * from DEFAULT_VALUE
--METHOD-I
insert into DEFAULT_VALUE values(1,'Smita','Jaipur',20,'katraj')
insert into DEFAULT_VALUE values(2,'Amla','Chennai',28,default)
insert into DEFAULT_VALUE values(3,'Asin','Madurai',34,'')

--METHOD-II
insert into DEFAULT_VALUE (D_ID,D_name,D_City,D_AGE) values(4,'Surya','Banglore',43)
```

--SET operator
--1.UNION
--2.UNION ALL
--3.INTERSECT
--4.EXCEPT

--1.UNION
--The Union operator is used to combine the result-set of two or more SELECT statements or Table.
--The UNION operator selects distinct values by default.

--Note:
--1.Each select statement or table within UNION must have the same number of columns.
--2.The columns must have similar data types.
--3.The columns is SELECT statement or table must be in the same order.

--Example :
--A =[1,2,3,4,5]
--B= [3,4,5,6,7]

--A union B =O/P =[1,2,3,4,5,6,7]

```
create table set1 (S_ID int ,SNAME varchar(20))

create table set2 (S_ID int ,SNAME varchar(20))

insert into set1 values(1,'A')
insert into set1 values(2,'B')
insert into set1 values(3,'C')
insert into set2 values(4,'D')
insert into set2 values(5,'E')
insert into set2 values(6,'F')
insert into set2 values(7,'G')
insert into set2 values(8,'H')
insert into set2 values(9,'Hamesha')


SELECT * FROM SET1
UNION
SELECT * FROM SET2
```

--2.Union All
--This operator is used to combine two or more tables using select statement when both the tables have same no. of columns.
--Combine the two or more tables with all the values. it means that it will allow duplicate values in it.

```
select * from set1
Union  all
select * from set2
```

--3.Intersection
--It will return only distinct (common records) values from two or more tables.

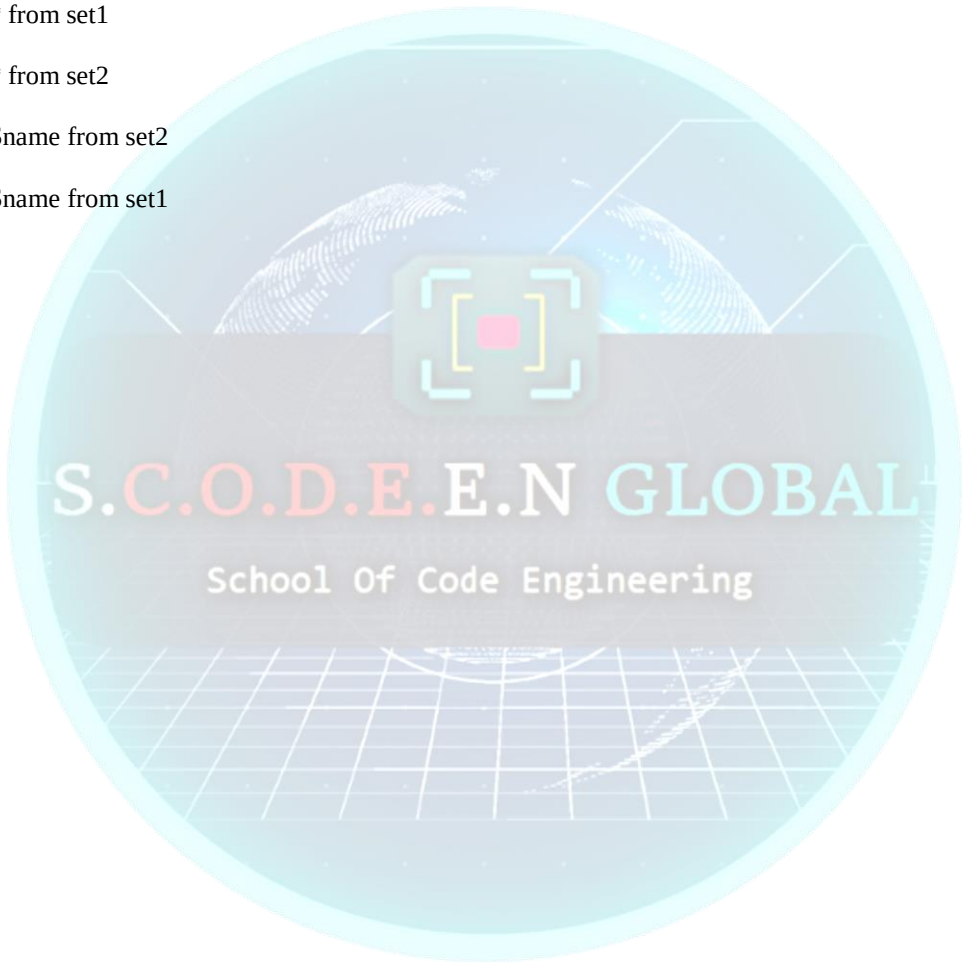
```
select * from set1
intersect
select * from set2
```

--4.Except/minus
--It will display the difference in records.
--For ex: A = [1,2,3] and B= [3,4,5]
--then A except B - O/P =[1,2]
--then B except A - O/P =[4,5]

```
select * from set1
select * from set2

select * from set1
Except
select * from set2

select Sname from set2
Except
select Sname from set1
```



--JOIN

--Join is used to return a value from both the table which should have common column column in both the tables.
--JOIN is the keyword is used in SQL statements to extract the data from two or more tables.

--JOIN = CROSS PRODUCT + CONDITION

--Types Of joins
--1.JOIN/Inner Join
--2.Outer Join
-- a.Left Join /Left Outer join
-- b.Right Join /Right Outer join
-- c.FULL Join /Full Outer join
--3.SELF join
--4.Equi-join
--5.Cross Join

--1.JOIN/Inner Join
--This join return the only matching records from Table

--Syntax:
--select */Column_name(s) from Table_Name1
--INNER JOIN /JOIN Table_Name2
--ON Table_Name1.Column_name =Table_Name2.Column_name

Create Table A (Aid int, Name varchar(20))
insert Into A values(1,'Sam')
insert Into A values(2,'tom')
insert Into A values(3,'harry')
insert Into A values(4,'katich')
insert Into A values(5,'kate')

Create Table B (Bid int, Name varchar(20),Aid int)
insert Into B values(11,'harry',3)
insert Into B values(12,'katich',4)
insert Into B values(13,'kate',5)
insert Into B values(14,'mate',6)
insert Into B values(15,'sat',7)

select A.Aid,A.Name,B.Bid from A join B ON A.Aid = B.Aid
select A.Aid,A.Name,B.Bid from A join B ON A.Aid = B.Aid join C On B.Bid = C.Bid

--Outer Join
--1.Left Outer Join/Left Join
--The LEFT JOIN returns all rows from the left side table, even if there are no matches in the right table.
--
--For Ex: Table A= [1,2,3,4,5] and Table B =[3,4,5,6,7]
--A left join B = [1,2,3,4,5]

```
--A		B
--1		NULL
--2		NULL
--3		3
--4		4
--5		5

--B left join A = [1,2,3,4,5]
--B		A
--3		3
--4		4
--5		5
--6		NULL
--7		NULL

--Syntax:
--select */Column_name(s) from Table_Name1
--Left JOIN  Table_Name2
--ON Table_Name1.Column_name =Table_Name2.Column_name

select * from A
select * from B

select * from A left join B ON A.Aid = B.Aid

select * from B left join A ON A.Aid = B.Aid

--2.Left Outer Join/Left Join
--The RIGHT JOIN returns all rows from the right side table, even if there are no matches in the right table.
--It will display complete right table i.e B with all the matcing records from A.
--For Ex: Table A= [1,2,3,4,5] and Table B =[3,4,5,6,7]
--A Right join B = [1,2,3,4,5]
--A		B
--3		3
--4		4
--5		5
--Null	6
--NULL 7

--B right join A = [1,2,3,4,5]
--B		A
--NULL 1
--NULL 2
--3		3
--4		4
--5		5

--Syntax:
--select */Column_name(s) from Table_Name1
--Right JOIN  Table_Name2
--ON Table_Name1.Column_name =Table_Name2.Column_name

select * from A
select * from B

select * from A left join B ON A.Aid = B.Aid ;
```

```
select * from B left join A ON A.Aid = B.Aid ;


select * from A right join B ON A.Aid = B.Aid ;

select * from B right join A ON A.Aid = B.Aid ;

--3.FULL Outer Join/Left Join
--The Full JOIN returns all rows from the both side table.
--It will display complete table A and B.

--For Ex: Table A= [1,2,3,4,5] and Table B =[3,4,5,6,7]
--A FULL join B = [1,2,3,4,5,6,7]
--A                 B
--1                 NULL
--2                 NULL
--3                 3
--4                 4
--5                 5
--Null    6
--NULL 7

--Syntax:
--select */Column_name(s) from Table_Name1
--FULL JOIN  Table_Name2
--ON Table_Name1.Column_name =Table_Name2.Column_name

select * from A Full outer join B ON A.Aid =B.Aid

select A.Aid,B.Aid  from A Full outer join B ON A.Aid =B.Aid
select * from A
select * from B
```

--4.Equi-Join(inner Join)

```
--Equi_join is join but without using a join keyword we can join the two or more tables.
--While writing Equi-join will use where clause

select * from A ,B,C where A.Aid=B.aid and b.Bid =c.Bid
-------------------------------------------

------Equi_join
Equi_join  is join but without using a join keyword we can join the two or more tables.
--While writing Equi-join will use where clause

select * from A ,B,C where A.Aid=B.aid and b.Bid =c.Bid
select * from A_1 ,B_1,C_1 where A_1.aid=B_1.aid and B_1.bid=C_1.bid;
create table EMP_new (id int, name varchar (10),Company varchar (10),Work varchar (10));
insert into EMP_new values (1,'Amit','Info','pune')
insert into EMP_new values (2,'Puja','Tcs','Mumbai')
insert into EMP_new values (3,'Poonam','Tech','Pune')
insert into EMP_new values (4,'Abhi','Logic','Nagpur')
insert into EMP_new values (5,'Kirti','Lim','Nagar')
```

```
select * from EMP_new

create table Job (salary int,base varchar (10),id int)

insert into job values (10000,'Pune',1)
insert into job values (20000,'Mumbai',3)
insert into job values (30000,'Nagpur',4)
insert into job values (40000,'Pune',5)
insert into job values (35000,'Nagar',2)

select * from Job;

select * from EMP_new,job where EMP_new.id=job.id and EMP_new.work=job.base;
```

Q. Find EMP name who worked in a department having location same as their address. (Equi Join)

```
-----Cross Join
--Cross Join is nothing but a cartesian product.

select * from A cross join B

select * from A
select * from B
--By using cross join we can create inner join by providing condition.
select * from a cross join b where a.Aid =b.Aid
select * from A_1 cross join B_1 cross join C_1

---Self join
--Joining a table with itself is nothing but self join.

create table SELF_TEST_EMP(EID int, ENAME varchar(20),ManagerID varchar(20))

insert into SELF_TEST_EMP values(1,'Shivam',2)
insert into SELF_TEST_EMP values(2,'krishna',4)
insert into SELF_TEST_EMP values(3,'meera',NULL)
insert into SELF_TEST_EMP values(4,'radha',2)
insert into SELF_TEST_EMP values(5,'bali',1)

select * from SELF_TEST_EMP

select * from SELF_TEST_EMP as T1 ,SELF_TEST_EMP as T2 where T1.ManagerID = T2.EID
select T1.eid ,T1.Ename from SELF_TEST_EMP as T1 ,SELF_TEST_EMP as T2 where T1.ManagerID
= T2.EID
```

Q. Display name and respected manager name. (Self join)
Use same table -SELF_TEST_EMP

--Date and Time Function

```
--getdate
select getdate() as Todays date-- Todays date

select getdate() -1 as Yesterday date --Yesterday date

select getdate() +1 as Tomorrow date --Tomorrow date

select getdate() +2

--There are three different functions in SQL to modify or perform any date related task
--1.DATEDIFF()
--2.DATEPART()
--3.DATEADD()

--1.datediff() function

--The datediff function requires 3 argument(s).
--If we provide more than 3 arguments then it will through an exception

--(YY,MM,DD,HH,Minutes and seconds)

select DATEDIFF(YYYY,'1987/09/13','2021/09/13')

select DATEDIFF(HH,getdate(),GETDATE()+2)
--syntax : DATEDIFF(interval,date1,date2)

--interval
--Year,YYYY, YY = Year
--Quarter,QQ, Q = Quarter
--Month - MM, M = Month
--DAYOFYEAR - day of the year
--DAY,dy,y = day
--WEEK,WW,WK = weekday
--HOUR,HH = hour
--MINUTE,MI,N = Minute
--SECOND,SS,S = Second
--MILISECOND , MS = Millisecond


select datediff(MINUTE,'2015/01/01','2021/08/01')

--Q.HOW  to calculate your age ?

select DATEDIFF(YY,'1999/08/15',getdate()) as Present_Age


select DATEDIFF(YEAR,'MONTH',getdate()) as Present_Age
```

```
Create table Account_details (
ACCT_NUMBER int primary key identity(11112881,1),
ACCT_NAME varchar(20),
ACCT_OPEN_DATE date,
BRANCH Varchar(20))

insert into Account_details values ('Shubham','2015/12/09','MUMBAI')
insert into Account_details values ('Rihan','2016/01/12','Jaipur')
insert into Account_details values ('Sheetal','2017/08/11','GOA')
insert into Account_details values ('Priyanka','2017/01/01','Chennai')
insert into Account_details values ('Manik','2015/01/08','Agra')
insert into Account_details values ('Veena','2021/01/01','Patna')
insert into Account_details values ('Rohan','2019/07/01','Pune')
insert into Account_details values ('Laxmi',GETDATE(),'rohatak')
insert into Account_details values ('Jinal',GETDATE(),'Indore')

select * from Account_details



select GETDATE()

select ACCT_NUMBER,ACCT_NAME,ACCT_OPEN_DATE ,
DATEDIFF(MM,ACCT_OPEN_DATE,GETDATE()) as Ageofaccount from Account_details
where DATEDIFF(yy,ACCT_OPEN_DATE,GETDATE()) >1


--Q.What is the age of your bank account

select ACCT_NUMBER, ACCT_NAME, DATEDIFF(YY,ACCT_OPEN_DATE,getdate()) as
ACCOUNT_AGE from Account_details

--Q.Calculate the no of accounts which is opened during the current year.

select ACCT_NUMBER, ACCT_NAME, DATEDIFF(YY,ACCT_OPEN_DATE,getdate()) as
ACCOUNT_AGE,count(*) from Account_details
where DATEDIFF(YY,ACCT_OPEN_DATE,getdate()) =0
```

--2.DATEPART

```
--This will allow you to display the date part
--Syntax : DATEPART(interval,date/column_name)

select getdate()
select DATEPART(HH,GETDATE())

select * from Account_details
select *,datepart(YY,ACCT_OPEN_DATE) as date from Account_details where
datepart(YY,ACCT_OPEN_DATE) =2021
```

select * from Account_details where ACCT_OPEN_DATE in ('2021')

--if we want to validate date related column which is in terms of timestamp
--and it is very difficult to mention each and every time stamp related column with every date
--in order to avoid that we can use date part so it will consider with mentioned interval.

select count(*) from Account_details where DATEPART(YY,ACCT_OPEN_DATE) in ('2021','2015')

select datepart(yy,getdate()) as years, datepart(MM,getdate()) as months --- yers and months

--3.DATEADD()

--it will allow you to add the dates.
--it will accept three arguments.
--syntax : DATEADD(interval,value,date/datecolumn)

select DATEADD(DD,30,GETDATE()) as after30days
