Sr.	Practical
Lab-1	1. Why Database? Advantages of Database. 2. Different types of Databases & tools/editors available for it. 3. What is SQL?&Components of SQL (DDL, DML, DCL, DQL, TCL) 4. Introduction to Editor (SQL Server Management Studio). 5. Introduction to Database, Table, Field, Row, Record. 6. Introduction to various data types INT, CHAR, VARCHAR, DATETIME, BIT, DECIMAL

Lab-2

Create Database with Name: **BANK_INFO**

Create following tables under BANK_INFO database. (Any two with Design Mode)

DEPOSIT	
Column_Name	**DataType**
ACTNO	INT
CNAME	VARCHAR(50)
BNAME	VARCHAR(50)
AMOUNT	DECIMAL(8,2)
ADATE	DATETIME

BRANCH	
Column_Name	**DataType**
BNAME	VARCHAR(50)
CITY	VARCHAR(50)

CUSTOMERS	
Column_Name	**DataType**
CNAME	VARCHAR(50)
CITY	VARCHAR(50)

BORROW	
Column_Name	**DataType**
LOANNO	INT
CNAME	VARCHAR(50)
BNAME	VARCHAR(50)
AMOUNT	DECIMAL(8,2)

Insert the data into tables using query as shown below. (Any two with design)

DEPOSIT

ACTNO	CNAME	BNAME	AMOUNT	ADATE
101	ANIL	VRCE	1000.00	01-MAR-95
102	SUNIL	AJNI	5000.00	04-JAN-96
103	MEHUL	KAROLBAGH	3500.00	17-NOV-95
104	MADHURI	CHANDI	1200.00	17-DEC-95
105	PRMOD	M.G. ROAD	3000.00	27-MAR-96
106	SANDIP	ANDHERI	2000.00	31-MAR-96
107	SHIVANI	VIRAR	1000.00	05-SEP-95
108	KRANTI	NEHRU PLACE	5000.00	02-JUL-95
109	MINU	POWAI	7000.00	10-AUG-95

BRANCH

BNAME	CITY
VRCE	NAGPUR
AJNI	NAGPUR
KAROLBAGH	DELHI
CHANDI	DELHI
DHARAMPETH	NAGPUR
M.G. ROAD	BANGLORE
ANDHERI	BOMBAY
VIRAR	BOMBAY
NEHRU PLACE	DELHI
POWAI	BOMBAY

CUSTOMERS

CNAME	CITY
ANIL	CALCUTTA
SUNIL	DELHI
MEHUL	BARODA
MANDAR	PATNA
MADHURI	NAGPUR
PRAMOD	NAGPUR
SANDIP	SURAT
SHIVANI	BOMBAY
KRANTI	BOMBAY
NAREN	BOMBAY

BORROW

LOANNO	CNAME	BNAME	AMOUNT
201	ANIL	VRCE	1000.00
206	MEHUL	AJNI	5000.00
311	SUNIL	DHARAMPETH	3000.00
321	MADHURI	ANDHERI	2000.00
375	PRMOD	VIRAR	8000.00
481	KRANTI	NEHRU PLACE	3000.00

2.1 From the above given tables perform the following queries using SELECT statement:

1. Retrieve all data from table DEPOSIT.
2. Retrieve all data from table BORROW.
3. Retrieve all data from table CUSTOMERS.
4. Display Account No, Customer Name & Amount from DEPOSIT.
5. Display Loan No, Amount from BORROW.
6. Display loan details of all customers who belongs to ‘ANDHERI’ branch.
7. Give account no and amount of depositor, whose account no is equals to 106.
8. Give name of borrowers having amount greater than 5000.
9. Give name of customers who opened account after date '1-12-96'.
10. Display name of customers whose account no is less than 105.
11. Display name of customer who belongs to either ‘NAGPUR’ Or ‘DELHI’. (**OR & IN**)
12. Display name of customers with branch whose amount is greater than 4000 and account no is less than 105.
13. Find all borrowers whose amount is greater than equals to 3000 & less than equals to 8000.

(**AND & BETWEEN**)

14. Find all depositors who do not belongs to 'ANDHERI' branch.
15. Display the name of borrowers whose amount is *NULL*.
16. Display Account No, Customer Name & Amount of such customers who belongs to 'AJNI', 'KAROLBAGH' Or 'M.G. ROAD' and Account No is less than 104.
17. Display all the details of first five customers.
18. Display all the details of first three depositors whose amount is greater than 1000.
19. Display Loan No, Customer Name of first five borrowers whose branch name does not belongs to 'ANDHERI'.
20. Retrieve all unique cities using DISTINCT. **(**Use **Customers Table)**
21. Retrieve all unique branches using DISTINCT. **(**Use **Branch Table)**
22. Retrieve all the records of customer table as per their city name in ascending order.
23. Retrieve all the records of deposit table as per their amount column in descending order.
24. Retrieve all the details of customers in which descending order of their city name.
25. Show all unique borrowers& label the column UNI_Borrowers. (Display only Names)

2.2 From the above given tables perform the following queries using UPDATE statement:

1. Update deposit amount of all customers from 3000 to 5000.
2. Change branch name of ANIL from VRCE to C.G. ROAD. (Use **Borrow Table**)
3. Update Account No of SANDIP to 111 & Amount to 5000.
4. Give 10% Increment in Loan Amount.
5. Update deposit amount of all depositors to 5000 whose account no between 103 & 107.
6. Update amount of loan no 321 to *NULL*.
7. Change Loan number from 201 to 401 & also change branch name from VRCE to AJNI.
8. Modify customer name ANIL to ANIL JAIN.
9. Change Name to Ramesh, Branch Name VRCE & Amount 5500, Whose Account Number is 102.
10. Make Branch Name & Amount NULL, Whose Loan Number is 481 & Name is KRANTI.

2.3 From the above given tables perform the following queries using DELETE/DROP/TRUNCATE statement:

1. Delete records of Customer table that belongs to BOMBAY City.
2. Delete all account numbers whose amount less than equals to 1000.
3. Delete borrowers whose branch name is 'AJNI'.
4. Delete all the borrowers whose loan number between 201 to 210.
5. Delete customers who opened account after date '01-DEC-96'. (Use **DEPOSIT** table)
6. Delete all the records of Customers table. (Use **TRUNCATE**)
7. Remove all customers whose name is ANIL & Account Number is 101.
8. Delete all the depositors who do not belongs to 'ANDHERI' branch.
9. Delete all the borrowers whose loan amount is less than 2000 and does not belong to VRCE branch.
10. Remove Branch table. (Use **DROP**)

Lab-3

Create following table using query according to the definition.

Students	
Column_Name	**DataType**
StuID	INT
FirstName	VARCHAR(25)
LastName	VARCHAR(25)
Website	VARCHAR(50)
City	VARCHAR(25)
Division	VARCHAR(20)

Insert the following records in the Students table.

StuID	FirstName	LastName	Website	City	Division
1011	Keyur	Patel	techonthenet.com	Rajkot	II-BCX
1022	Hardik	Shah	digminecraft.com	Ahmedabad	I-BCY
1033	Kajal	Trivedi	bigactivities.com	Baroda	IV-DCX
1044	Bhoomi	Gajera	checkyourmath.com	Ahmedabad	III-DCW
1055	Harmit	Mitel	*NULL*	Rajkot	II-BCY
1066	Ashok	Jani	*NULL*	Baroda	II-BCZ

From the above given tables perform the following queries using LIKE Operator:

1. Display the name of students whose name starts with ‘k’.
2. Display the name of students whose name consists of five characters.
3. Retrieve the first name & last name of students whose city name ends with a & contains six characters.
4. Display all the students whose last name ends with ‘tel’.
5. Display all the students whose first name starts with ‘ha’ & ends with ‘t’.
6. Display all the students whose first name starts with ‘k’ and third character is ‘y’.
7. Display the name of students having no website and name consists of five characters.
8. Display all the students whose last name consists of ‘jer’.
9. Display all the students whose city name starts with either ‘r’ or ‘b’.
10. Display all the name students having websites.
11. Display all the students whose name starts from alphabet A to H.
12. Display all the students whose name’s second character is vowel.
13. Display student’s name whose city name consist of ‘rod’.
14. Retrieve the First & Last Name of students whose website name starts with ‘bi’.
15. Display student’s city whose last name consists of six characters.
16. Display all the students whose city name consist of five characters & not start with ‘ba’.
17. Show all the student’s whose division starts with ‘II’.
18. Find out student’s first name whose division contains ‘bc’ anywhere in division name.
19. Show student id and city name in which division consist of six characters and having website name.
20. Display all the students whose name’s third character is consonant.

Lab-4

Create following table using query according to the definition.

Student	
Column_Name	**DataType**
Enrollment_No	VARCHAR(20)
Name	VARCHAR(25)
CPI	DECIMAL(5,2)

Birthdate	DATETIME

From the above given table perform the following queries using ALTER statement:

1. Add two more columns City VARCHAR (20) NULL and Backlog INT NOT NULL.
2. Change the size of NAME column of student from VARCHAR (25) to VARCHAR (35).
3. Change the data type DECIMAL to INT in CPI Column.
4. Rename Column Enrollment No to ENO.
5. Delete Column City from the STUDENT table.
6. Change name of table STUDENT to STUDENT_MASTER.
7. Remove Column Backlog from the table.
8. Change Constraint of Name Column from NULL to NOT NULL.
9. Rename Column Birthdate to BDate.
10. Change the datatype of ENO Column from VARCHAR (20) to VARCHAR (12)

Lab-5

Constraints:

Define Primary Key, Foreign Key, Unique Key, Auto Increment, Default Values, NULL, NOT NULL, Check constraints as given below.

Student_Master		
Column_Name	**DataType**	**Remarks**
StudentID	Int	Primary Key, Auto Increment, Not Null
Enrollment_No	VARCHAR(20)	Unique Key, Not Null
Name	VARCHAR(25)	Not Null
CPI	DECIMAL(5,2)	Do not allow SPI more than 10, Null
JoiningDate	DATETIME	Set Default value getdate(), Not Null
Bklog	Int	Do not allow Bklog less than 0, Not Null
CityID	Int	Foreign Key, Not Null
StateName	VARCHAR(50)	Default value as 'Gujarat' in StateName to all new records If no other value is Specified

City_Master		
Column_Name	**DataType**	**Remarks**
CityID	Int	Primary Key, Auto Increment, Not Null
CityName	VARCHAR(20)	Unique Key, Not Null
PinCode	VARCHAR(10)	Null
STDCode	VARCHAR(10)	Null

Lab-6 **Math functions**

1. Display the result of 5 multiply by 30.
2. Find out the absolute value of -25, 25, -50 and 50.
3. Find smallest integer value that is greater than or equal to 25.2, 25.7 and -25.2.
4. Find largest integer value that is smaller than or equal to 25.2, 25.7 and -25.2.
5. Find out remainder of 5 divided 2 and 5 divided by 3.
6. Find out value of 3 raised to 2nd power and 4 raised 3rd power.
7. Find out the square root of 25, 30 and 50.
8. Find out the square of 5, 15, and 25.
9. Find out the value of PI.
10. Find out round value of 157.732 for 2, 0 and -2 decimal points.
11. Find out exponential value of 2 and 3.
12. Find out logarithm having base b having value 10 of 5 and 100.
13. Find sine, cosine and tangent of 3.1415.
14. Find sign of -25, 0 and 25.
15. Generate random number using function.

String functions

1. Find the length of following. (I) NULL (II) ‘ hello ’ (III) Blank
2. Display your name in lower & upper case.
3. Display first three characters of your name.
4. Display 3rd to 10th character of your name.
5. Write a query to convert ‘abc123efg’ to ‘abcXYZefg’ & ‘abcabcabc’ to ‘ab5ab5ab5’ using REPLACE.
6. Write a query to display ASCII code for ‘a’,’A’,’z’,’Z’, 0, 9.
7. Write a query to display character based on number 97, 65,122,90,48,57.
8. Write a query to remove spaces from left of a given string ‘hello world ‘.
9. Write a query to remove spaces from right of a given string ‘ hello world ‘.
10. Write a query to display first 4 & Last 5 characters of ‘SQL Server’.
11. Write a query to convert a string ‘1234.56’ to number (Use CAST()).
12. Write a query to convert a float 10.58 to integer (UseCONVERT()).
13. Put 10 space before your name using function.
14. Combine two strings (Your name & Surname) using + sign as well as CONCAT ().
15. Find reverse of “Darshan”.
16. Repeat your name 3 times.
17. Delete 3 characters from a string, starting in position 1, and then insert "HTML" in position 1. (Use STUFF())
18. From Data, returns the first non-null value in a list. (Use COALESCE())
19. Tests whether the expression is numeric. (Use ISNUMERIC())
20. Search for "t" in string "Customer", and return its position. (Use CHARINDEX())

Lab-7 **Date Functions**

1. Write a query to display the current date & time. Label the column Today_Date.
2. Write a query to find new date after 365 day with reference to today.
3. Display the current date in a format that appears as may 5 1994 12:00AM.
4. Display the current date in a format that appears as 03 Jan 1995.
5. Display the current date in a format that appears as Jan 04, 96.
6. Write a query to find out total number of months between 31-Dec-08 and 31-Mar-09.
7. Write a query to find out total number of years between 25-Jan-12 and 14-Sep-10.
8. Write a query to find out total number of hours between 25-Jan-12 7:00 and 26-Jan-12 10:30.
9. Write a query to extract Day, Month, Year from given date 12-May-16.
10. Write a query that adds 5 years to current date.
11. Write a query to subtract 2 months from current date.
12. Extract month from current date using datename () and datepart () function.
13. Write a query to find out last date of current month.
14. Write a query to display date & time after 30 days from today.
15. Calculate your age in years and months.

Aggregate Functions

- **Create table Student_Marks with Sid int not null, SName varchar (50) not null & Marks int not null columns & insert records as given below.**

Student_Marks		
Sid	SName	Marks
1	John	90
2	Martin	80
3	Carol	89
4	Jack	99
5	Rose	88
6	Mary	90

1. Find total number of students.
2. Find total of marks scored by all students.
3. Find average marks of all students.
4. Find minimum marks scored from all students.
5. Find maximum marks scored from all students.

Lab-8 **Aggregate Functions**

- **Create table Employee with EID int not null, ENamevarchar (50) not null, Department varchar (50) not null, Salary Decimal (8,2) not null, JoiningDatedatetime not null &Cityvarchar (50) not null.**

Employee					
EID	EName	Department	Salary	JoiningDate	City
101	Rahul	Admin	56000	01-Jan-90	Rajkot
102	Hardik	IT	18000	25-Sep-90	Ahmedabad
103	Bhavin	HR	25000	14-May-91	Baroda
104	Bhoomi	Admin	39000	08-Feb-91	Rajkot
105	Rohit	IT	17000	23-Jul-90	Jamnagar
106	Priya	IT	9000	18-Oct-90	Ahmedabad
107	Neha	HR	34000	25-Dec-91	Rajkot

1. Display the Highest, Lowest, Total, and Average salary of all employees& label the columns Maximum, Minimum, Total_Sal and Average_Sal, respectively.
2. Find total number of employees of EMPLOYEE table.
3. Retrieve maximum salary from IT department.
4. Count total number of cities of employee without duplication.
5. Display city with the total number of employees belonging to each city.
6. Display city having more than one employee.
7. Give total salary of each department of EMPLOYEE table.
8. Give average salary of each department of EMPLOYEE table without displaying the respective department name.
9. Give minimum salary of employee who belongs to Ahmedabad.
10. List the departments having total salaries more than 50000 and located in city Rajkot.
11. Count the number of employees living in Rajkot.
12. Display the difference between the highest and lowest salaries. Label the column name to SAL_DIFFERENCE.
13. Display the total number of employees hired before 1st January, 1991.
14. Display total salary of each department with total salary exceeding 35000 and sort the list by total salary.
15. List out department names in which more than two employees.
16. Display Minimum salary of Rajkot City.
17. Display City wise total employees count.
18. List all departments with minimum salaries.
19. Give Total salaries of each city without displaying the respective city name.
20. Find department wise Minimum, Maximum & Total Salaries.

Lab-9 **SET Operators**

- **Create below two tables with RollNo as Int & Name as varchar (50) & insert records as given below.**

Computer	
RollNo	Name
101	Ajay
109	Haresh
115	Manish

Electrical	
RollNo	Name
105	Ajay
107	Mahesh
115	Manish

1. Display name of students who is either in Computer or in Electrical.
2. Display name of students who is either in Computer or in Electrical including duplicate data.
3. Display name of students who is in both Computer and Electrical.
4. Display name of students who are in Computer but not in Electrical.
5. Display name of students who are in Electrical but not in Computer.
6. Display all the details of students who are either in Computer or in Electrical.
7. Display all the details of students who are in both Computer and Electrical.

Select Into

- **Create table Cricket with Name varchar (50), City varchar (50) & Age Int columns & insert records as given below.**

Cricket		
Name	City	Age
Sachin Tendulkar	Mumbai	30
Rahul Dravid	Bombay	35
M. S. Dhoni	Jharkhand	31
Suresh Raina	Gujarat	30

1. Create table World cup from cricket with all the columns.
2. Create table T20 from cricket with first two columns with no data.
3. Create table IPL From Cricket with No Data
4. Insert the Data into IPL from Cricket Whose Second Character Should Be ‘A’ And String Should Have At least 7 Characters in Cricket Name Field.
5. Delete All the Rows From IPL.
6. Delete the Detail of Cricketer Whose City is Jharkhand.
7. Rename the Table IPL to IPL2018.
8. Destroy table T20 with All the Data.

Lab-10 **Joins**

- **Create below tables with given datatype & insert records as given below.**
  - **Student** (Rno int, Name varchar (50), Branch varchar (50))
  - **Result** (RNo int, SPI Decimal (4,2))
  - **Employee** (EmployeeNo varchar (50), Name varchar (50), ManagerNo varchar (50))

Student

Rno	Name	Branch
101	Raju	CE
102	Amit	CE
103	Sanjay	ME
104	Neha	EC
105	Meera	EE
106	Mahesh	ME

Result

Rno	SPI
101	8.8
102	9.2
103	7.6
104	8.2
105	7.0
107	8.9

Employee

EmployeeNo	Name	ManagerNo
E01	Tarun	*NULL*
E02	Rohan	E02
E03	Priya	E01
E04	Milan	E03
E05	Jay	E01
E06	Anjana	E04

1. Combine information from student and result table using cross join or Cartesian product.
2. Display Rno, Name, Branch and SPI of CE branch's student only.
3. Display Rno, Name, Branch and SPI of other than EC branch's student only.
4. Display average result of each branch.
5. Display average result of each branch and sort them in ascending order by SPI.
6. Display average result of CE and ME branch.
7. Perform the left outer join on Student and Result tables.
8. Perform the right outer join on Student and Result tables.
9. Perform the full outer join on Student and Result tables.
10. Retrieve the names of employee along with their manager's name from the Employee table.

- **Create table as per following data& insert records as given below.**
  - **City** (CityID int, CityName varchar (50), Pincode varchar (6), Remarks varchar (250))
  - **Village** (VillageID int, VillageName varchar (50), CityID int)

City

CityID **(Primary Key)**	City Name **(Unique Key)**	Pincode	Remakrs
1	Rajkot	360005	Good
2	Surat	335009	Very Good
3	Baroda	390001	Awesome
4	Jamnagar	361003	Smart
5	Junagadh	362229	Historic
6	Morvi	363641	Ceramic

Village

VillageID **(Primary Key)**	Village Name	CityID **(Foreign Key)**
101	Raiya	1
102	Madhapar	1
103	Dodka	3
104	Falla	4
105	Bhesan	5
106	Dhoraji	5

1. Display all the villages of Rajkot city.
2. Display city along with their villages & pin code.
3. Display the city having more than one village.
4. Display the city having no village.
5. Count the total number of villages in each city.
6. Count the number of cities having more than one village.

Lab-11 **Sub Queries**

- **Create table as per following data.**
  - **Student** (RNo int, Name varchar (50), City varchar (50),DID int)
  - **Academic** (RNo int, SPI Decimal (4,2), Bklog int)
  - **Department** (DID int, DName varchar (50))

Academic

Rno	SPI	Bklog
101	8.8	0
102	9.2	2
103	7.6	1
104	8.2	4
105	7.0	2
106	8.9	3

Department

DID	DName
10	Computer
20	Electrical
30	Mechanical
40	Civil

Student

Rno	Name	City	DID
101	Raju	Rajkot	10
102	Amit	Ahmedabad	20
103	Sanjay	Baroda	40
104	Neha	Rajkot	20
105	Meera	Ahmedabad	30
106	Mahesh	Baroda	10

1. Display details of students who are from computer department.
2. Display name of students whose SPI is more than 8.
3. Display details of students of computer department who belongs to Rajkot city.
4. Find total number of students of electrical department.
5. Display name of student who is having maximum SPI.
6. Display details of students having more than 1 backlog.
7. Display name of student who is having second highest SPI.
8. Display name of students who are either from computer department or from mechanical department.
9. Display name of students who are in same department as 102 studying in.
10. Display name of students whose SPI is more than 9 and who is from electrical department.