Sr.	Practical
1	1. What is SQL? 2. Introduction to Editor (SQL Server Management Studio). 3. Components of SQL (DDL, DML, DCL, DQL, TCL)
2	1. Introduction to Database, Table, Field, Row, Record. 2. Introduction to various data types INT, C HAR, VARCHAR, DATETIME, BIT, DECIMAL
3	Database Name: **BANK_INFO** **Create following tables under BANK_INFO database.**

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.

DEPOSIT

ACTNO	CNAME	BNAME	AMOUNT	ADATE
101	ANIL	VRCE	1000.00	1-3-95
102	SUNIL	AJNI	5000.00	4-1-96
103	MEHUL	KAROLBAGH	3500.00	17-11-95
104	MADHURI	CHANDI	1200.00	17-12-95
105	PRMOD	M.G. ROAD	3000.00	27-3-96
106	SANDIP	ANDHERI	2000.00	31-3-96
107	SHIVANI	VIRAR	1000.00	5-9-95
108	KRANTI	NEHRU PLACE	5000.00	2-7-95
109	MINU	POWAI	7000.00	10-8-95

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

From the above given tables perform the following queries (SELECT Operation):

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

From the above given tables perform the following queries (UPDATE Operation):

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. Display the name of borrowers whose amount is *NULL*.

4

Create following table using query according to the definition.

Employee	
Column_Name	**DataType**
EmpNo	INT
EmpName	VARCHAR(25)
JoiningDate	DATETIME
Salary	DECIMAL (8,2)
City	VARCHAR(20)

Insert the following records in the Employee table.

EmpNo	EmpName	JoiningDate	Salary	City
101	Keyur	5-1-02	12000.00	Rajkot
102	Hardik	15-2-04	14000.00	Ahmedabad
103	Kajal	14-3-06	15000.00	Baroda
104	Bhoomi	23-6-05	12500.00	Ahmedabad
102	Harmit	15-2-04	14000.00	Rajkot

From the above given tables perform the following queries (DELETE Operation):

1. Delete all the records of Employee table having salary greater than and equals to 14000.
2. Delete all the Employees who belongs to 'RAJKOT' city.
3. Delete all the Employees who joined after 1-1-2007.
4. Delete all the records of Employee table. (Use **Truncate**)
5. Remove Employee table. (Use **Drop**)

5 **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 tables perform the following queries (ALTER Operation):

1. Add two more columns City VARCHAR (20) and Backlog INT.
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 the table STUDENT_MASTER.

6 **Create following table using query according to the definition.**

Student	
Column_Name	**DataType**
StuID	INT
FirstName	VARCHAR(25)
LastName	VARCHAR(25)
Website	VARCHAR(50)
City	VARCHAR(25)

Insert the following records in the Student table.

StuID	FirstName	LastName	Website	City
1011	Keyur	Patel	techonthenet.com	Rajkot
1022	Hardik	Shah	digminecraft.com	Ahmedabad
1033	Kajal	Trivedi	bigactivities.com	Baroda
1044	Bhoomi	Gajera	checkyourmath.com	Ahmedabad
1055	Harmit	Mitel	NULL	Rajkot
1066	Ashok	Jani	NULL	Baroda

From the above given tables perform the following queries (LIKE Operation):

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 consist 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.
7	**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 e of 10 and 2. 13. Find out logarithm having base b having value 10 of 5 and 100. 14. Find sine, cosine and tangent of 3.1415. 15. Find sign of -25, 0 and 25. 16. 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 and convert function). 12. Write a query to convert a float 10.58 to integer (Use cast and convert function). 13. Put 10 space before your name using function. 14. Combine two strings using + sign as well as CONCAT (). 15. Find reverse of "Darshan". 16. Repeat your name 3 times. **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. Calculate your age in years and months.

8 **SET Operators**

Create below two tables as per following data.

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 is either in Computer or in Electrical.
7. Display all the details of students who is in both Computer and Electrical.

9 **Create table as per following.**

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

1. Create table Worldcup 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.

10 **Create the EMPLOYEE table and insert following records.**

Employee					
EID	EName	Department	Salary	JoiningDate	City
101	Rahul	Admin	56000	1-Jan-90	Rajkot
102	Hardik	IT	18000	25-Sep-90	Ahmedabad
103	Bhavin	HR	25000	14-May-91	Baroda
104	Bhoomi	Admin	39000	8-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. Give 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 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.

11 **JOINS (Create below tables as per following data)**

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 all students.
3. Display Rno, Name, Branch and SPI of CE branch's student only.
4. Display Rno, Name, Branch and SPI of other than EC branch's student only.
5. Display average result of each branch.
6. Display average result of each branch and sort them in ascending order by SPI.

7. Display average result of CE and ME branch.
8. Perform the left outer join on Student and Result tables.
9. Perform the right outer join on Student and Result tables.
10. Perform the full outer join on Student and Result tables.
11. Retrieve the names of employee along with their manager name from the Employee table.

12 **Create table as per following data.**

City

CityID (Primary Key)	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

VID (Primary Key)	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.

13 **Create below table with following constraints**

1. Do not allow SPI more than 10
2. Do not allow Bklog less than 0.
3. Enter the default value as ‘General’ in branch to all new records IF no other value is Specified.

Student

Rno(PK)	Name	Branch	SPI	Bklog
101	Raju	CE	8.80	0
102	Amit	CE	2.20	3
103	Sanjay	ME	1.50	6
104	Neha	EC	7.65	0
105	Meera	EE	5.52	2
106	Mahesh		4.50	3

- ✓ Try to update SPI of Raju from 8.80 to 12.
- ✓ Try to update Bklog of Neha from 0 to -1.

14 **Sub Queries**

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

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

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.

15 **Views (First create a view then display all views)**

Student				
RNo(PK)	Name	Branch	SPI	Bklog
101	Raju	CE	8.80	0
102	Amit	CE	2.20	3
103	Sanjay	ME	1.50	6
104	Neha	EC	7.65	1
105	Meera	EE	5.52	2
106	Mahesh	EC	4.50	3

1. Create a view Personal with all columns.
2. Create a view Student_Details having columns Name, Branch & SPI.
3. Create a view Academic having columns RNo, Name, Branch.
4. Create a view Student_Data having all columns but students whose bklog more than 2.
5. Create a view Student_Pattern having RNo, Name & Branch columns in which Name consists of four letters.
6. Insert a new record to Academic view. (107, Meet, ME)
7. Update the branch of Amit from CE to ME in Student_Details view.
8. Delete a student whose roll number is 104 from Academic view.

(For More Practice of View Kindly Refer Practical No. 11)

16 **Stored Procedure**

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

1. Create a stored procedure to display all the records. (Rno, Name, Branch, SPI)
2. Create a stored procedure to get a roll number from user and display all the details of it.
3. Create a stored procedure to insert a record in student table. (107, Raj, EE)
4. Create a stored procedure to update Branch of roll number 105 to EC in student table.
5. Create a stored procedure to delete a record in student table whose roll number is 103.
6. Use following commands on above stored procedure. SP_HELP, SP_HELPTEXT, SP_DEPENDS.

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User Defined Functions (UDF)

1. Write a function to print number from 1 to 10. (Using while loop)
2. Write a function to check where given number is ODD or EVEN.
3. Write a function to print ODD numbers between 1 and 10.
4. Write a function to print Sum of numbers from 1 to 50.
5. Write a function to print Sum of even numbers between 1 to 20.
6. Write a function to check weather given number is prime or not.
7. Write a function to inserting even numbers into even table & odd numbers into odd table between 1 to 50.

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Triggers

Student

RNO	Name	Branch
101	Raju	CE
102	Amit	ME
103	Sanjay	CE
104	Neha	EC

Result

Sub1	Sub2	Sub3	Total

Audit

RNO	Description

1. Create a trigger on Student table for Insert , update and delete statement to display a message “Record is affected”.
2. Create a trigger on Student table for Insert statement to insert description (Record with Rno=[101] is inserted on [current date]) in audit table.
3. Create a trigger on Student table for update statement to insert description (Record with Rno=[101] is updated on [current date]) in audit table.
4. Create a trigger on Student table for delete statement to insert description (Record with Rno=[101] is deleted on [current date]) in audit table.
5. Create a trigger on Result table for insert statement to update total marks automatically. Here total marks is sum of of sub1, sub2 and sub3.

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Cursor

Student

RNO	Name	Branch	SPI
101	Raju	CE	8.25
102	Amit	CE	5.52
103	Sanjay	ME	1.50
104	Neha	EC	9.10
105	Meera	EE	7.65

Employee

EID	EName	JoiningDate	Salary
101	Keyur	5-1-2002	1200
102	Hardik	15-2-2004	200
103	Kajal	14-3-2006	1000
104	Bhoomi	23-6-2005	600
105	Harmit	15-2-2004	400

1. Create a cursor to decrease the salary of all employees by 500. Display error message if salary becomes negative and does not decrease salary.
2. Create a cursor to insert details of students of computer branch into NewStudent table.
3. Create a cursor to decrease SPI of all students by 7. Display error message if SPI becomes negative and does not decrease SPI.

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Design below databases at yourself.

1. College_Info
2. Hospital_Info
3. Online_Shopping
4. Cricket_Info
5. Insurance_Info

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