SRM INSTITUTE OF SCIENCE AND TECHNOLOGY



DATABASE MANAGEMENT SYSTEM PROJECT BLOOD BANK MANAGEMENT SYSTEM.

Submitted to: Sindhu.S

PROJECT TEAM

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AIM

The aim is to provide blood donation service to the city recently. Blood Bank Management System (BBMS) is a Web-based application that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank.

This project aims at maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a better way.

Project Aim is to provide transparency in this field, make the process of obtaining blood from a blood bank hassle-free and corruption-free and make the system of blood bank management effective.

Blood Bank donation system can collect blood from many donators in short from various sources and distribute that blood to needy people who require blood.

PROPOSED WORK DETAILS

The proposed work consists of 6 tables that are interconnected. The team members work ontables and keep updating them by implementing queries.

DDL Statements:

In the context of SQL, data definition or data description language (DDL) is a syntaxfor creating and modifying database objects such as tables, indices, and users.

- CREATE to create a new table or database.
- ALTER for alteration.
- Truncate to delete data from the table.
- DROP to drop a table
- RENAME to rename a table.

1.Donor Table :-

It contains the details of donor along with ID,Name,age,sex,blood_type and phone number.Here,Donor_Id is the Primary key.

```
SQL> create table Donor(
2 Donor_Id int,
3 Name varchar(25),
4 Age int,
5 Sex varchar(10),
6 Blood_Type varchar(5),
7 Phonenumber int
8 );
```

Table created.

2.DonatesBloodRecepient Table:-

SQL> create table DonatesBloodRecepient(

- 2 cost int,
- 3 BloodAmount int,
- 4 Blood_Type varchar(5),
- 5 Bloodbag_number int,
- 6 Donor_Id int
- 7);

Table created.

3. Recepient Table:-

It contains Recepient details like Name, Age, sex, Blood_Type.

SQL> create table Recepient(

- 2 Name varchar(15),
- 3 Age int,
- 4 sex varchar(10),
- 5 Blood_Type varchar(5)
- 6);

Table created.

4. Registers Table:-

It contains Details like Donor_Id and Emp_Id.

```
SQL> create table Registers(2 Donor_Id int,3 Emp_Id int4 );
```

Table created.

5. Staff Table:-

It contains details of staff like their Emp_Id,Name,address,Phone number, Salary.Here,Emp_id is primary key.

```
SQL> create table Staff(
2 Emp_Id int,
3 Name varchar(15),
4 Address varchar(10),
5 PhoneNumber int,
6 Salary int
7 );
```

Table created.

6. Bloodinventorymanages Table:

It contains details like quantity of Blood,blood_bag number and blood_Type.

```
SQL> create table Bloodinventorymanages(
    quantity int,
    Bloodbag_Number int,
    Blood_Type varchar(5)
    ;
```

Table created.

SQL> Alter table Bloodinventorymanages 2 add Orders int;

Table altered.

DML Statements

A data manipulation language (DML) is a computer programming language used foradding (inserting), deleting, and modifying (updating) data in a database.

INSERT – is used to insert data into a table.

<u>UPDATE</u> – is used to update existing data within a table.

<u>DELETE</u> – is used to delete records from a database table.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber)

2 values(101, 'Priyansh', 23, 'Male', 'B+', 8452310932);

1 row created.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber) 2 values(102,'Siri',22,'Female','O+',9923157832);

1 row created.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber) 2 values(103,'Pavani',28,'Female','A-',8045692378);

1 row created.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber)

2 values(104,'Raki',31,'Male','A+',9932567819);

1 row created.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber) 2 values(105,'Krish',25,'Male','B-',9566164872);

1 row created.

SQL> insert into Donor(Donor_Id,Name,Age,Sex,Blood_Type,Phonenumber) 2 values(106,'Kumari',30,'Female','AB-',8074001727);

1 row created.

SQL> select * from Donor;

DONOR_ID	NAME	AGE	SEX	BL00D	PHONENUMBER
101	Priyansh	23	Male	B+	8452310932
102	Siri	22	Female	0+	9923157832
103	Pavani	28	Female	Α-	8045692378
104	Raki	31	Male	A+	9932567819
105	Krish	25	Male	B-	9566164872
106	Kumari	30	Female	AB-	8074001727

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(850,250,'A-',021,103);

1 row created.

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(1225,500,'AB-',043,106);

1 row created.

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(850,250,'B+',051,101);

1 row created.

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(1700,750,'O+',053,102);

1 row created.

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(850,250,'B-',032,105);

1 row created.

SQL> insert into

 $Donates BloodRecepient (cost, BloodAmount, Blood_Type, Bloodbag_number, Donor_Id)$

2 values(1700,750,'A+',071,104);

1 row created.

SQL> select * from DonatesBloodRecepient;

COST	BLOODAMOUNT	BLOOD	BLOODBAG_NUMBER	DONOR_ID
850 1225 850	250 500 250	AB-	21 43 51	103 106 101
1700 850 1700	750 250 750	0+ B-	53 32 71	102 105 104
6 rows sele		Α.	,1	104

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Siva',24,'Male','B+');

1 row created.

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Prince',28,'Male','O+');

1 row created.

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Aishu',31,'Female','AB-');

1 row created.

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Pavitra',26,'Female','A+');

1 row created.

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Lucky',21,'Female','B-');

1 row created.

SQL> insert into Recepient(Name,Age,sex,Blood_Type)

2 values('Vaishnavi',30,'Female','A-');

1 row created.

SQL> select * from Recepient;

NAME	AGE SEX BLOOD	
Siva Prince Aishu Pavitra Lucky Vaishnavi	24 Male B+ 28 Male O+ 31 Female AB- 26 Female A+ 21 Female B- 30 Female A-	
6 rows selected.		

SQL> insert into Registers(Donor_Id,Emp_Id)

2 values(104,19911);

1 row created.

SQL> insert into Registers(Donor_Id,Emp_Id)

2 values(101,19912);

1 row created.

SQL> insert into Registers(Donor_Id,Emp_Id)
2 values(106,19913);

1 row created.

SQL> insert into Registers(Donor_Id,Emp_Id)
2 values(102,19914);

1 row created.

SQL> insert into Registers(Donor_Id,Emp_Id)
2 values(105,19915);

1 row created.

SQL> insert into Registers(Donor_Id,Emp_Id)
2 values(103,19916);

1 row created.

SQL> select * from Registers;

DONOR_ID	EMP_ID
104	
101 106	19912 19913
102	
105 103	19915 19916
6 rows sel	ected.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19911,'Saranya','Vizag',8885523416,40000);

1 row created.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19912,'Ishaa','Orissa',9943567821,35000);

1 row created.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19913,'Sreenivas','Chennai',8321456986,42000);

1 row created.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19914,'Priyanka','Bangalore',9321599932,21000);

1 row created.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19915,'Reddy','Mumbai',9912345694,41050);

1 row created.

SQL> insert into Staff(Emp_Id,Name,Address,PhoneNumber,Salary) 2 values(19916,'Sonika','Delhi',9123876124,27000);

1 row created.

SQL> select * from Staff;

EMP_ID	NAME	ADDRESS	PHONENUMBER	SALARY
19911	Saranya	Vizag	8885523416	40000
19912	Ishaa	Orissa	9943567821	35000
19913	Sreenivas	Chennai	8321456986	42000
19914	Priyanka	Bangalore	9321599932	21000
19915	Reddy	Mumbai	9912345694	41050
19916	Sonika	Delhi	9123876124	27000

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(750,071,'A+');

1 row created.

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(250,021,'A-');

1 row created.

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(250,051,'B+');

1 row created.

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(250,032,'B+');

1 row created.

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(750,053,'O+');

1 row created.

SQL> insert into

Bloodinventorymanages(quantity,Bloodbag_Number,Blood_Type) 2 values(500,043,'AB-');

1 row created.

SQL> select * from Bloodinventorymanages;

QUANTITY	BLOODBAG_NUMBER	BLOOD	ORDERS
750	71	A+	
250	21	Α-	
250	51	B+	
250	32	B+	
750	53	0+	
500	43	AB-	
6 rows sele	ected.		

SQL> insert into Bloodinventorymanages(Orders) 2 values(2);

1 row created.

SQL> insert into Bloodinventorymanages(Orders) 2 values(3);

1 row created.

SQL> insert into Bloodinventorymanages(Orders) 2 values(1);

1 row created.

SQL> insert into Bloodinventorymanages(Orders) 2 values(2);

1 row created.

SQL> insert into Bloodinventorymanages(Orders) 2 values(2);

1 row created.

SQL> insert into Bloodinventorymanages(Orders)

2 values(2);

1 row created.

SQL> delete from Bloodinventorymanages 2 where orders=2;

4 rows deleted.

SQL> delete from Bloodinventorymanages 2 where orders=3;

1 row deleted.

SQL> delete from Bloodinventorymanages 2 where orders=1;

1 row deleted.

SQL> select * from Bloodinventorymanages;

QUANTITY	BLOODBAG_NUMBER	BLOOD	ORDERS
750	71	A+	
250	21	Α-	
250	51	B+	
250	32	B+	
750	53	0+	
500	43	AB-	
6 rows sele	ected.		

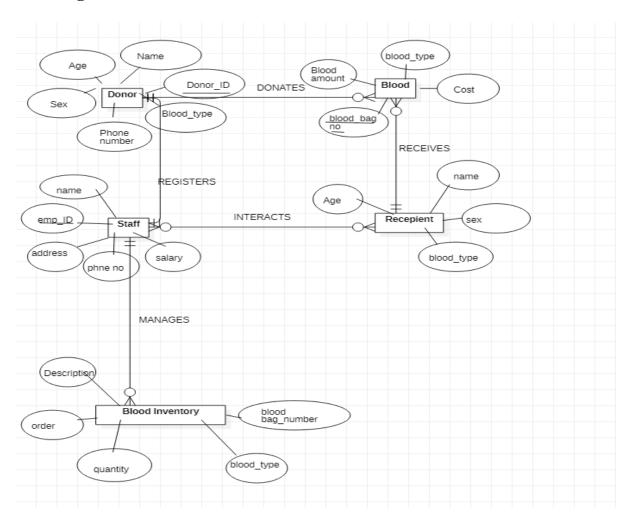
SQL> commit;

Commit complete.

INBUILT FUNCTIONS:

A built-in function is a function that is already available in a programming language, application, or another tool that can be accessed by end users.

ER-Diagram:-



JOINS:-

A joins clause is used to combine rows from two or more tables, based on a related column between them.

Different Types of SQL Joins:

(INNER) JOIN: Returns records that have matching values in both tables

LEFT (OUTER) JOIN: Returns all records from the left table, and the matched records from the right table

RIGHT (OUTER) JOIN: Returns all records from the right table, and the matched records from the left table

FULL (OUTER) JOIN: Returns all records when there is a match in either left or right table.

NATURAL JOIN: Returns all records based on the common columns in the two tables being joined.

SELF JOIN: A table is joined with itself.

```
SQL> select Donor.Blood_Type
2  from Donor
3  LEFT JOIN Recepient ON Donor.Blood_Type=Recepient.Blood_Type;

BLOOD
-----
B+
O+
AB-
A+
B-
A-
6 rows selected.
```

```
SQL> select DonatesBloodRecepient.cost,Donor.Name
2  from DonatesBloodRecepient
3  RIGHT JOIN Donor ON DonatesBloodRecepient.Donor_Id=Donor.Donor_Id;

COST NAME

850 Pavani
1225 Kumari
850 Priyansh
1700 Siri
850 Krish
1700 Raki

6 rows selected.
```

```
SQL> select Registers.Donor_Id,Staff.Name,Staff.Salary
 2 from Registers
 3 FULL JOIN Staff ON Registers.Emp_Id=Staff.Emp_Id;
 DONOR_ID NAME
                          SALARY
-----
     104 Saranya
                          40000
      101 Ishaa
                          35000
     106 Sreenivas
102 Priyanka
                          42000
                          21000
                          41050
      105 Reddy
      103 Sonika
                          27000
6 rows selected.
```

- ${\tt SQL} \succ {\tt select\ DonatesBloodRecepient.Blood_Type,DonatesBloodRecepient.Bloodbag_Number,Bloodinventorymanages.quantity}$
- 2 from DonatesBloodRecepient
- 3 INNER JOIN Bloodinventorymanages ON DonatesBloodRecepient.BloodAmount=Bloodinventorymanages.quantity;

BLOOD BLOOD	BAG_NUMBER	QUANTITY
0+	53	750
A+	71	750
A-	21	250
B+	51	250
B-	32	250
A-	21	250
B+	51	250
B-	32	250
A-	21	250
B+	51	250
B-	32	250
BLOOD BLOOD	BAG_NUMBER	QUANTITY
0+	53	750
A+	71	750
AB-	43	500

```
SQL> select Donor.Donor_Id,Donor.Phonenumber,Recepient.Blood_Type
 2 from Donor
 3 cross join Recepient;
 DONOR_ID PHONENUMBER BLOOD
       101 8452310932 B+
       101 8452310932 0+
       101 8452310932 AB-
       101 8452310932 A+
101 8452310932 B-
       101 8452310932 A-
       102 9923157832 B+
102 9923157832 O+
       102 9923157832 AB-
       102 9923157832 A+
       102 9923157832 B-
  DONOR_ID PHONENUMBER BLOOD
       102 9923157832 A-
       103 8045692378 B+
       103 8045692378 0+
       103 8045692378 AB-
       103 8045692378 A+
       103 8045692378 B-
       103 8045692378 A-
       104 9932567819 B+
       104 9932567819 0+
       104 9932567819 AB-
104 9932567819 A+
```

```
DONOR_ID PHONENUMBER BLOOD
----- ----
      104 9932567819 B-
      104 9932567819 A-
      105 9566164872 B+
      105 9566164872 0+
      105 9566164872 AB-
      105 9566164872 A+
      105 9566164872 B-
      105 9566164872 A-
      106 8074001727 B+
      106 8074001727 0+
      106 8074001727 AB-
 DONOR_ID PHONENUMBER BLOOD
      106 8074001727 A+
      106 8074001727 B-
      106 8074001727 A-
36 rows selected.
```

SUBQUERIES:-

A query within a query is known as subquery.

```
DONOR_ID
            EMP_ID NAME
                                        SALARY
               19911 Saranya
      104
       101
               19912 Ishaa
               19913 Sreenivas
19914 Priyanka
       106
                                          42000
                                         21000
41050
27000
       102
              19915 Reddy
19916 Sonika
      103
6 rows selected.
SQL> select Emp_Id,Name,Salary from Staff where Salary>=(select Salary from Staff where Name='Sonika');
                              SALARY
    19911 Saranya
                               40000
                               35000
     19912 Ishaa
     19913 Sreenivas
    19915 Reddy
19916 Sonika
                                41050
                               27000
SQL> select Name, Age from Recepient where Sex in (select Sex from Recepient where Sex='Female');
                      AGE
            31
Aishu
Pavitra
                       26
Lucky
                       21
{\tt SQL} \succ {\tt Select Name,Age,Sex,Blood\_Type from Donor where age=(select min(age) from Donor );}
    AGE SEX
SQL> select Donor_ID,Blood_Type from DonatesBloodRecepient where BloodAmount = any(select BloodAmount from DonatesBloodRecepient where BloodAmount>250);
 DONOR_ID BLOOD
     106 AB-
102 O+
104 A+
```

PL/SQL PROGRAMS:

PROCEDURES-

```
SQL> CREATE OR REPLACE PROCEDURE today_is AS
   2 BEGIN
   3 DBMS_OUTPUT.PUT_LINE( 'Today is ' || TO_CHAR(SYSDATE, 'DL') );
   4 END today_is;
   5 /

Procedure created.

SQL> BEGIN
   2 today_is();
   3 END;
   4 /

PL/SQL procedure successfully completed.
Today is Tuesday,June 14, 2022
```

FUNCTIONS:

```
SQL> create or replace function
  2 count_rows (Donor in varchar2)
  3 return number
  5
    1_count number;
  6 begin
  7 execute immediate
     'select count(*)
from '|| Donor
  8
  9
 10 into l_count;
 12 return l_count;
 13 end;
 14 /
Function created.
SQL> select count(*) as numberofdonors
  2 from Donor;
NUMBEROFDONORS
```

TRIGGERS:

```
SQL> CREATE OR REPLACE TRIGGER display_salary_changes
  2 BEFORE DELETE OR INSERT OR UPDATE ON Staff
  3 FOR EACH ROW
  4 WHEN (NEW.Emp_Id>0)
  5 DECLARE
  6
      sal_diff number;
  7 BEGIN
      sal_diff := :NEW.salary - :OLD.salary;
  8
      dbms_output.put_line('Old salary: ' | :OLD.salary);
  9
      dbms_output.put_line('New salary: ' || :NEW.salary);
 10
       dbms_output.put_line('Salary difference: ' || sal_diff);
 11
 12 END;
 13 /
Trigger created.
SQL> insert into Staff(Emp Id, Name, Address, PhoneNumber, Salary)
  2 values(19919, 'Lohi', 'Delhi', 9912376231, 41900);
1 row created.
Old salary:
New salary: 41900
Salary difference:
```

IMPLICIT CURSORS:-

```
SQL> DECLARE
 2 total_rows number(2);
 3 BEGIN
 5 UPDATE Staff
 6 SET salary = salary + 500;
 7 IF sql%notfound THEN
 8 dbms_output.put_line('no Staff selected');
 9 ELSIF sql%found THEN
10
     total_rows := sql%rowcount;
11 dbms_output.put_line( total_rows: || ' Staff selected');
12 END IF;
13
    END;
14 /
PL/SQL procedure successfully completed.
Statement Processed
total_rows: 7 Staff selected
```

EXPLICIT CURSORS:-

```
SQL> DECLARE
  2 c_Name Recepient.Name%type;
  3 c_Age Recepient.Age%type;
4 c_Sex Recepient.Sex%type;
5 CURSOR c_Recepient is
        SELECT Name, Age, Sex FROM Recepient;
  6
  7
        BEGIN
  8 OPEN c_Recepient;
 9 LOOP
 10 FETCH c_Recepient into c_Name,c_Age,c_Sex;
 11 EXIT WHEN c_Recepient%notfound;
12 dbms_output.put_line(c_Name || ' ' || c_Age || ' ' || c_Sex);
 13 END LOOP;
 14 CLOSE c_Recepient;
 15 END;
 16 /
PL/SQL procedure successfully completed.
Statement Processed
NAME
                        AGE SEX
Siva
                         24 Male
Prince
                         28 Male
Aishu
                        31 Female
Pavitra
                        26 Female
                        21 Female
Lucky
                  30 Female
Vaishnavi
```

SET OPERATORS:-

```
SQL> select Blood_Type from Donor
 2 union all
 3 select Blood_Type from Recepient;
BLOOD
----
B+
0+
A-
Α+
B-
AB-
B+
0+
AB-
Α+
B-
BLOOD
----
Α-
SQL> select Blood_Type from Donor
 3 select Blood_Type from Recepient;
BLOOD
----
Α+
A-
AB-
B+
B-
0+
```

```
SQL> select Emp_Id from Registers
 2 intersect
3 select Emp_Id from Staff;
  EMP_ID
   19911
    19912
    19913
    19914
    19915
    19916
6 rows selected.
SQL> select Emp_Id from Staff
 2 minus
 3 select Emp_Id from Registers;
   EMP_ID
  19919
1 row selected.
```

VIEWS:-

```
SQL> create view donordetails as
  2 select Name,Age,Blood_Type
3 from Donor;
View created.
SQL> select * from donordetails;
                                   AGE BLOOD
                                   23 B+
Priyansh
Siri
                                    22 0+
Pavani
                                    28 A-
Raki
                                    31 A+
Krish
                                    25 B-
                                    30 AB-
Kumari
6 rows selected.
SQL> update donordetails
 2 SET Name='Surya',Age=29
3 where Blood_Type='O+';
1 row updated.
SQL> select * from donordetails;
                                  AGE BLOOD
NAME
                                   23 B+
Priyansh
                                    29 0+
Surya
                                    28 A-
Pavani
Raki
                                    31 A+
Krish
                                    25 B-
Kumari
                                    30 AB-
```

```
SQL> delete from donordetails
 2 where Name='Raki';
1 row deleted.
SQL> select * from donordetails;
NAME
                            AGE BLOOD
-----
Priyansh
                             23 B+
Surya
                              29 0+
                              28 A-
Pavani
Krish
                             25 B-
Kumari
                             30 AB-
SQL> drop view donordetails;
View dropped.
SQL> select * from donordetails;
select * from donordetails
ERROR at line 1:
ORA-00942: table or view does not exist
SQL>spool off;
```

RESULTS:-

Successfully implemented Blood bank management system Database with all the necessary sql queries. $\label{eq:constraint}$