Ahsanullah University of Science and Technology(AUST)
Department of Computer Science and Engineering

Final Report : Blood Bank Management System

Course No.: CSE4126

Course Title: Distributed Database Systems Lab

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Blood Bank Management System

Objective: The objective of a blood bank management system is to efficiently store, manage, and distribute blood and related products, ensuring timely availability of safe blood for medical treatments, emergencies, and transfusions while maintaining accurate donor records and inventory control.

Database Schema:

Global Schema:

Donor(DID, Name, BloodType, LastDonated, Contact)

Blood_Bank(UnitID, DID, BloodType, CollectionDate, Address)

Transfusion(PID, Name, UnitID, BloodType, TransfusionDate)

Appointment(AID, DID, BloodType, Date)

Fragmentation Schema:

Donor1 = SL(BloodType =”AB+”) Donor

Donor2 = SL(BloodType =”B+”) Donor

Appointment1 = Appointment SJ $_{(Appointment.DID = Donor.DID)}$ Donor1

Appointment2= Appointment SJ $_{(Appointment.DID = Donor.DID)}$ Donor2

Transfusion1 = PJ(Name,BloodType, TransfusionDate) Transfusion

Transfusion2 = PJ(PID, Name,BloodType, TransfusionDate) Transfusion

Blood_Bank1 = SL(Address=”Dhaka”) PJ(UnitID, DID, BloodType, CollectionDate) Blood_Bank

Blood_Bank2 = SL(Address=”Sylhet”) PJ(UnitID, DID, BloodType, CollectionDate) Blood_Bank

Allocation Schema:

$Donor_1^1$, $Donor_2^2$, $Appointment_1^1$, $Appointment_2^2$, $Transfusion_1^{1,2}$, $Transfusion_2^1$, $Blood\_Bank_1^1$, $Blood\_Bank_2^2$

Functionalities :

Tables:

1.*Donor*: Stores information about donors, including their ID, name, blood type, last donation date, and contact details.
2.*Blood Bank*: Tracks blood units, associating them with donors, blood types, collection dates, and addresses.
3.*Transfusion*: Records details of blood transfusions, including patient ID, patient name, donor unit ID, blood type, and transfusion date.
4.*Appointment*: Manages appointments for donors, capturing appointment IDs, donor IDs, desired blood types, and appointment dates.

Functions:

1. **GET_NEXT_APPOINTMENT(DID, CurrentDate)**: Retrieves the next appointment date for a specific donor, considering the current date.
2. **IS_BLOOD_TYPE_AVAILABLE(BloodType, CurrentDate)**: Checks if a specific blood type is available in the blood bank as of the current date.
3. **GET_LAST_DONATION_DATE(DID)**: Retrieves the last donation date for specific donor.
4. **GET_DONOR_INFO(DID)**: Returns detailed information about a specific donor.

Procedures:

1. ADD_DONOR(Name, BloodType, LastDonated, Contact): Adds a new donor to the Donor table.
2. BOOK_APPOINTMENT(DID, BloodType, Date1): Books an appointment for a donor with a specific blood type on a given date.

Package:

BLOOD_BANK_PACKAGE: Initializes the functions and procedures in the body of the package.

Trigger:

trigger1, trigger2, trigger3, trigger4 are created for each of the tables.

Exception:

Exceptions also handled.

These functionalities collectively support the management of donor information, blood unit inventory, appointments, and transfusion records in the blood bank system, ensuring efficient and safe blood donation and distribution.

Outputs:

1.Tables ->

```
       DID NAME                 BLOOD LASTDONAT CONTACT
---------- -------------------- ----- --------- ---------------
         1 John Doe             A+    16-JUN-23 555-1234
         2 ppn Dre              A-    30-MAY-23 555-4586
         3 Emily Brown          AB+   12-JUL-23 555-4567
         4 William Lee          O-    05-JUN-23 555-1572
         5 Olivia Wilson        B+    02-JUL-23 555-2345
         6 Jane Smith           AB+   27-APR-23 555-7748

6 rows selected.


    UNITID        DID BLOOD COLLECTIO ADDRESS
---------- ---------- ----- --------- --------------------
         1          1 A+    27-JUN-23 Dhaka
         2          2 A-    06-JUN-23 Chittagong
         3          5 B+    12-JUL-23 Dhaka
         4          4 O-    25-JUN-23 Chittagong
         5          6 AB+   27-JUL-23 Chittagong
         6          3 AB+   25-JUL-23 Dhaka

6 rows selected.
```

```
       PID NAME                      UNITID BLOOD TRANSFUSI
---------- ---------------------- ---------- ----- ---------
         1 Sarah Johnson                   1 A+    30-JUN-23
         2 Robert Williams                 2 A-    25-JUN-23
         3 Finley Tucker                   6 AB+   25-JUL-23
         4 Layne Nelson                    3 B+    19-JUL-23
         5 Nixon Nelson                    5 AB+   15-JUN-23
         6 Morgan Burns                    4 O-    05-JUL-23

6 rows selected.


       AID        DID BLOOD DATE1
---------- ---------- ----- ---------
         1          5 B+    02-JUL-23
         2          3 AB+   12-JUL-23
         3          1 A+    16-JUN-23
         4          6 AB+   27-MAY-23
         5          4 O-    05-JUN-23
         6          2 A-    30-MAY-23
         7          6 AB+   25-AUG-23

7 rows selected.
```

2. All Functions and Procedures ->

```
Enter value for didfornextappointment: 6
Enter value for nextappointment: 'AB+'
Enter value for bloodavailable: 'O+'
Enter value for didforlastdonationdate: 4
Enter value for didfordonorinfo: 5
Next Appointment Date: 25-AUG-23
Blood Type O+ is not available.
Last Donated in 05-JUN-23
Donor Info - Name: Olivia Wilson, Blood Type: B+, Contact: 555-2345
Donor added successfully.
Appointment booked successfully.

PL/SQL procedure successfully completed.


Trigger created.
```

3. Trigger ->

```
SQL> INSERT INTO Blood_Bank VALUES (7, 3, 'AB+', DATE '2023-07-25', 'Dhaka');
successfully inserted on Blood Bank

1 row created.

SQL>
```

Contribution:

190204041 - Md. Shiful Islam Piash

- Table
- 2 functions, 1 procedure, package

190204047 – Anik Paul

- User Inputs
- 2 functions, 1 procedure, trigger

Conclusion:

In conclusion, a blood bank management system plays a vital role in ensuring the safe and efficient collection, storage, and distribution of blood and related products. It helps maintain accurate donor records, monitor blood inventory, and facilitate patient transfusions. The system's functions, encapsulated in a PL/SQL package, offer essential tools for donor management, appointment scheduling, and blood type availability checks. This system is critical for healthcare institutions to provide timely and life-saving blood transfusions while maintaining data integrity and donor records.