西北工業大學
Northwestern Polytechnical University

Object Oriented Programming Experiment

(U10P32005)

Project Report

Name: Samun Islam Ahmed

Title	Virtual Blood Bank
Group No.	02
Leader	Samun Islam Ahmed(2019380182)
Member(1)	Ahmed Tufahel (2019380181)
Member(2)	Abid Ali (2019380141)
Member(3)	Tafsir Mubtasim Mahmood (2019380179)

June 16, 2021

I. Introduction

The "Virtual Blood Bank" application has been developed into NetBeans IDE to overcome the blood bank problems prevailing in the common social phenomena. This software is supported to eliminate and in some cases reduce the hardships faced by this existing system. Moreover, my group selected this project because of the particular need of the hospital or organization to carry out blood donation information and operations in a smooth and effective manner without facing complexity and hardship through virtual system. Every organization, whether big or small, has challenges to overcome and managing the information of Donor, Blood Bank, Donor Address, Blood Group etc. Virtual Blood Bank software will provide and maintain all the necessary information regarding blood donor, blood group, contact, address of the donor etc.

II. Problem Statement

The percentage of people donating blood is increasing day by day due to awareness to donate blood for those needed. The blood donor has to be managed thoroughly so that there will be no negative effect to the blood receiver. So the main problems I often face while collecting blood or blood donor is,

1.The scarcity of rare blood group during emergency.

2.The unavailable blood group failed to found.

3.Less awareness among people about virtual blood donation instead of offline blood donation activity.

4.Patients Death due to lack of blood during operations.

5.Time consuming at blood donor managing during emergency.

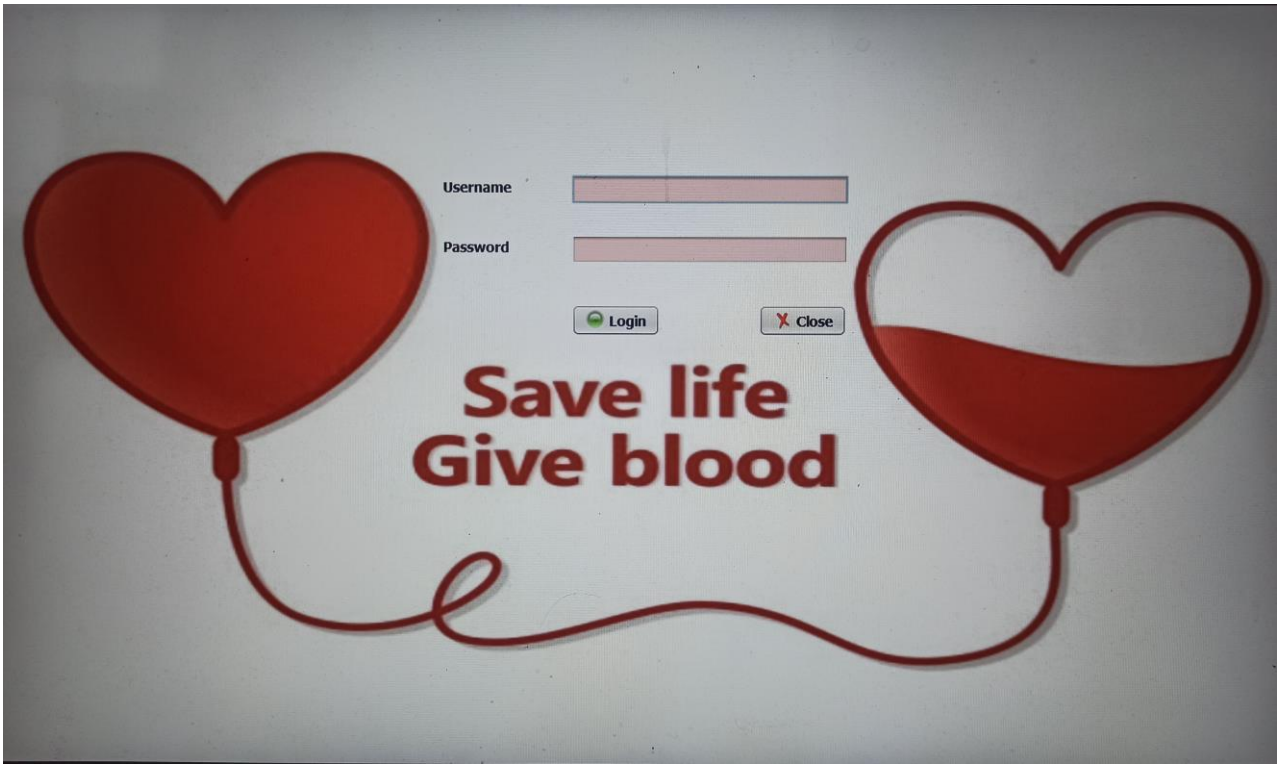
The ‘Virtual Blood Bank’ project aims to make all the procedures automated and therefore with computer system it can be more fast and accurate.

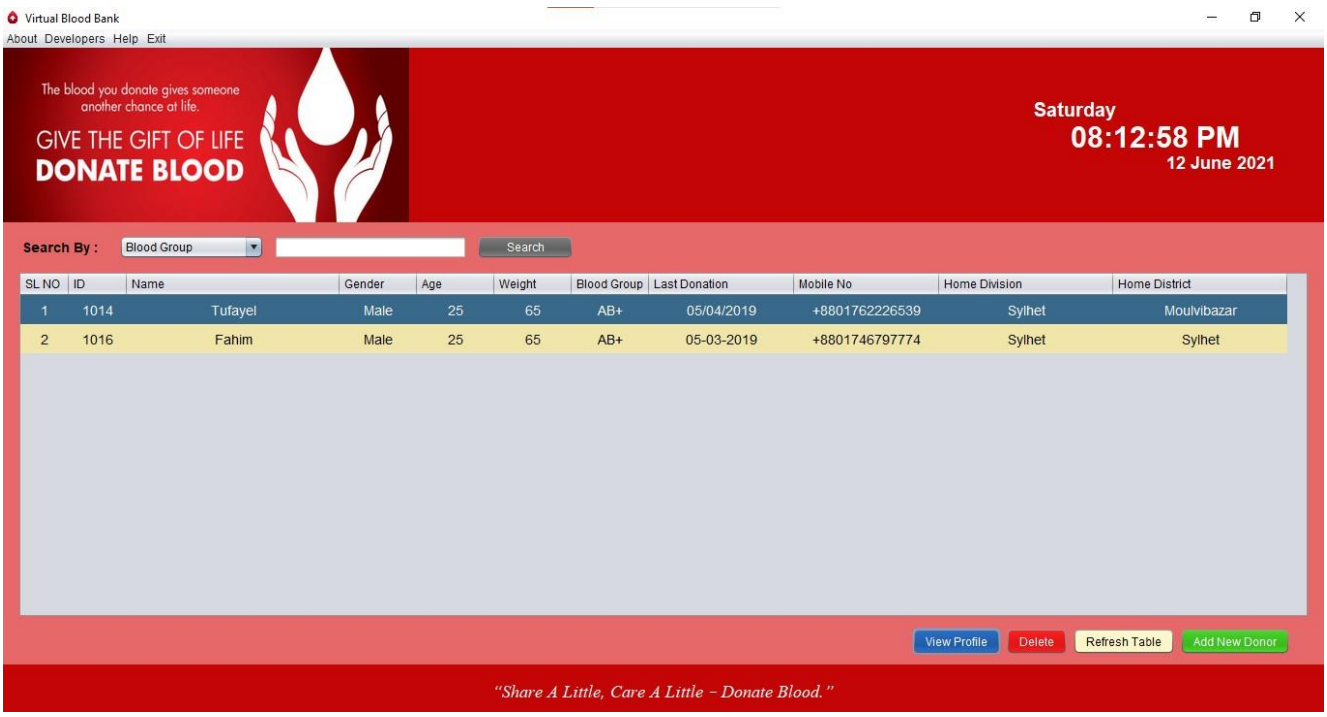
III. Core Design

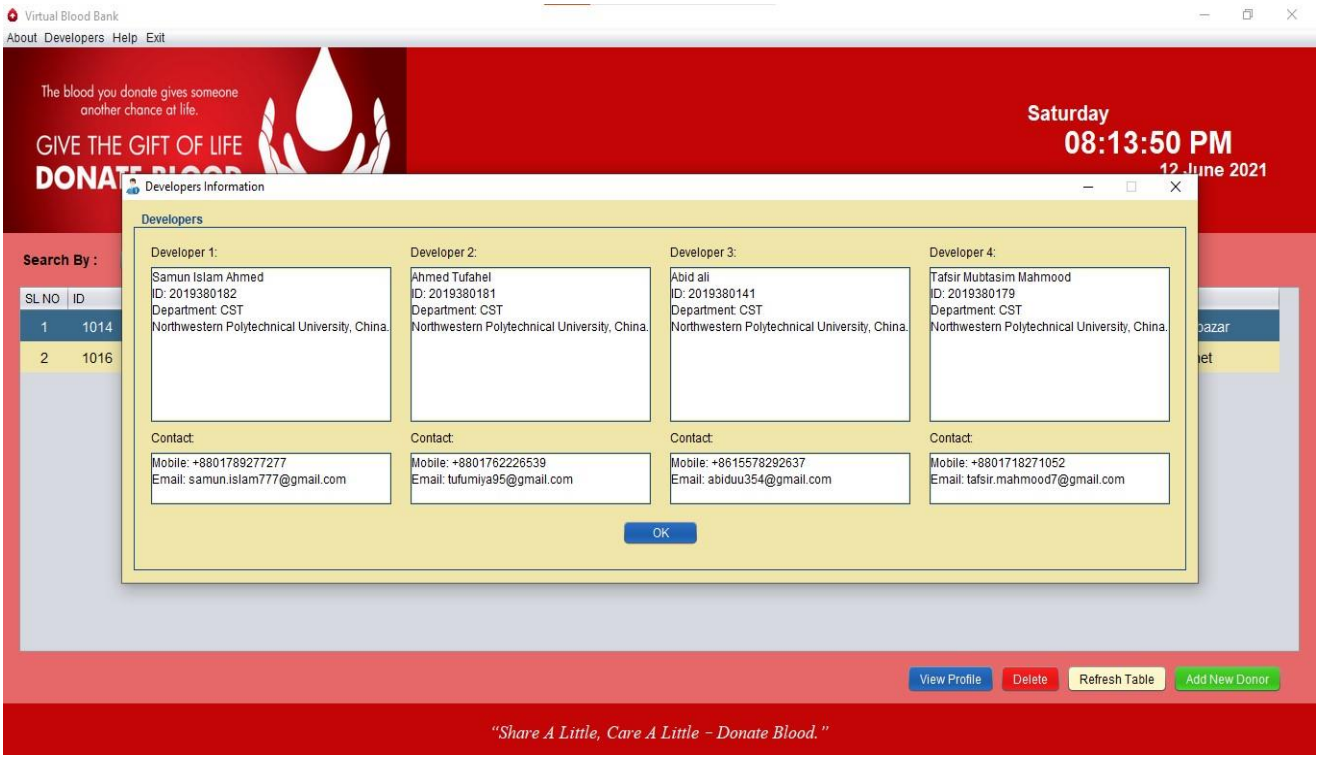
I used AWT, Swing, io, util, sql java component or packages for fronted design and database connector. There are two sets of Java APIs for graphics programming: AWT and Swing. AWT and Swing are used

to develop window-based applications in Java. Awt is an abstract window toolkit that provides various component classes like Label, Button, TextField, etc., to show window components on the screen. All these classes are part of the Java.awt package. Swing is the latest GUI toolkit and is the part of JFC (Java Foundation Classes) built on the top of AWT and written entirely in Java. The javax.swing API provides all the component classes like JButton, JTextField, JCheckbox, JMenu, etc. In our project I have used Java.io component which provided user input and output through data streams, serialization and the file system. Moreover, for date and time facilities I used Java.util package and most importantly I have used java.sql package which provides the API for accessing and processing data stored in a data source i.e. a relational database using the JavaTM programming language and build a connection with a specific database.

DEMO FIGURE:


Username
Password
Login
Close
Save life
Give blood


Virtual Blood Bank
About Developers Help Exit
The blood you donate gives someone another chance at life.
GIVE THE GIFT OF LIFE
DONATE BLOOD
Saturday
08:12:58 PM
12 June 2021
Search By :
Blood Group
Search
SL NO ID Name Gender Age Weight Blood Group Last Donation Mobile No Home Division Home District
1 1014 Tufayel Male 25 65 AB+ 05/04/2019 +8801762226539 Sylhet Moulvibazar
2 1016 Fahim Male 25 65 AB+ 05-03-2019 +8801746797774 Sylhet Sylhet
View Profile
Delete
Refresh Table
Add New Donor
"Share A Little, Care A Little - Donate Blood."


Virtual Blood Bank
About Developers Help Exit
The blood you donate gives someone another chance at life.
GIVE THE GIFT OF LIFE
Saturday
08:13:50 PM
Developers Information
Developers
Developer 1:
Samun Islam Ahmed
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Email: abiduu354@gmail.com
Developer 4:
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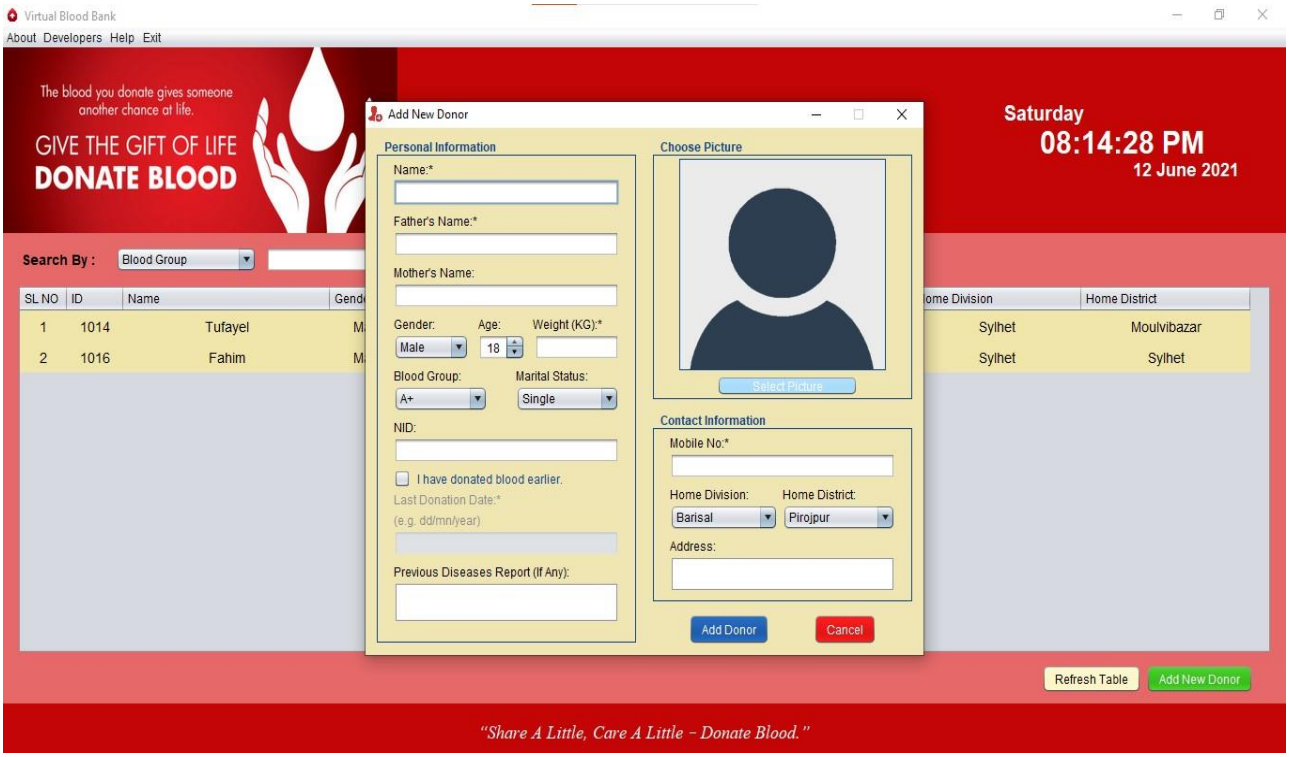
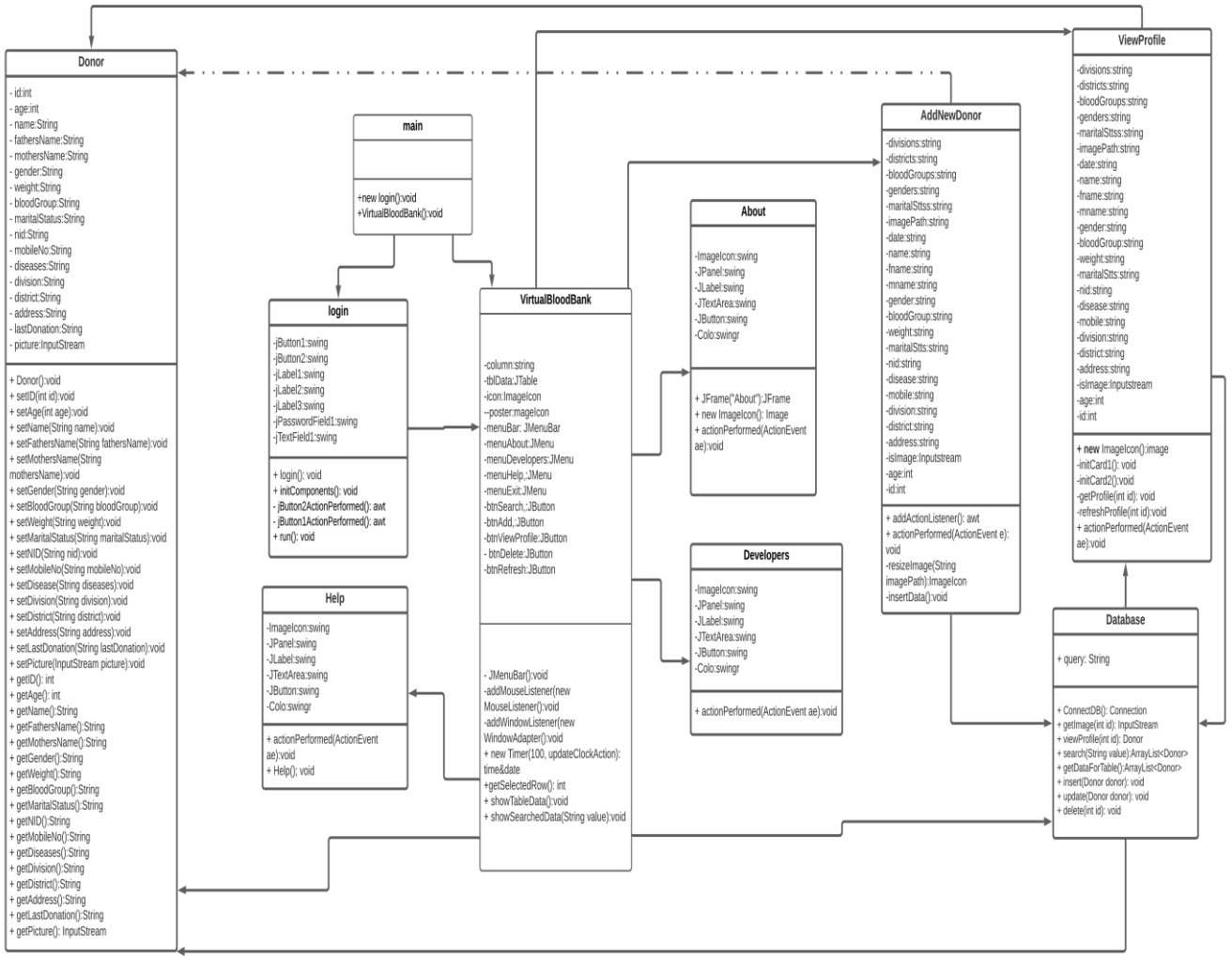
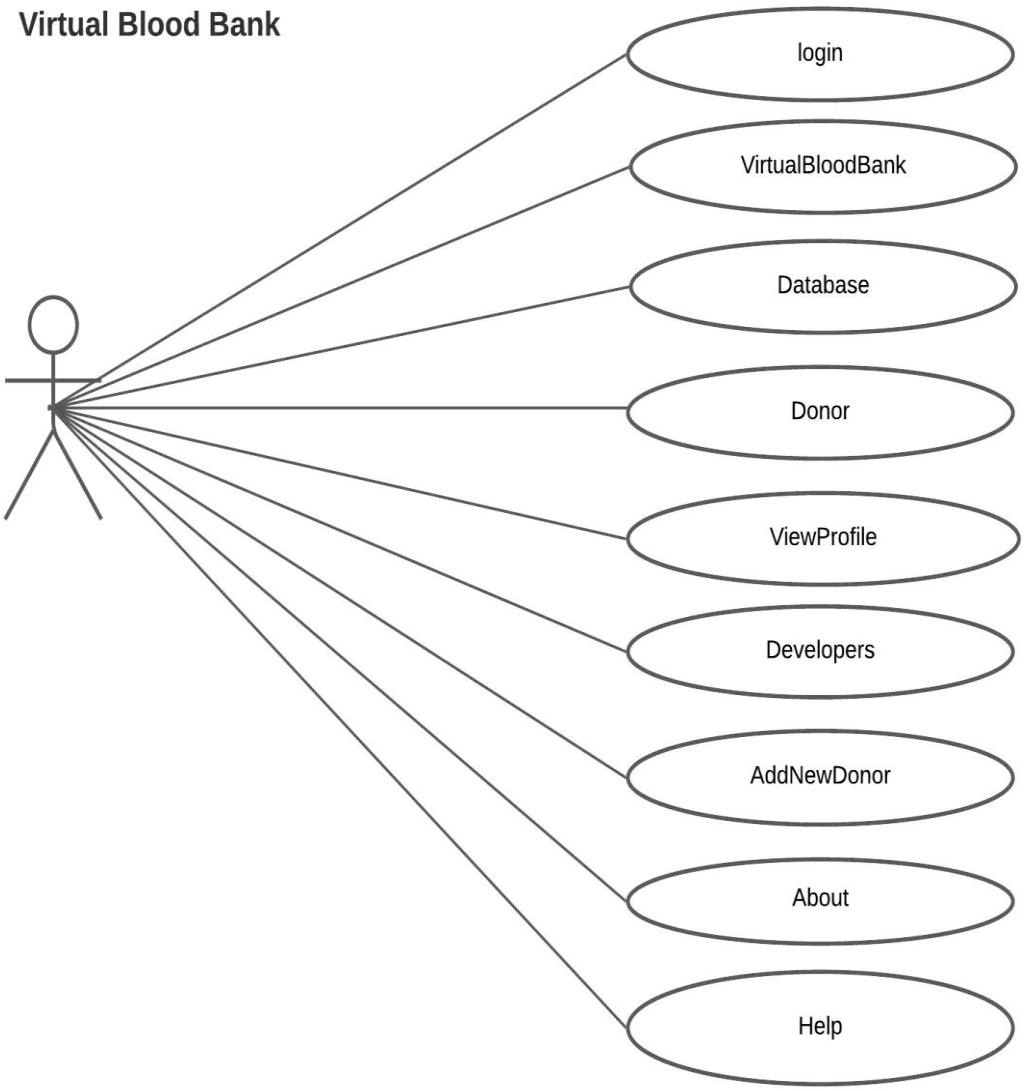
Northwestern Polytechnical University, China.
Contact:
Mobile: +8801718271052
Email: tafsir.mahmood7@gmail.com
OK
Search By :
SL NO
ID
1
1014
2
1016
View Profile
Delete
Refresh Table
Add New Donor
"Share A Little, Care A Little - Donate Blood."


Virtual Blood Bank
About Developers Help Exit
The blood you donate gives someone another chance at life.
GIVE THE GIFT OF LIFE
DONATE BLOOD
Saturday
08:14:28 PM
12 June 2021
Add New Donor
Personal Information
Name:*
Father's Name:*
Mother's Name:
Gender:
Male
Age:
18
Weight (KG):*
Blood Group:
A+
Marital Status:
Single
NID:
I have donated blood earlier.
Last Donation Date:*
(e.g. dd/mn/year)
Previous Diseases Report (If Any):
Choose Picture
Select Picture
Contact Information
Mobile No:*
Home Division:
Barisal
Home District:
Pirojpur
Address:
Add Donor
Cancel
Search By :
Blood Group
SL NO
ID
Name
Home Division
Home District
1
1014
Tufayel
Sylhet
Moulvibazar
2
1016
Fahim
Sylhet
Sylhet
Refresh Table
Add New Donor
"Share A Little, Care A Little - Donate Blood."

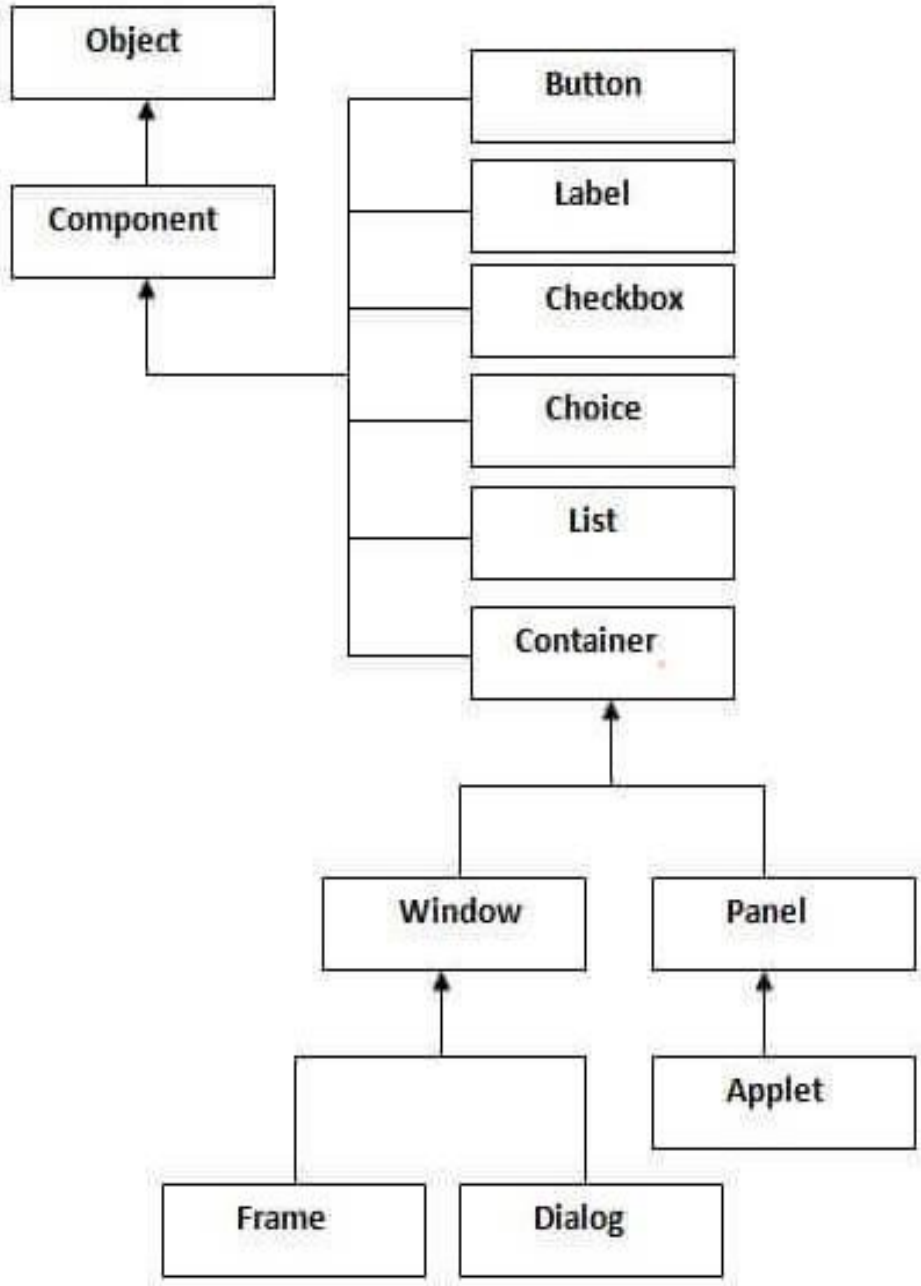
UML DESIGN:


Donor
- id:int
- age:int
- name:String
- fathersName:String
- mothersName:String
- gender:String
- weight:String
- bloodGroup:String
- maritalStatus:String
- nid:String
- mobileNo:String
- diseases:String
- division:String
- district:String
- address:String
- lastDonation:String
- picture:InputStream
+ Donor():void
+ setID(int id):void
+ setAge(int age):void
+ setName(String name):void
+ setFathersName(String fathersName):void
+ setMothersName(String mothersName):void
+ setGender(String gender):void
+ setBloodGroup(String bloodGroup):void
+ setWeight(String weight):void
+ setMaritalStatus(String maritalStatus):void
+ setNID(String nid):void
+ setMobileNo(String mobileNo):void
+ setDisease(String diseases):void
+ setDivision(String division):void
+ setDistrict(String district):void
+ setAddress(String address):void
+ setLastDonation(String lastDonation):void
+ setPicture(InputStream picture):void
+ getID(): int
+ getAge(): int
+ getName():String
+ getFathersName():String
+ getMothersName():String
+ getGender():String
+ getWeight():String
+ getBloodGroup():String
+ getMaritalStatus():String
+ getNID():String
+ getMobileNo():String
+ getDiseases():String
+ getDivision():String
+ getDistrict():String
+ getAddress():String
+ getLastDonation():String
+ getPicture(): InputStream
main
+new login():void
+VirtualBloodBank():void
login
-jButton1:swing
-jButton2:swing
-jLabel1:swing
-jLabel2:swing
-jLabel3:swing
-jPasswordField1:swing
-jTextField1:swing
+ login(): void
+ initComponents(): void
- jButton2ActionPerformed(): awt
- jButton1ActionPerformed(): awt
+ run(): void
VirtualBloodBank
-column:string
-tblData:JTable
-icon:ImageIcon
--poster:mageIcon
-menuBar: JMenuBar
-menuAbout:JMenu
-menuDevelopers:JMenu
-menuHelp:.JMenu
-menuExit:JMenu
-btnSearch,:JButton
-btnAdd,:JButton
-btnViewProfile:JButton
- btnDelete:JButton
-btnRefresh:JButton
- JMenuBar():void
-addMouseListener(new MouseListener():void
-addWindowListener(new WindowAdapter():void
+ new Timer(100, updateClockAction): time&date
+getSelectedRow(): int
+ showTableData():void
+ showSearchedData(String value):void
About
-ImageIcon:swing
-JPanel:swing
-JLabel:swing
-JTextArea:swing
-JButton:swing
-Colo:swingr
+ JFrame("About"):JFrame
+ new ImageIcon(): Image
+ actionPerformed(ActionEvent ae):void
AddNewDonor
-divisions:string
-districts:string
-bloodGroups:string
-genders:string
-maritalSitss:string
-imagePath:string
-date:string
-name:string
-fname:string
-mname:string
-gender:string
-bloodGroup:string
-weight:string
-maritalSits:string
-nid:string
-disease:string
-mobile:string
-division:string
-district:string
-address:string
-islmage:Inputstream
-age:int
-id:int
+ addActionListener(): awt
+ actionPerformed(ActionEvent e): void
-resizeImage(String imagePath):ImageIcon
-insertData():void
ViewProfile
-divisions:string
-districts:string
-bloodGroups:string
-genders:string
-maritalSitss:string
-imagePath:string
-date:string
-name:string
-fname:string
-mname:string
-gender:string
-bloodGroup:string
-weight:string
-maritalSits:string
-nid:string
-disease:string
-mobile:string
-division:string
-district:string
-address:string
-islmage:Inputstream
-age:int
-id:int
+ new ImageIcon():image
-initCard1(): void
-initCard2():void
-getProfile(int id): void
-refreshProfile(int id):void
+ actionPerformed(ActionEvent ae):void
Developers
-ImageIcon:swing
-JPanel:swing
-JLabel:swing
-JTextArea:swing
-JButton:swing
-Colo:swingr
+ actionPerformed(ActionEvent ae):void
Help
-ImageIcon:swing
-JPanel:swing
-JLabel:swing
-JTextArea:swing
-JButton:swing
-Colo:swingr
+ actionPerformed(ActionEvent ae):void
+ Help(); void
Database
+ query: String
+ ConnectDB(): Connection
+ getImage(int id): InputStream
+ viewProfile(int id): Donor
+ search(String value):ArrayList<Donor>
+ getDataForTable():ArrayList<Donor>
+ insert(Donor donor): void
+ update(Donor donor): void
+ delete(int id): void

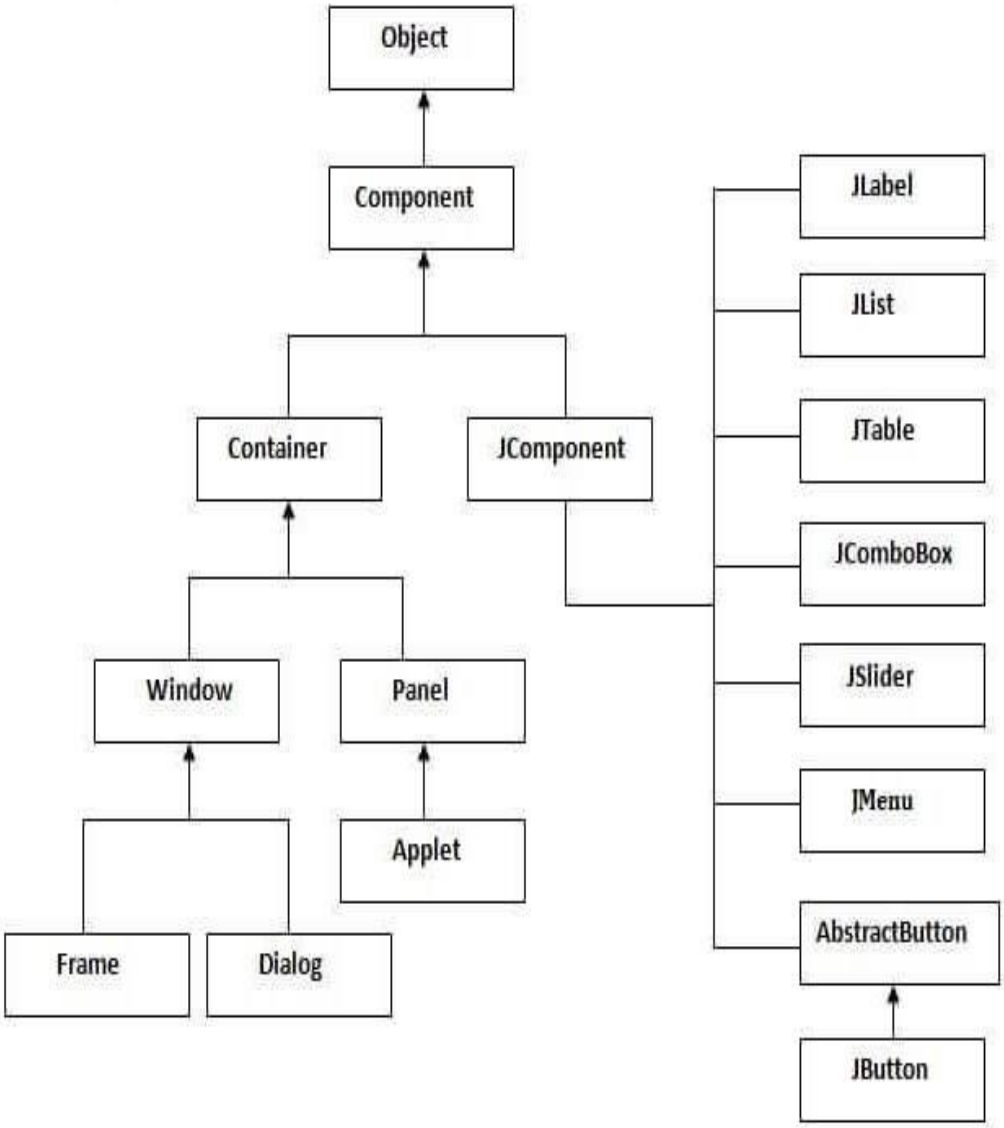
CASE DIAGRAM:



Java AWT Hierarchy:



Java Swing Hierarchy:

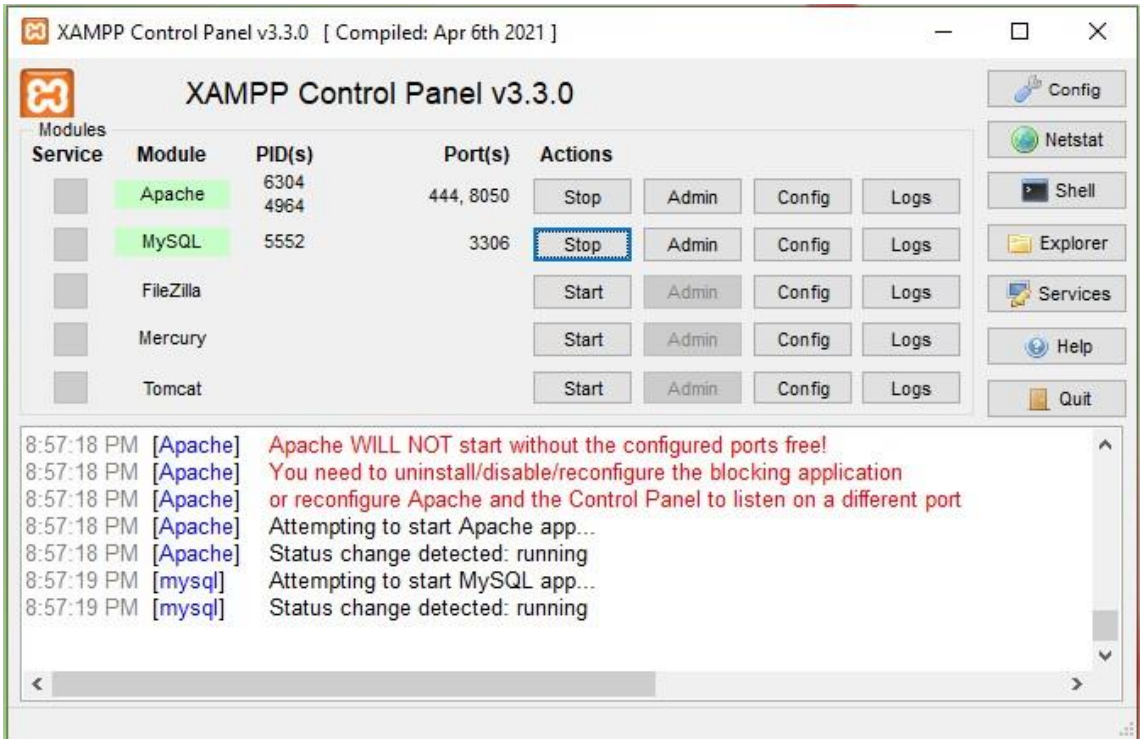


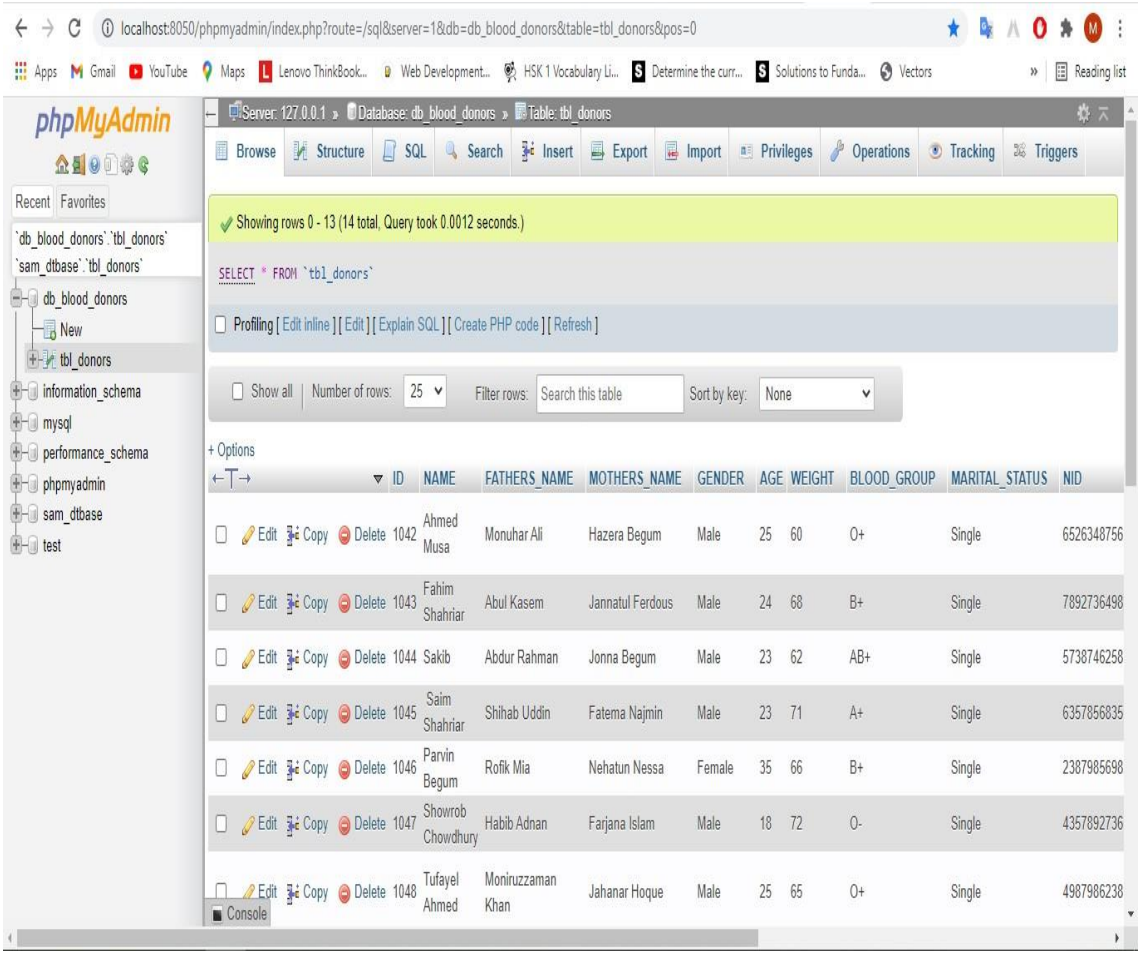
IV. Case Study

In today's world a number of online blood bank databases are available, however none of them offers the capability for the direct contact between the donor and the recipient. This is a major drawback particularly in cases where there is an urgent need of blood. My work aims to overcome this communication barrier. The data collected will be maintained in a central server by a database administrator. To run the project, first of all there should be available internet connection with the pc. Then **MySQL** or phpmyadmin(MySQL administration tools) server controller **XAMP**, **JDK**, and **NetBeans IDE** should be installed in the computer before run the project. I have used XAMP local host server for mysql database connection with NetBeans IDE. However, after setup the mysql or XAMP, **import 'db_blood_donors.sql' into mysql database named 'db_blood_donors'**. I have attached 'db_blood_donors.sql' file to the Email. If database connect successfully then build & run.

```
public class Database {
    public static Connection ConnectDB() {
        Connection con = null;
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/db_blood_donors", "root", "");
            System.out.println("Database Connected.");
        } catch (ClassNotFoundException | SQLException e) {
            JOptionPane.showMessageDialog(null, "Database Connection Failed.");
            System.out.println("Database.ConnectDB():" + e);
        }
```

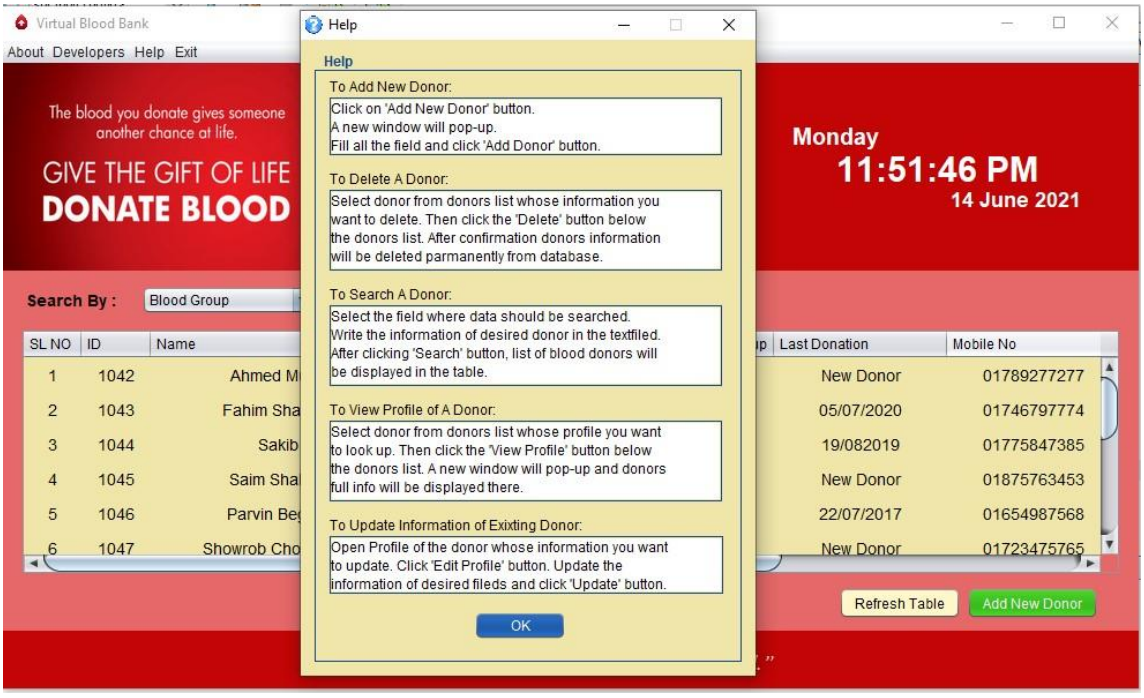




After run the project login page will appear. Then type ‘vbb’ for username and ‘admin’ for password to login into the Virtual Blood

Bank main page.

That's it. After following all the steps above, anyone can easily access all the features of the application and add new donor information to the Virtual Blood Bank. There is a 'Help' options in the Menu bar of this application and from that option anyone can get the information about how to use this software smoothly.



However, to develop this project I read some research's from the following links.

1. https://docs.oracle.com/cd/E19316-01/819-3669/bnbsn/index.html

2.https://www.kashipara.com/project/idea/java/blood-bank-management-system_1199.html

3.https://www.researchgate.net/publication/339032343_Blood_bank_and_Donor_Management_system

4. https://www.save.life/?_branch_match_id=932678552996244068

5.https://www.developer.com/database/creating-a-jdbc-application-in-netbeans-a-step-by-step-guide/

6.https://www.kensoftph.com/2020/10/java-netbeans-connecting-to-mysql.html

7.https://www.geekinsta.com/how-to-connect-java-application-with-mysql-using-netbeans/

8.https://www.researchgate.net/publication/344106581_Blood_Bank_System_using_Database_Security

V. Contribution of My Work in the Project

I have mainly covered the MySQL database creation and AWT Programming part of this Project. Additionally I have built up the VirtualBloodBank, login, AddNewDonor, Database, Donor,

ViewProfile classes of the project and participated by coding ActionEvent, ActionListener, MouseEvent, MouseListener, WindowAdapter, WindowEvent, SimpleDateFormat, ArrayList, ListSelectionEvent, BorderLayout, Cursor, JComboBox, JTextField, JOptionPane, DefaultTableModel, filechooser, MaskFormatter, IOException, JCheckBox, Image events as well as connect and maintain all the java files by calling from the specific action and mouse events in the whole project.

VI. Conclusion

I Developed Virtual Blood Bank applications in Java programming language by using NetBeans IDE. My main purpose is to create a centralized virtual blood banks which makes collecting and storing data easier, upgrade the system as per new technology, Digitize the system for easy usage, keep a check on inventory of blood donor, monitor the achievement etc. This software is portable, efficient, and easily maintainable for large number of clients or hospital or any organization. Our developed web-based virtual blood bank software is unique in its features and more importantly easily customizable.