UNIVERSITY OF PITTSBURGH

DEPARTMENT OF COMPUTER SCIENCE

CS 2310: MULTIMEDIA SOFTWARE ENGINEERING

FINAL PROJECT REPORT

BLOOD DONOR -WEB APPLICATION

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ABSTRACT:

Every two seconds someone needs blood. More than 41,000 blood donations are needed every day. The gift of blood is the gift of life. Blood cannot be manufactured – it can only come from generous donors. One donation can save the lives up to three people. The Blood donor application is built on the lines to arrange for blood during emergency situation. This application notifies people within the premises of the hospital that a particular type of blood group is needed. The Blood Donor is an application that puts the power to save lives in the palm of your hand. It has two interfaces: Donor Interface and Blood Bank Interface. As part of the final project, the blood bank interface is implemented. This report gives an insight about the blood donor application, its components and the various criteria to send out an alert message.

INTRODUCTION:

First I would like to brief about the necessity of this application. Few facts about the blood needs are:

- Every two seconds someone needs blood.
- More than 41000 blood donations are needed every day.
- Sickle cell patients can require frequent blood transfusions throughout their lives.
- More than 1 million new people are diagnosed with cancer each year. Many of them will need blood, sometimes daily, during their chemotherapy treatment.
- A single car accident victim can require as many as 100 units of blood.

Few facts about the blood supply are:

- Blood cannot be manufactured- need to be donated.
- Type O-negative blood (red cells) can be transfused to patients of all blood types. It is always in great demand and often in short supply.
- Type AB-positive plasma can be transfused to patients of all other blood types. AB plasma is also usually in short supply.
- The blood type most often requested by hospitals is Type O.

All these facts put together states that blood donation is the only way to save lives of people who are in need and there is always a need of blood. Here comes the role of Blood Donor Application.

When a hospital or the Blood Bank is in need of blood of a particular blood group, they send out a request through this web application entering the blood group and zip code details. Once these details are entered and a request is made. Then the application at the back end will check for all the possible users based on blood group, age, no of days last he donated blood, height, weight, zipcode. An email alert will be sent out to the users.

COMPONENTS OF THE WEB APPLICATION:

This application follows the MVC architecture which consists of three components model, view and controller.

1. **Model:** This layer is responsible for maintaining the data. This application uses the **Oracle 11g** data base to store the values.
2. **View:** This layer is responsible to provide the User Interface. In this application the user interface is created using **HTML5** and **AJAX.**
3. **Controller:** This layer controls the interactions between the Model and View. In this application as a controller, I have used **servlets**.

The connection to the Database layer is through the **JDBC connection**. The web application is deployed onto the Tomcat Server i.e. **Tomcat v7.0 Server**.

CLASSIFICATION OF VALID DONOR:

1. **Blood Group:** The blood Group should match the requested from the Blood Bank
2. **Location:** It should be in the premises of the Blood Bank Address or the Hospital Address.
3. **Last Time Blood Donation:** Donor should not have donated blood in the Last 56 days.
4. **Height and Weight Requirement:** General Requirement for donors age 18 years or older is that weight should be 110 pounds. Additional weight requirements apply for donors 18-years-old and younger and all high school donors.

Male donors who are 18-years-old and younger must weigh 110 pounds or more, depending on their height in the following chart:

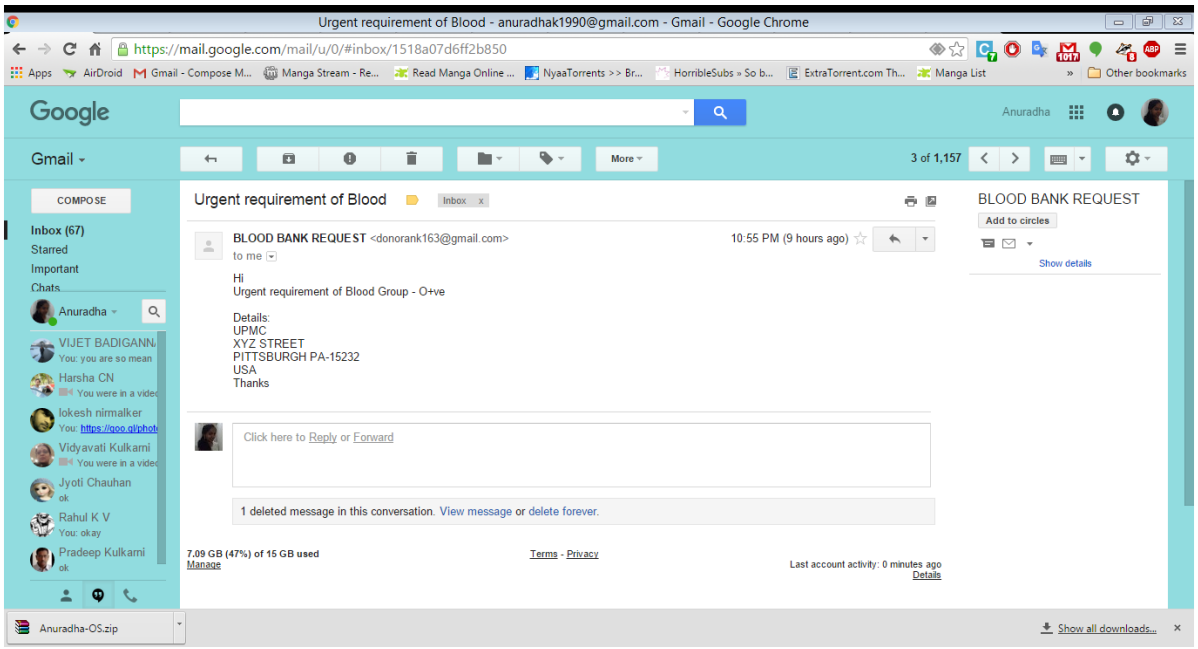
If you are	4'10"	4'11"	5' or taller
You must weigh at least	118	114	110

Female donors who are 18-years-old and younger must weigh 110 pounds or more, depending on their height in the following chart:

If you are	4'10"	4'11"	5'	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"
You must weigh at least	146	142	138	133	129	124	120	115	110

ALERT MESSAGE:

The alert message is sent via **Gmail SMTP server**, using both TLS and SSL connection. The details that are sent via the mail are the blood group and the bank address.



TABLES:

1. **DONOR_DETAILS:** Table to store details of the possible donors.

DonorUserName	varchar(25)	PRIMARY KEY
FirstName	varchar(255)	
LastName	varchar(255)	
Gender	varchar(10)	
Age	int	
Blood Group	varchar(255)	
Address	varchar(255)	
Country	varchar(255)	
City	varchar(255)	
State	varchar(255)	
ZipCode	varchar(255)	
PhoneNo	varchar(255)	
Height	Int	
Weight	Int	
LastDonationDate	Date	

2. **BLOOD_BANK:**Table to store Blood bank Details or Hospital Details.

BankUserName	varchar(25)	PRIMARY KEY
Name	varchar(255)	
Address	varchar(255)	
Country	varchar(255)	
City	varchar(255)	
State	varchar(255)	
ZipCode	varchar(255)	
PhoneNo	varchar(255)	

3. **BLOOD_BANK_LOGIN:** Table to store login details of Blood Bank or Hospital.

BankUserName	varchar(25)	PRIMARY KEY
Name	varchar(255)	

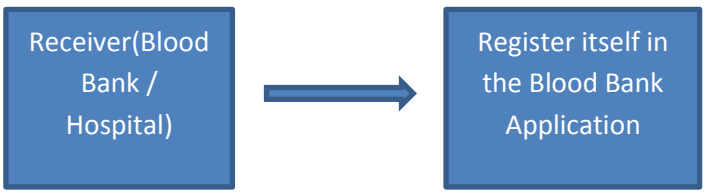
DEMO VIDEO:

https://youtu.be/g3GqccBd_-Y

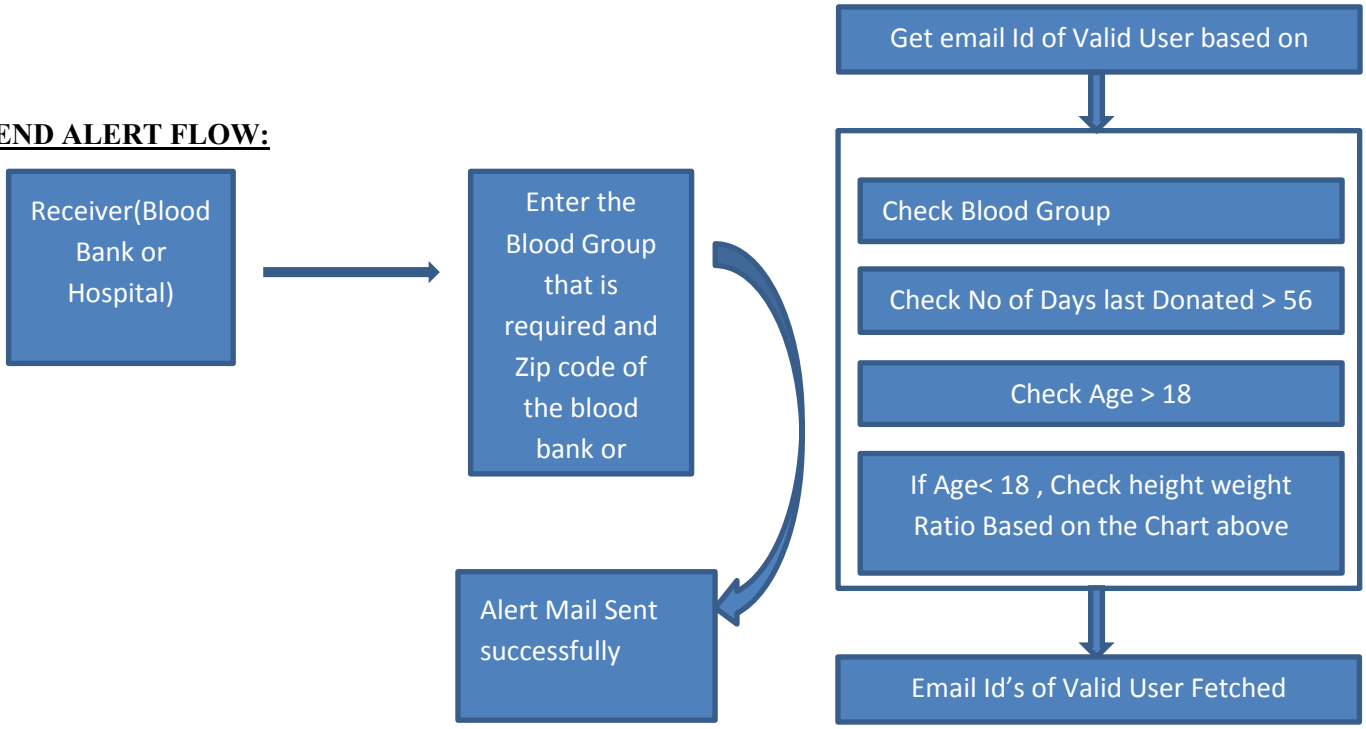
FLOW OF THE APPLICATION:

The Donor Interface is not implemented as part of the Final Report. The flow for the receiver Interface is as follows:

REGISTER FLOW:



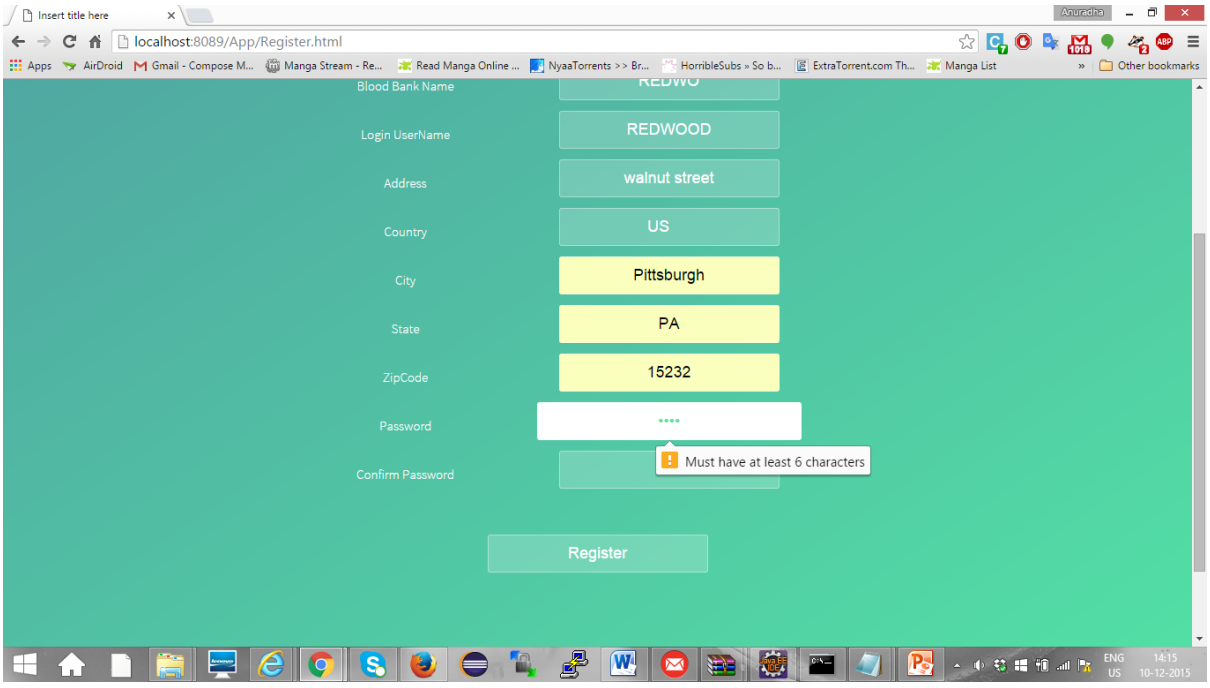
SEND ALERT FLOW:



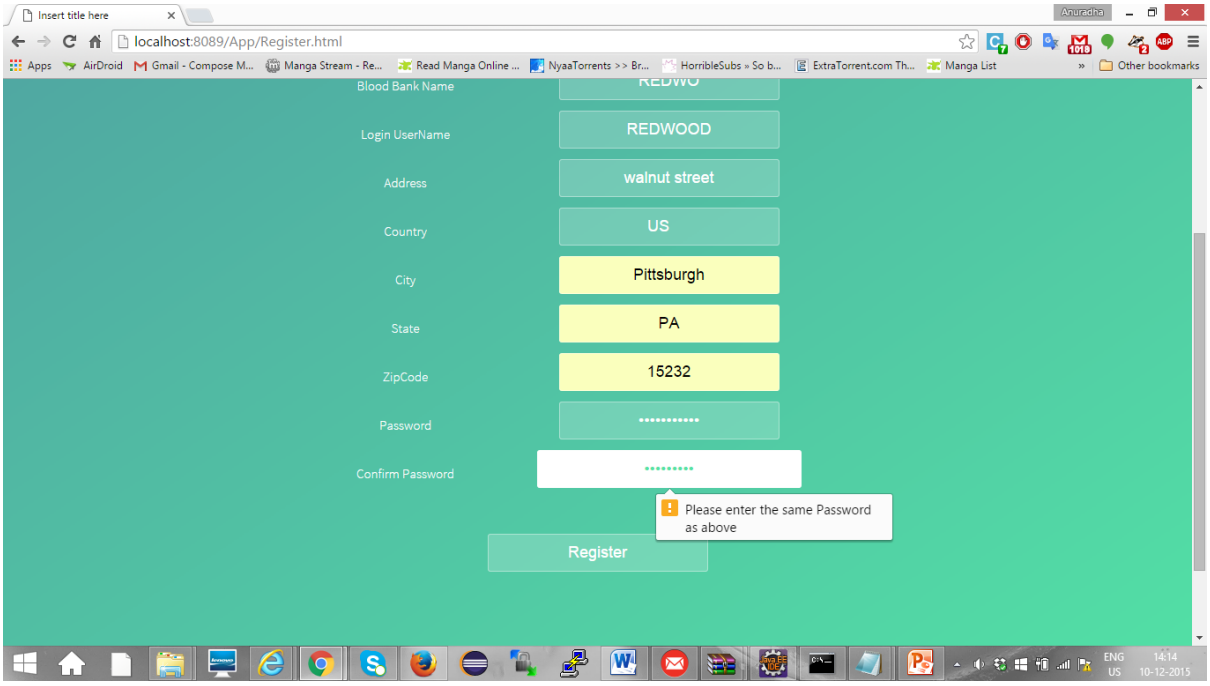
STEP 1: REGISTER ONTO THE APPLICATION

The application looks like as below. Few highlight of this web page are:

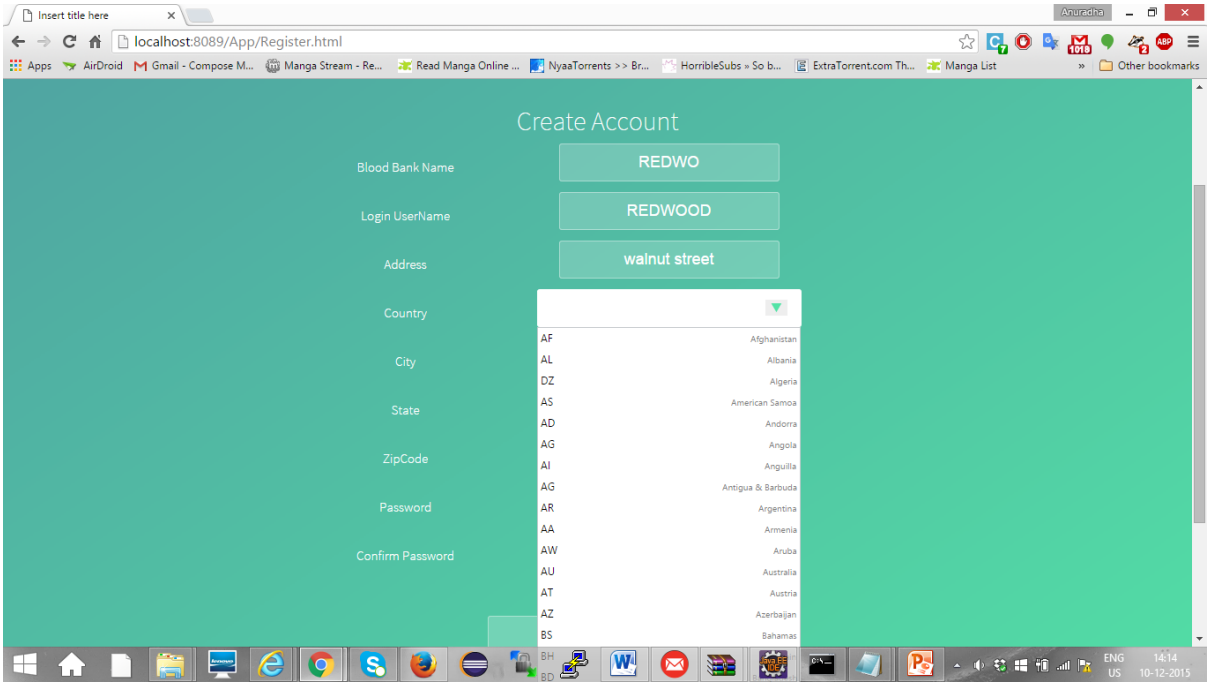
- Password should be at least 6 characters and should have one special character and one number.



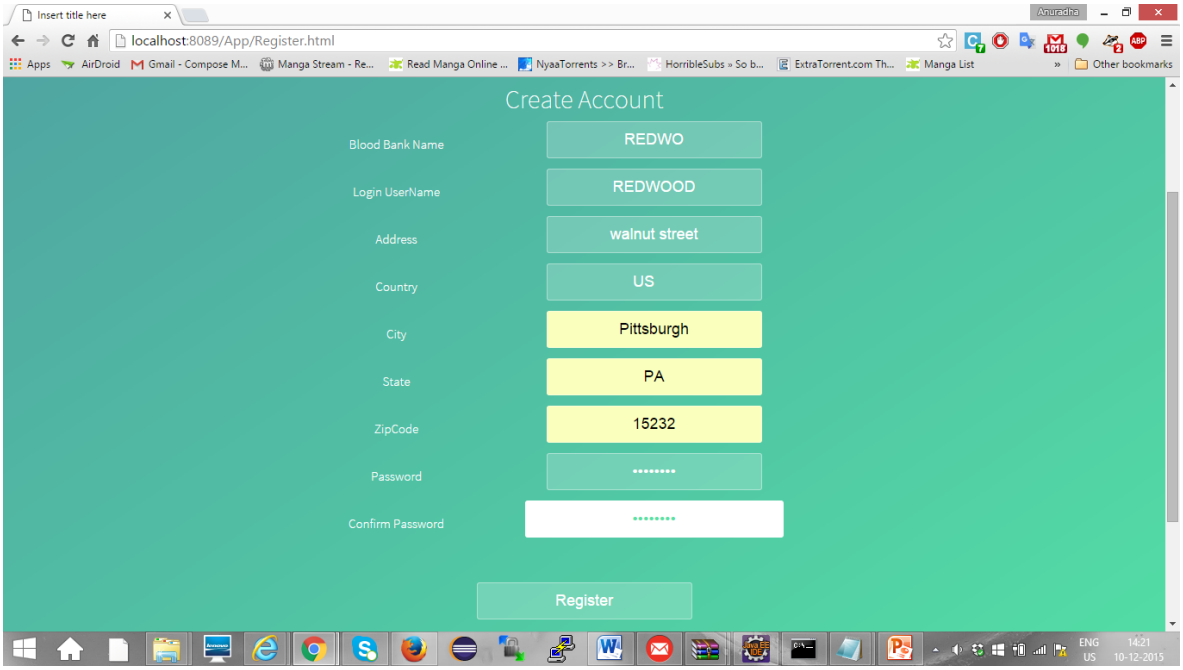
- Only if the Password one is same as the confirm Password then the user is registered in the system else a pop up message is shown saying that the password don't match.



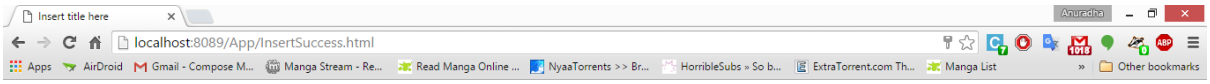
- The Country is a drop down box populating the values.

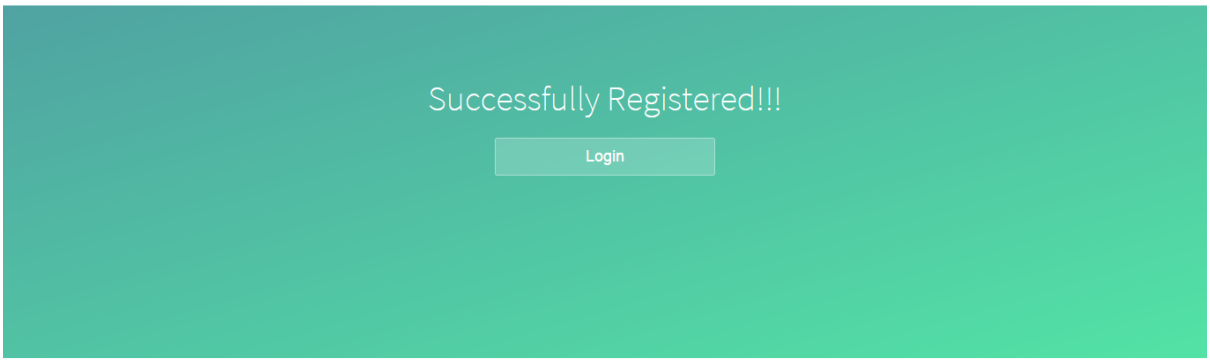


- Once all the Values are entered properly then click on register button.



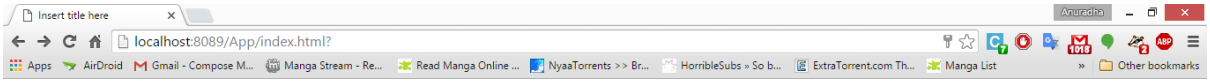
- Notification to the User that the user was successfully registered and Direct the user to the Login Page

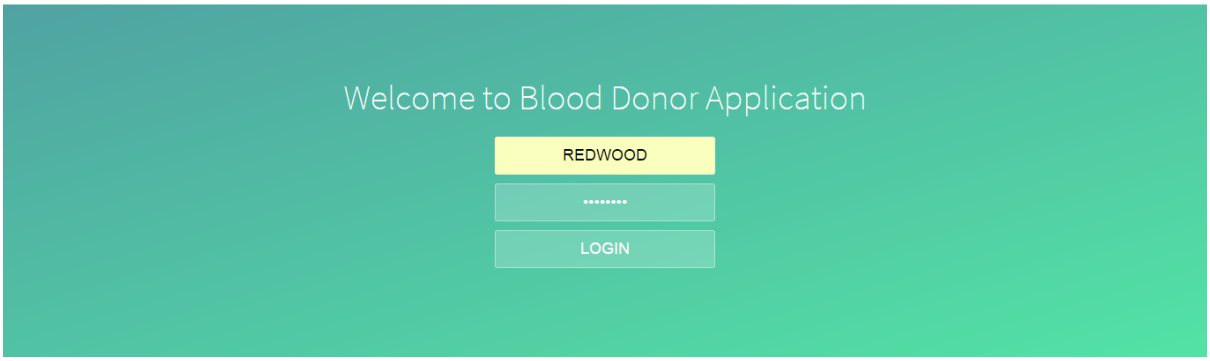




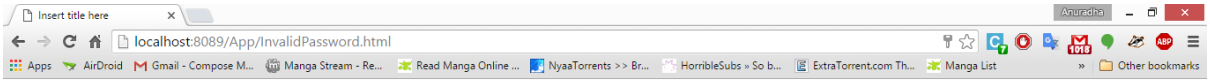
STEP 2: LOGIN TO THE APPLICATION

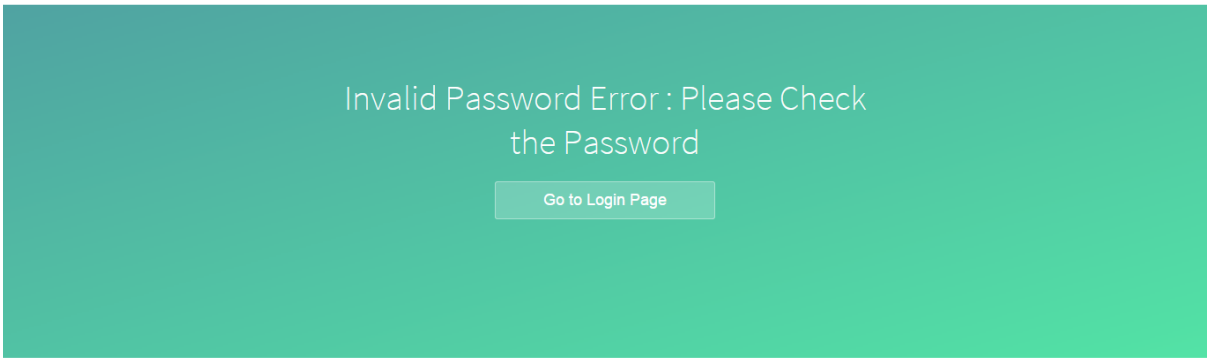
- Login to the application



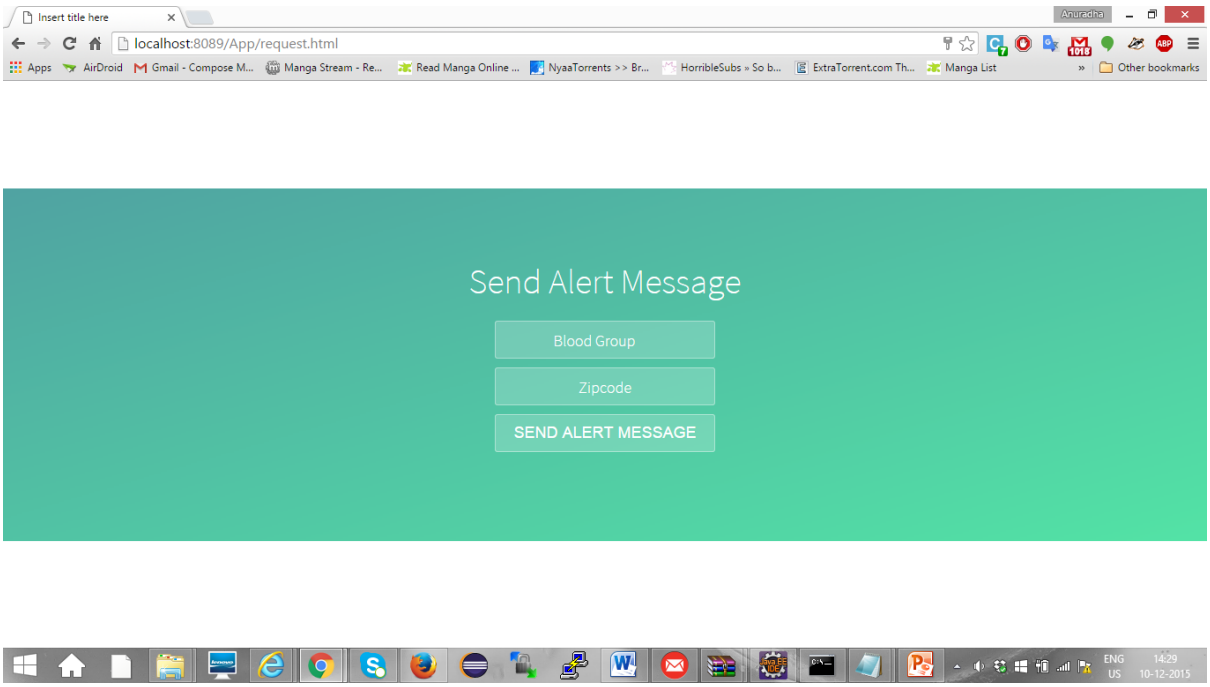


- Invalid password Alert

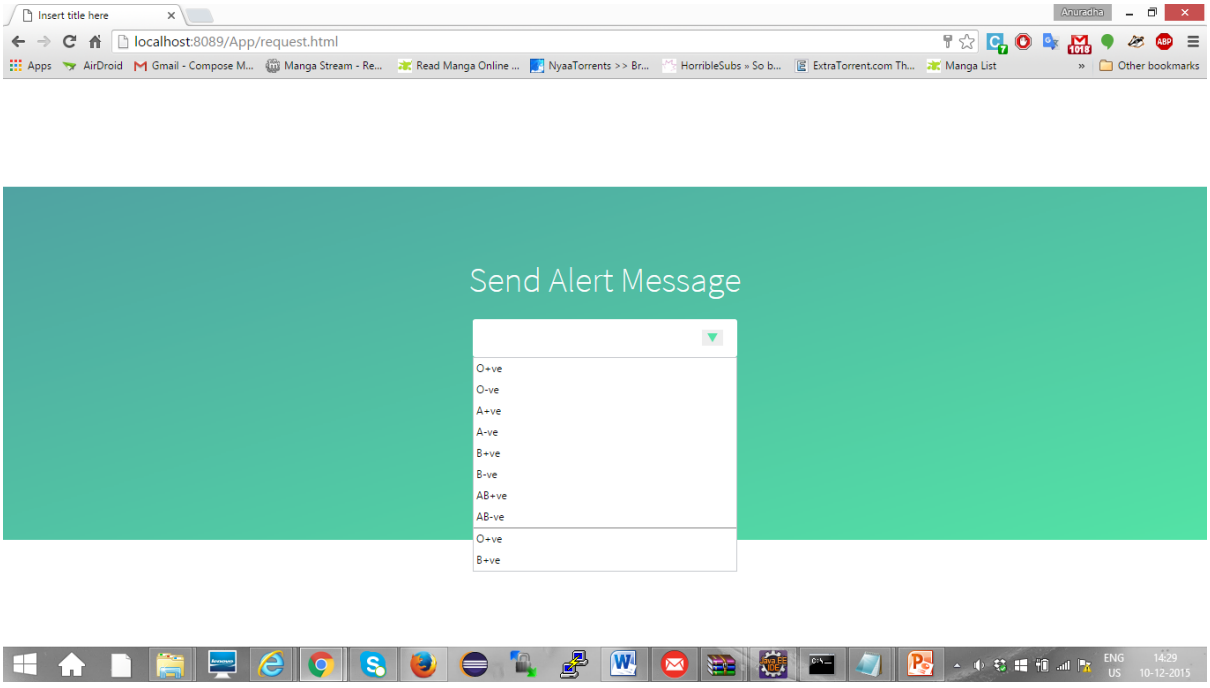




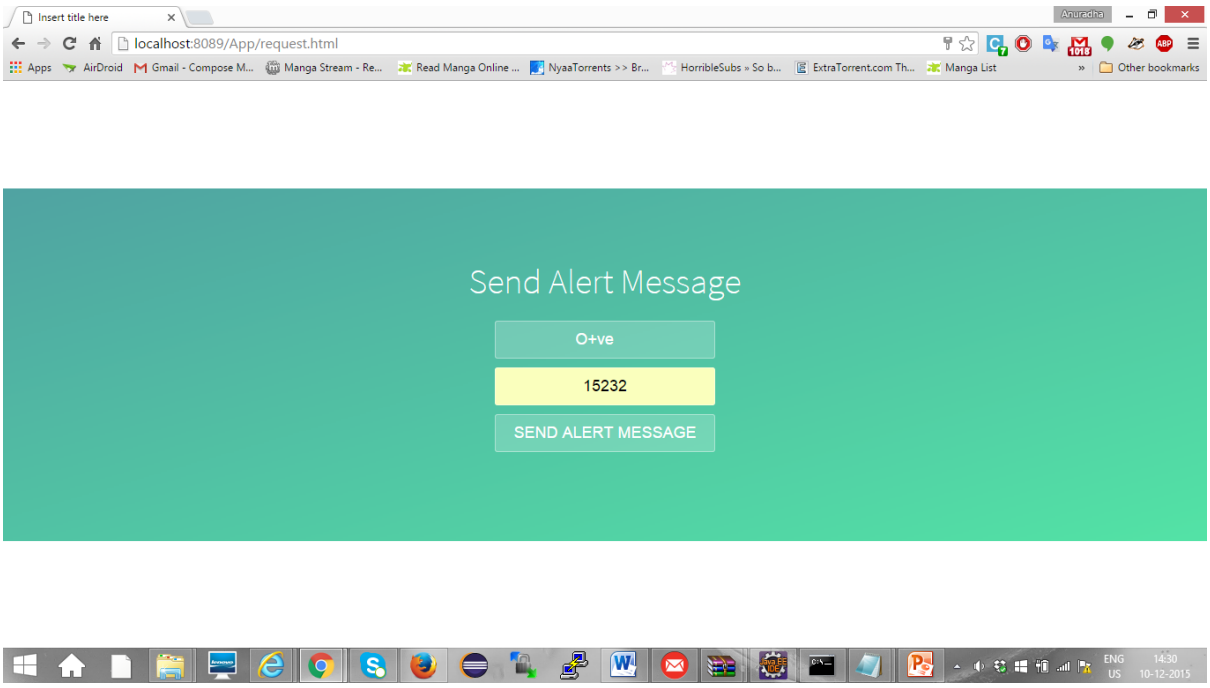
- Valid User gets directed to page where the zip Code and blood Group is entered.



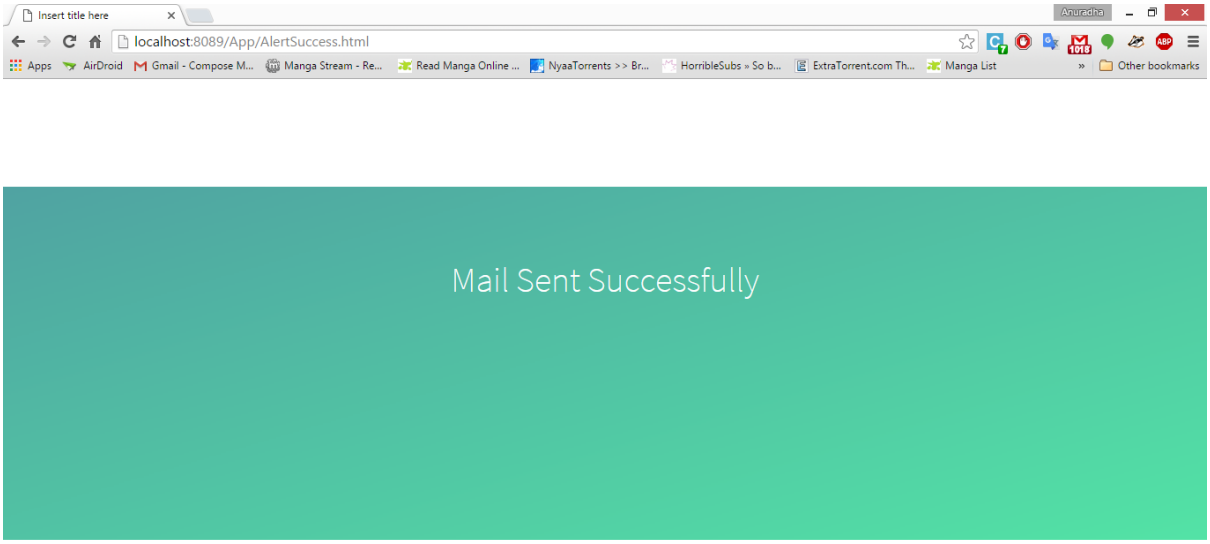
- Blood Group is a drop down menu.



- Enter the details and click on send alert



- Mail sent successfully



INSIGHT ABOUT THE CLASSES CREATED:

CLASS NAME	DESCRIPTION
DBConnection.java	JDBC Connection Details
FirstServlet.java	Login Controller
RegisterServlet.java	Register the blood bank Controller
RequestServlet.java	Send Alert Controller
SendMail.java	Send mail to the Valid User
GetValidDonorDetails.java	Get Valid Donor details

CONCLUSION:

This application notifies people within the premises of the hospital to donate blood. The advantage is that the donor can immediately donate the blood and help the needy. Thus “Donate Blood, Save Lives”. I would like to bring to light that the application can be extended by implementing the Donor Interface and making an android application.