UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

W O R K S H O P 1
R E P O R T

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COURSE	**BITI**
PROJECT TITLE	**BLOOD BANK MANAGEMENT SYSTEM**
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Chapter 1: Introduction

1.1 – Background of Project

Blood Bank Management System is the system that going to be used for any type of blood management personal, event or hospital. Where it is a tool that any blood bank can use to manage their blood supply, their workers or volunteer and the patient data. This project is developed is to ease the process to hosting a blood donation campaign which will encourage more people to do a campaign to donate blood especially in rural and underdeveloped areas.

Nextly, Blood Bank Management System will provide a huge, more organize, secure and easy to handle database. The uses of database element can and will increase the productivity of workers of blood donation and create more organized and systematic data. Data can be fetched easily to ease the work of blood usage for hospital and patient usage in case of any emergency. Thus, it will also save more lives due to easy accessibility and bug free management system.

Blood Bank Management System will ease the workload for admin by saving it into a database. Blood Bank Management System can have admin search and create a blood order with ease and fast. Admin won't have to search a physical paper which will be hectic, admin only need to enter the invoice id of order. Same goes to with the donor and blood donated data.

For worker, with Blood Bank Management System, worker will only need to key-in the donor's detail without relying to internet since Blood Bank Management System is an offline system, they won't need to write on paper, which is risky and prone to missing.

1.2 – Problem Statements

- **Time and Cost consuming**

  - It is time and cost consuming for a host of blood donation event to create a new blood management database. It will cost a lot of many for the host to pay some develop a management system just to help people collecting blood. It will increase the burden of a blood donation host, and this will decrease the activity for blood donation.

- **Unreliable Management System**

  - Some third-party blood management system that is being underdeveloped will cost the loss of data and tons of money to recover the lost data, or the management system that being forced to be use will be full of bugs which will be easy for criminals to hack in the system to steal patients' information.

- **Handwritten records prone to being misused**

  - In rural area that still using handwritten records, it is prone to be misused by criminal and workers to breach of trust as the record is very easy to be access by anyone and change by anyone. Donated blood can be stolen and sell in the black market in a blink of an eye without any act of prevention or detection can be taken

    .

1.3 – Objectives

- To provide a blood bank management system.
- To enable blood supply database for managing and organize blood and donor's record
- To enable an easy monitoring for blood supply by workers

1.4 - Scopes

- **Module to be developed**
  - Login
    - Admin Login
    - Worker Login
  - Add data
    - Add Donor data
    - Add Worker data
    - Add Hospital data
    - Add Pusat Derma Darah data
  - Modify data
    - Worker data
    - Donor data
    - Blood Donated data
    - Pusat Derma Darah data
    - Hospital data
  - Delete data
    - Worker data
    - Donor data
    - Blood Donated data
    - Pusat Derma Darah data
    - Hospital data
  - Search data
    - Worker data
    - Donor data
    - Blood Donated data
  - Calculation
    - Calculation modules include the analysis of blood donated and blood stock. Calculation module will show the quantity of blood that is not tested, testing and tested and total blood donated for each blood type. Blood Stock analysis will show the percentage of each blood type stock quantity.

- **Target User**

  1) Administrator

  - Admin handle both donor, worker, and order data where they can add, modify, search, delete and view every donor, worker, order and blood donated data in the Blood Bank Management System.

  2) Worker

  - Worker handle donor where they can add, modify, search and view data in the system. Worker can transfer the current phase of blood donated.

CHAPTER 2 : ANALYSIS OF PROBLEM

2.1 – DETAILS OF PROBLEM

Problem	Solution
Manual data management	Blood Bank Management System will make it easier for administration and worker to access, modified and manage data by simply typing the data into the system without having to waste a lot of paper.
Waste of time and cost	Other than having to eliminate to cost for paper usage, Blood Bank Management System will also save the time by just entering all the data to be stored in a database rather than manual writing.
Data Security	Blood Bank Management System have the function for admin and worker to enter their username and password where only certain user can access to the system which make the system is more secure, and every data entered will be safely stored in the database.

2.2 – STRUCTURED CHART

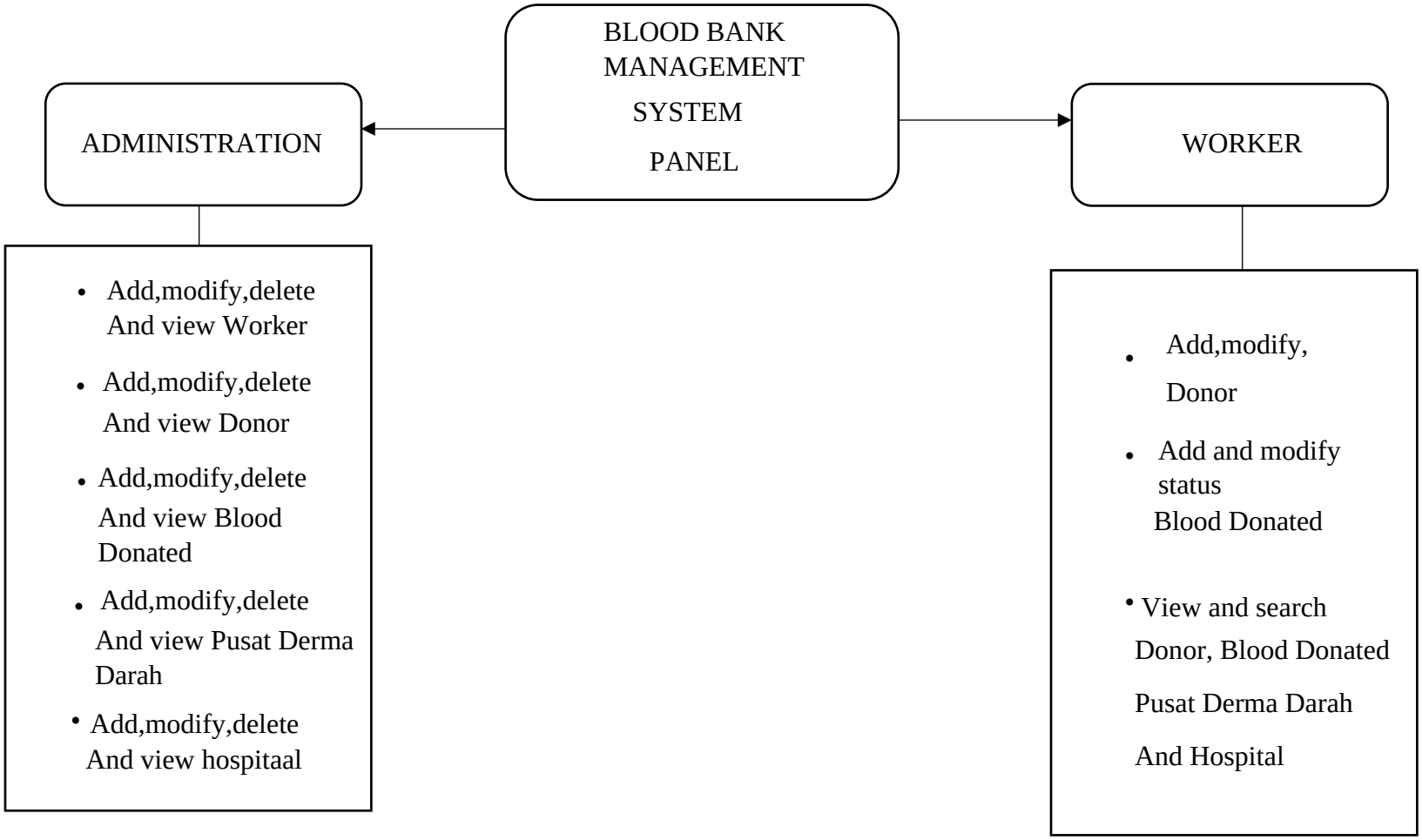
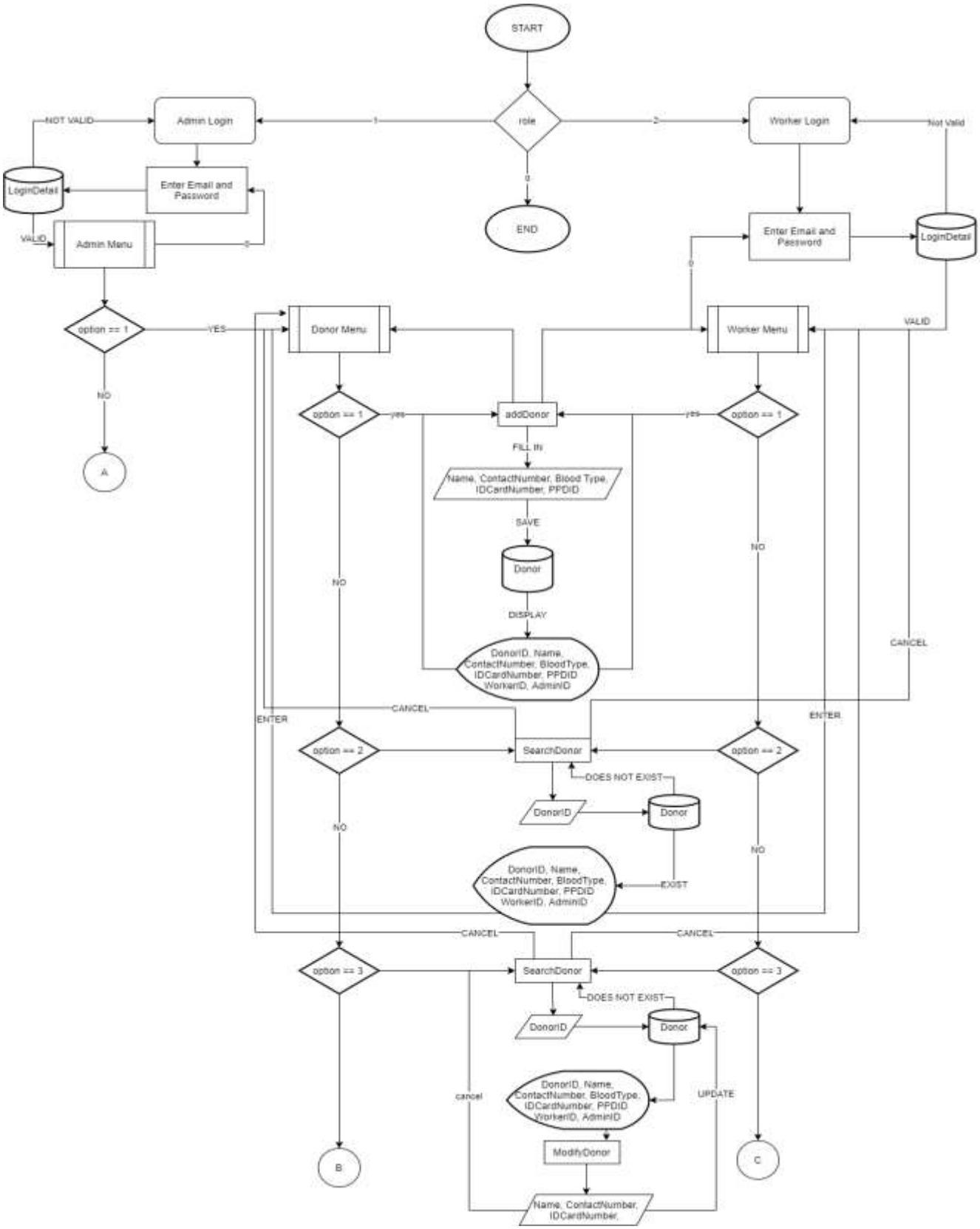
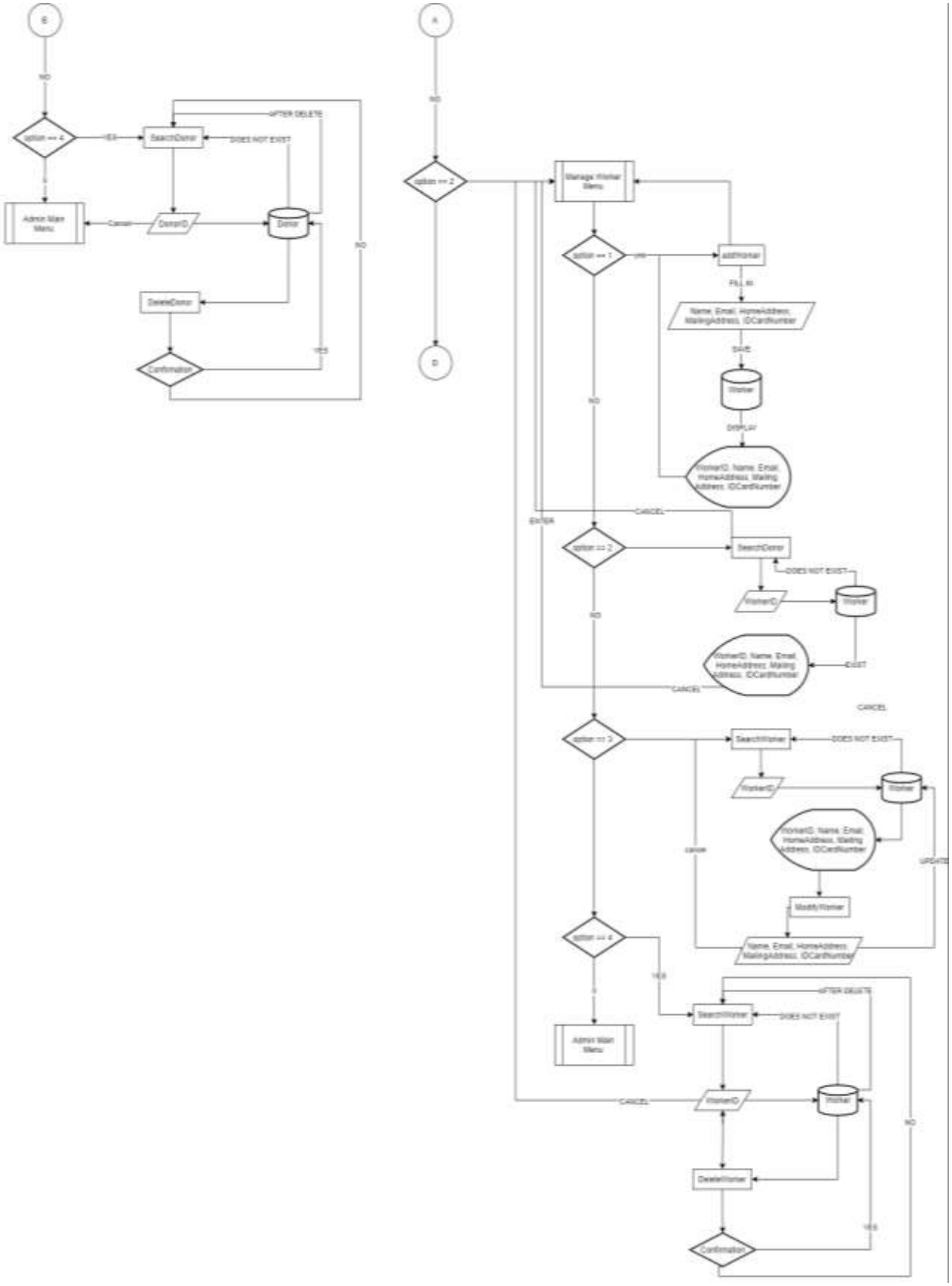


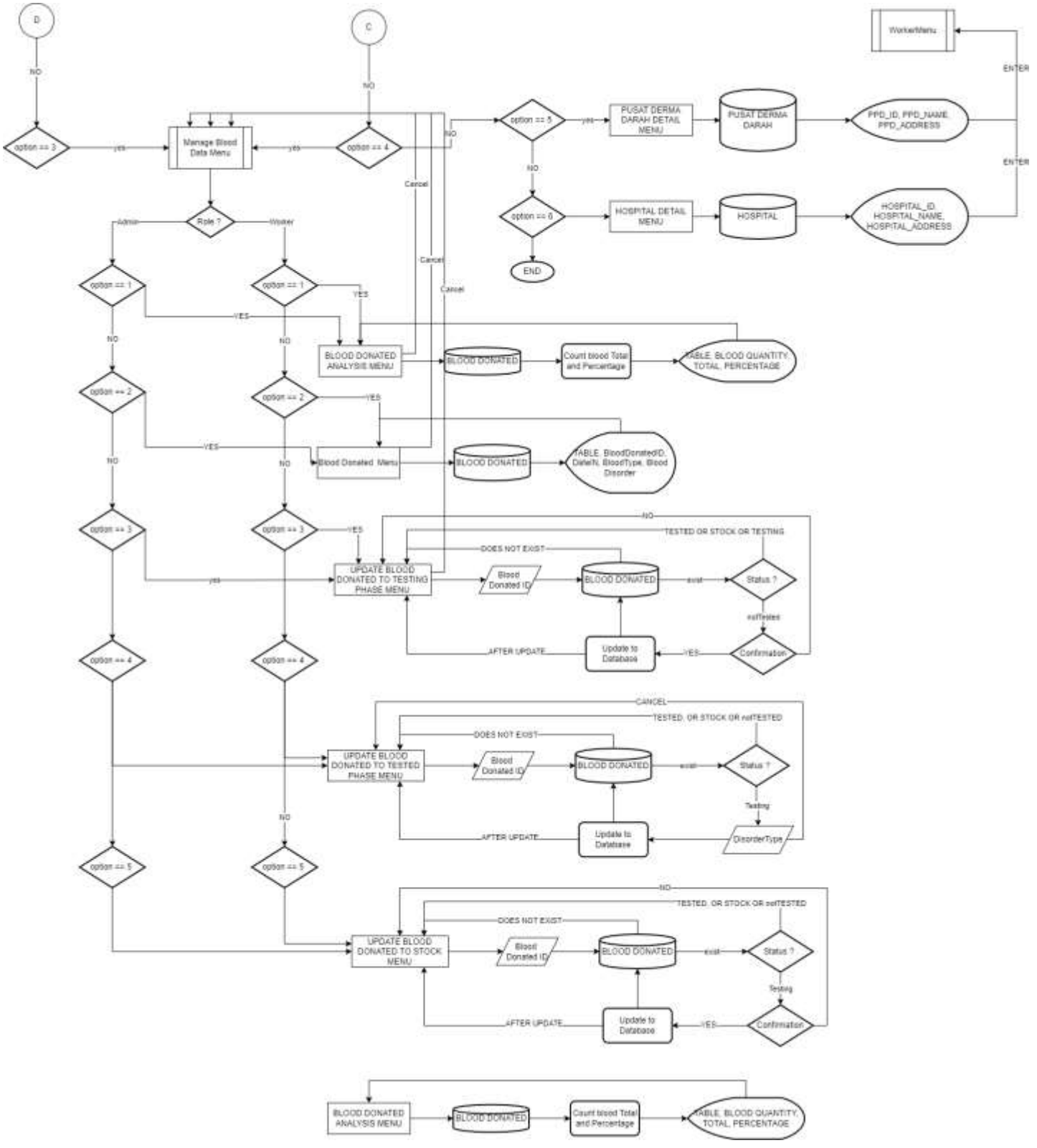
Figure 2.2(a)

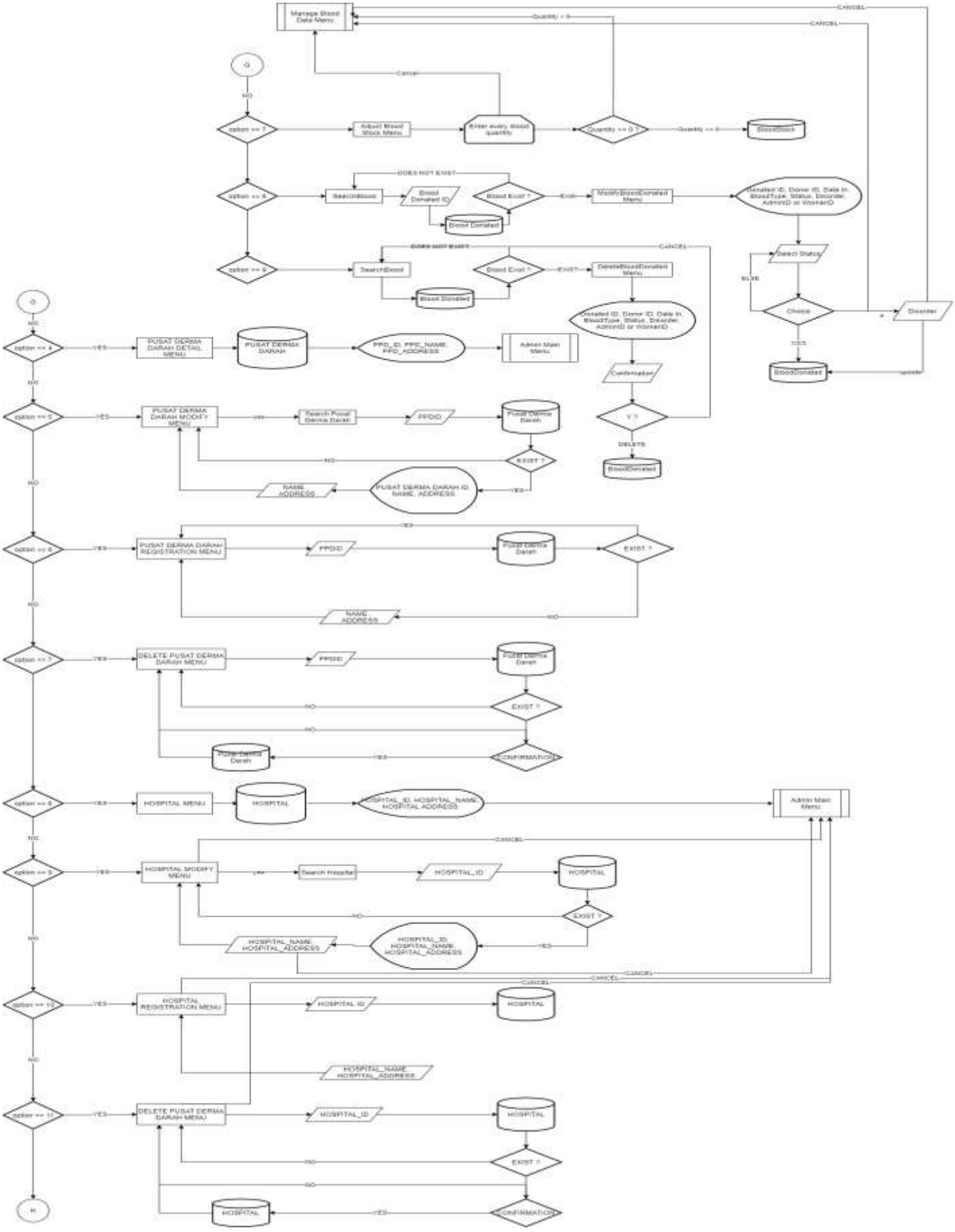
Chapter 3 : Design

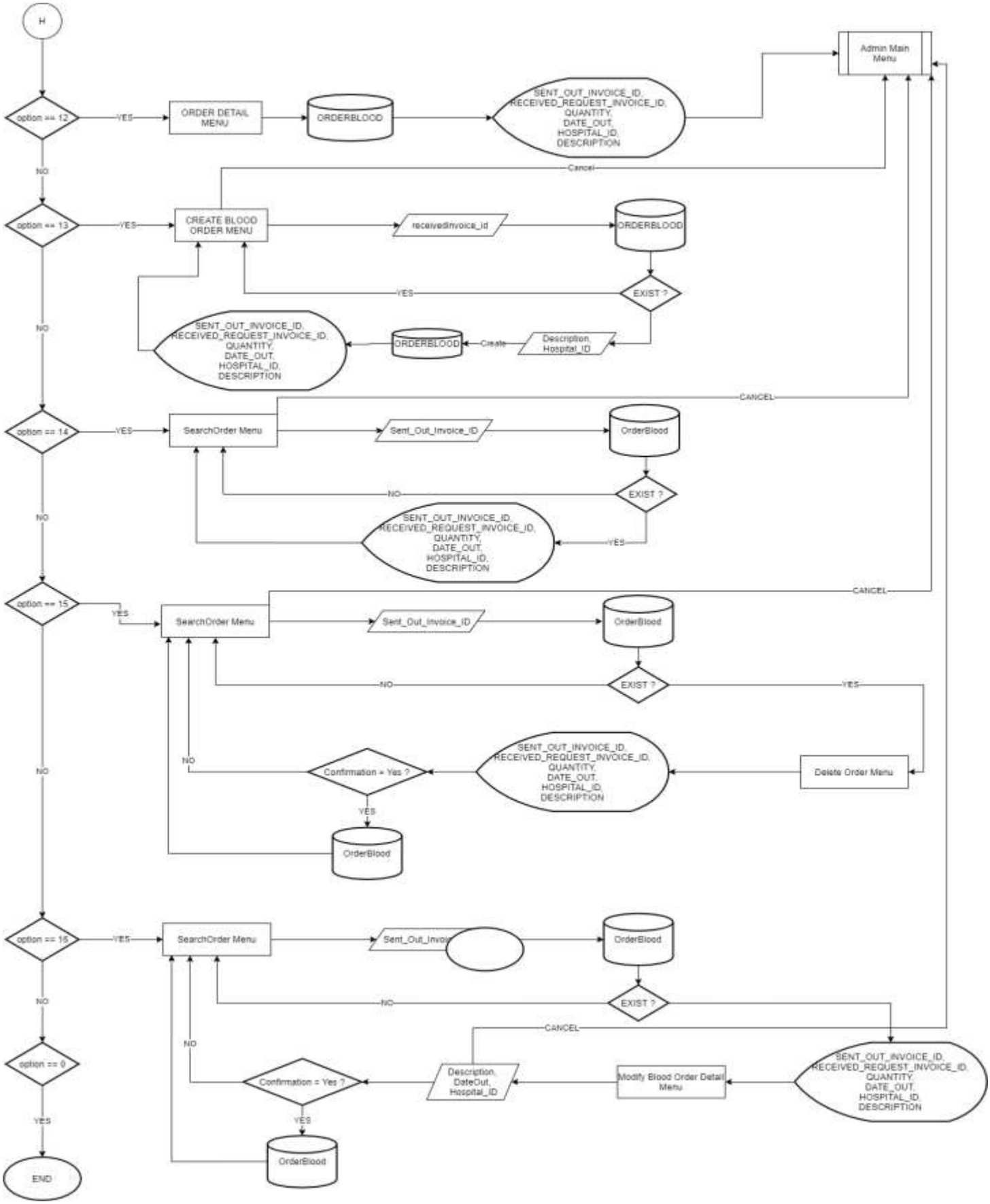
3.1 FLOWCHART



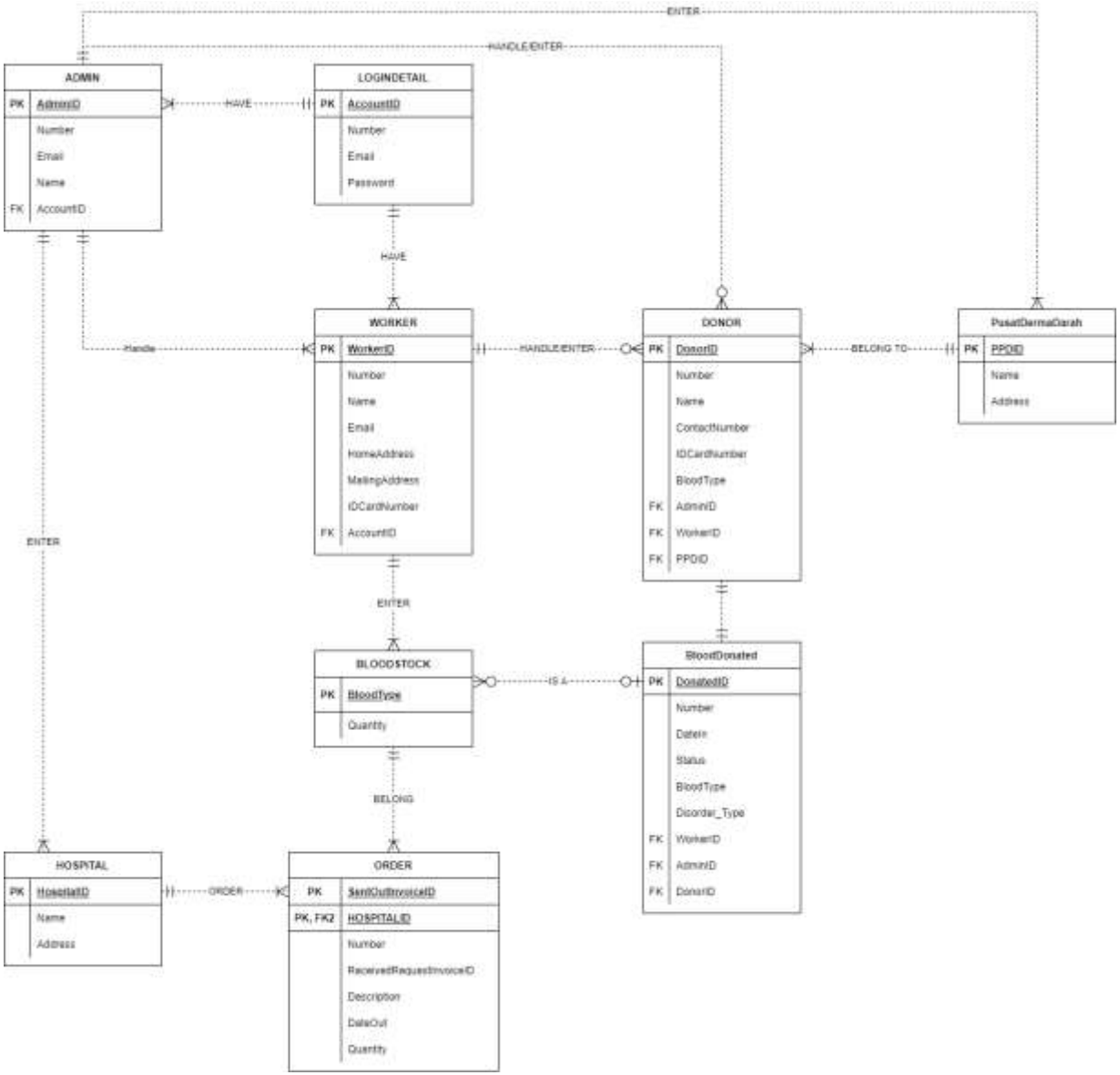

B
NO
option == 4
YES
SearchDonor
AFTER DELETE
DOES NOT EXIST
Admin Main Menu
Cancel
DonorID
Donor
NO
DeleteDonor
Confirmation
YES
A
NO
option == 2
Manage Worker Menu
option == 1
YES
addWorker
FILL in
Name, Email, HomeAddress, MailingAddress, IDCardNumber
SAVE
Worker
DISPLAY
WorkerID, Name, Email, HomeAddress, Mailing Address, IDCardNumber
NO
CANCEL
ENTER
option == 2
SearchDonor
DOES NOT EXIST
WorkerID
Worker
NO
WorkerID, Name, Email, HomeAddress, Mailing Address, IDCardNumber
EXIST
CANCEL
CANCEL
option == 3
SearchWorker
DOES NOT EXIST
WorkerID
Worker
WorkerID, Name, Email, HomeAddress, Mailing Address, IDCardNumber
cancel
UPDATE
ModifyWorker
option == 4
Name, Email, HomeAddress, MailingAddress, IDCardNumber
YES
NO
Admin Main Menu
AFTER DELETE
SearchWorker
DOES NOT EXIST
CANCEL
WorkerID
Worker
NO
DeleteWorker
Confirmation
YES


D
C
NO
option == 3
yes
Manage Blood Data Menu
option == 4
Cancel
option == 5
PUSAT DERMA DARAH DETAIL MENU
PUSAT DERMA DARAH
PPD_ID, PPD_NAME, PPD_ADDRESS
WorkerMenu
ENTER
option == 6
HOSPITAL DETAIL MENU
HOSPITAL
HOSPITAL_ID, HOSPITAL_NAME, HOSPITAL_ADDRESS
END
Role ?
Admin
Worker
option == 1
YES
BLOOD DONATED ANALYSIS MENU
BLOOD DONATED
Count blood Total and Percentage
TABLE, BLOOD QUANTITY, TOTAL, PERCENTAGE
option == 2
Blood Donated Menu
TABLE, BloodDonatedID, DateIN, BloodType, Blood Disorder
option == 3
UPDATE BLOOD DONATED TO TESTING PHASE MENU
Blood Donated ID
exist
Status ?
TESTED OR STOCK OR TESTING
DOES NOT EXIST
notTested
Confirmation
AFTER UPDATE
Update to Database
option == 4
UPDATE BLOOD DONATED TO TESTED PHASE MENU
CANCEL
TESTED, OR STOCK OR notTESTED
Testing
DisorderType
option == 5
UPDATE BLOOD DONATED TO STOCK MENU


Manage Blood Data Menu
CANCEL
Quantity > 0
CANCEL
Cancel
NO
option == 1
Adjust Blood Stock Menu
Enter every blood quantity
Quantity == 0
Quantity == 0
BloodStock
option == 3
DOES NOT EXIST
SearchBlood
Blood Donated ID
Blood Exist ?
EXIST
ModifyBloodDonated Menu
Donated ID, Donor ID, Date In, BloodType, Status, Disorder, AdminID or WorkerID
Blood Donated
option == 5
DOES NOT EXIST
CANCEL
SearchBlood
Blood Exist ?
EXIST
DeleteBloodDonated Menu
Blood Donated
Select Status
ELSE
Choice
Disorder
TRUE
BloodDonated
update
Donated ID, Donor ID, Date In, BloodType, Status, Disorder, AdminID or WorkerID
Confirmation
Y ?
DELETE
BloodDonated
option == 4
YES
PUSAT DERMA DARAH DETAIL MENU
PUSAT DERMA DARAH
PPD_ID, PPD_NAME, PPD_ADDRESS
Admin Main Menu
option == 5
YES
PUSAT DERMA DARAH MODIFY MENU
yes
Search Pusat Derma Darah
PPDID
Pusat Derma Darah
NO
EXIST ?
YES
NAME, ADDRESS
PUSAT DERMA DARAH ID, NAME, ADDRESS
option == 6
YES
PUSAT DERMA DARAH REGISTRATION MENU
PPDID
Pusat Derma Darah
EXIST ?
NAME, ADDRESS
NO
option == 7
YES
DELETE PUSAT DERMA DARAH MENU
PPDID
Pusat Derma Darah
NO
EXIST ?
NO
Pusat Derma Darah
YES
CONFIRMATION
option == 8
YES
HOSPITAL MENU
HOSPITAL
HOSPITAL_ID, HOSPITAL_NAME, HOSPITAL_ADDRESS
Admin Main Menu
CANCEL
option == 9
YES
HOSPITAL MODIFY MENU
yes
Search Hospital
HOSPITAL_ID
HOSPITAL
NO
EXIST ?
HOSPITAL_NAME, HOSPITAL_ADDRESS
HOSPITAL_ID, HOSPITAL_NAME, HOSPITAL_ADDRESS
YES
CANCEL
CANCEL
option == 10
YES
HOSPITAL REGISTRATION MENU
HOSPITAL ID
HOSPITAL
HOSPITAL_NAME, HOSPITAL_ADDRESS
option == 11
YES
DELETE PUSAT DERMA DARAH MENU
HOSPITAL_ID
HOSPITAL
NO
EXIST ?
NO
HOSPITAL
YES
CONFIRMATION


H
option == 12
YES
ORDER DETAIL MENU
ORDERBLOOD
SENT_OUT_INVOICE_ID,
RECEIVED_REQUEST_INVOICE_ID,
QUANTITY,
DATE_OUT,
HOSPITAL_ID,
DESCRIPTION
Admin Main Menu
NO
Cancel
option == 13
YES
CREATE BLOOD ORDER MENU
receivedInvoice_id
ORDERBLOOD
EXIST ?
YES
NO
SENT_OUT_INVOICE_ID,
RECEIVED_REQUEST_INVOICE_ID,
QUANTITY,
DATE_OUT,
HOSPITAL_ID,
DESCRIPTION
ORDERBLOOD
Create
Description,
Hospital_ID
CANCEL
option == 14
YES
SearchOrder Menu
Sent_Out_Invoice_ID
OrderBlood
EXIST ?
NO
YES
NO
SENT_OUT_INVOICE_ID,
RECEIVED_REQUEST_INVOICE_ID,
QUANTITY,
DATE_OUT,
HOSPITAL_ID,
DESCRIPTION
CANCEL
option == 15
YES
SearchOrder Menu
Sent_Out_Invoice_ID
OrderBlood
EXIST ?
NO
YES
NO
NO
Confirmation = Yes ?
SENT_OUT_INVOICE_ID,
RECEIVED_REQUEST_INVOICE_ID,
QUANTITY,
DATE_OUT,
HOSPITAL_ID,
DESCRIPTION
Delete Order Menu
YES
OrderBlood
option == 16
YES
SearchOrder Menu
Sent_Out_Invoi
OrderBlood
EXIST ?
NO
NO
CANCEL
option == 0
NO
Confirmation = Yes ?
Description,
DateOut,
Hospital_ID
Modify Blood Order Detail Menu
SENT_OUT_INVOICE_ID,
RECEIVED_REQUEST_INVOICE_ID,
QUANTITY,
DATE_OUT,
HOSPITAL_ID,
DESCRIPTION
YES
YES
OrderBlood
END

3.2 – Entity Relationship Diagram (ERD)



3.3 BUSINESS RULES

LoginDetail consist of login detail for all worker and admin. For admin, it consist of AdminID and Number which it unique and auto increment. Email, Name and from login detail primary key which is AccountID. Worker have workerid, number same as admin it is unique and auto increment, name, email, home address and email address, IDCardNumber and from login detail primary key which is AccountID.

An Admin can enter one or more worker, donor , pusat derma darah, hospital and order. Other than that, admin can search, modify and delete details for worker, donor, pusat derma darah, hospital and order. Only admin handle worker. Worker can register one or more donor. Each donor can donate only 1 pint of blood. Blood stock consist of blood donated that passed the testing phase. Blood donated status as soon as it donated is not Tested. Worker can change the phase of blood donated from not tested to testing, then to next phase either Tested and have disorder or to Stock.

Since donor can donate 1 blood at a time, each donor only can donate blood at one pusat derma darah. Pusat derma darah has Pusat Derma Darah ID(PPDID), Name and address. Donor has DonorID and Number which is auto increment and unique, contactNumber, IDCardNumber, BloodType, AdminID, WorkerID and Pusat Derma Darah ID(PPDID). Blood donated by donor will have its own BloodDonated ID, Number (unique and auto increment), Date in (Auto increment), Status that at first it auto increment to not tested, blood type, disorder_type that is nullable, WorkerID, AdminID and DonorID.

After the blood passed the testing phase and became a BloodStock, it is separated by blood type and only shows the quantity of each blood type. A hospital will be identified by HospitalID, Name and address. Each hospital can make more than one request for blood order. Blood stock fulfill all the blood order. Order will be idenfitied using SentOutInvoiceID which is auto increment and ReceivedRequest InvoiceID, description, Number(auto increment and unique), date out , quantity of blood requested and hospitalid.

Figure 3.3(a)

3.4 – Data Dictionary

Data Dictionary						
Blood Bank Management System						
LOGINDETAIL						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(255)	AUTO_INCREMENT	YES	UNIQUE	
AccountID	User Account ID	VARCHAR (20)	XXXXXXXXXX	YES	PRIMARY KEY UNIQUE	
Name	User fullname	VARCHAR (30)	XXXXXXXXXX	YES		
Email	User Email	VARCHAR (30)	XXXXXXXXXX	YES	UNIQUE	
Password	User Password	VARCHAR (255)	XXXXXXXXXX	YES		

Data Dictionary						
Blood Bank Management System						
ADMIN						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(255)	AUTO_INCREMENT	YES	UNIQUE	
AdminID	Admin ID	VARCHAR (10)	XXXXXXXXXX	YES	PRIMARY KEY UNIQUE	
Email	Admin Email	VARCHAR (30)	XXXXXXXXXX	YES	UNIQUE	
Name	Admin Fullname	VARCHAR (30)	XXXXXXXXXX	YES		
Accountid	Admin accountid	VARCHAR (20)	XXXXXXXXXX	NO	FOREIGN KEY	LOGINDETAIL

Data Dictionary						
Blood Bank Management System						
Worker						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(255)	AUTO_INCREMENT	Yes	UNIQUE	
WorkerID	Worker ID	VARCHAR (10)	XXXXXXXXXX	Yes	PRIMARY KEY	
Name	Worker Name	VARCHAR (30)	XXXXXXXXXX	Yes		
Email	Worker Email	VARCHAR (30)	XXXXXXXXXX	Yes	UNIQUE	
Home Address	Worker Home Address	VARCHAR (255)	XXXXXXXXXX	Yes		
Mailing Address	Worker Mailing address	VARCHAR (255)	XXXXXXXXXX	Yes		
IDCardNumber	Worker Identification Card	VARCHAR (100)	XXXXXXXXXX	Yes	UNIQUE	
AccountID	Worker AccountID	VARCHAR (20)	XXXXXXXXXX	No	FOREIGN KEY	LOGINDETAIL

Data Dictionary						
Blood Bank Management System						
PUSAT DERMA DARAH						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
PPDID	Pusat Derma Darah ID	VARCHAR(10)	XXXXXXX XXX	Yes	PRIMARY KEY UNIQUE	
Name	Pusat Derma Darah Name	VARCHAR (100)	XXXXXXXXX	Yes		
Address	Pusat Derma Darah Address or Location	VARCHAR (100)	XXXXXXXXX	Yes		

Data Dictionary						
Blood Bank Management System						
HOSPITAL						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
HospitalID	Hospital ID	VARCHAR (10)	XXXXXXXXX	Yes	PRIMARY KEY UNIQUE	
Name	Hospital Name	VARCHAR(100)	XXXXXXXXXX	Yes		
Address	Hospital Address	VARCHAR (100)	XXXXXXXXX	Yes		

Data Dictionary						
Blood Bank Management System						
DONOR						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(11)	AUTO_INCREMENT	Yes	UNIQUE	
DonorID	Donor Name	VARCHAR (10)	XXXXX	Yes	PRIMARY KEY UNIQUE	
Name	Donor Name	VARCHAR(30)	XXXXXXXXXX	Yes		
ContactNumber	Donor Number Phone	VARCHAR(30)	XXX	Yes		
BloodType	Donor Blood Type	VARCHAR (3)	XXXXXXXXX	Yes		
IDCardNumber	Donor Identification Card Number	VARCHAR (17)	XXXXXXXXX	Yes	UNIQUE	
WorkerID	Worker ID	VARCHAR (10)	XXXXXXX	No	FOREIGN KEY 1	Worker
AdminID	Admin ID	VARCHAR (10)	XXXXXXX	No	FOREIGN KEY 2	Admin
PPDID	Pusat Derma Darah ID	VARCHAR (10)	XXXXXXX	Yes	FOREIGN KEY 3	Pusat Derma Darah

Data Dictionary						
Blood Bank Management System						
BLOOD DONATED						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(255)	AUTO_INCREMENT	Yes	UNIQUE	
Donatedid	Blood Donated ID	VARCHAR (20)	XXXXXXXXXX	Yes	PRIMARY KEY	
DonorID	DonorID	VARCHAR (20)	XXXXXXXXXX	Yes	FOREIGN KEY 1	Donor
DateIN	Date	DATE	YYYY-MM-DD	No		
BloodType	BloodType	VARCHAR (3)	XXX	Yes		
WorkerID	WorkerID	VARCHAR(10)	XXXXXXXXX	No	FOREIGN KEY 2	Worker
AdminID	AdminID	VARCHAR(10)	XXXXXXXXX	No	FOREIGN KEY 3	Admin
Status	Blood Status	VARCHAR(30)	XXXXXXXXX	Yes		
Disorder_Type	Disorder	VARCHAR(50)	XXXXXXXXX	No		

Data Dictionary						
Blood Bank Management System						
BLOOD STOCK						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
BloodType	BloodType	VARCHAR (3)	XXX	Yes	PRIMARY KEY UNIQUE	
Quantity	Blood Quantity	INTEGER(255)	XXXXXX	Yes		

Data Dictionary						
Blood Bank Management System						
ORDERBLOOD						
ATTRIBUTE NAME	**CONTENTS**	**DATA TYPE AND SIZE**	**FORMAT**	**REQUIRED?**	**CONSTRAINT**	**FK REFERENCED TABLE**
Number	Number	INTEGER(11)	XXXXXX	Yes	UNIQUE	
SentOutInvoiceID	Send Out Invoice ID	VARCHAR(10)	XXXXXXXXXX	Yes	PRIMARY KEY	
ReceivedRequestInvoiceID	Received Invoice ID	VARCHAR(10)	XXXXXXXXXX	Yes	UNIQUE	
Description	Description	VARCHAR(255)	XXXXXXXXXX	No		
Quantity	Quantity	INTEGER(11)	XXXX	Yes		
DateOut	DATE	DATE	YYYY-MM-DD	Yes		

3.5 – Interface Design

Figure 3.4(a): Shows the first interface when user successfully connected to the database

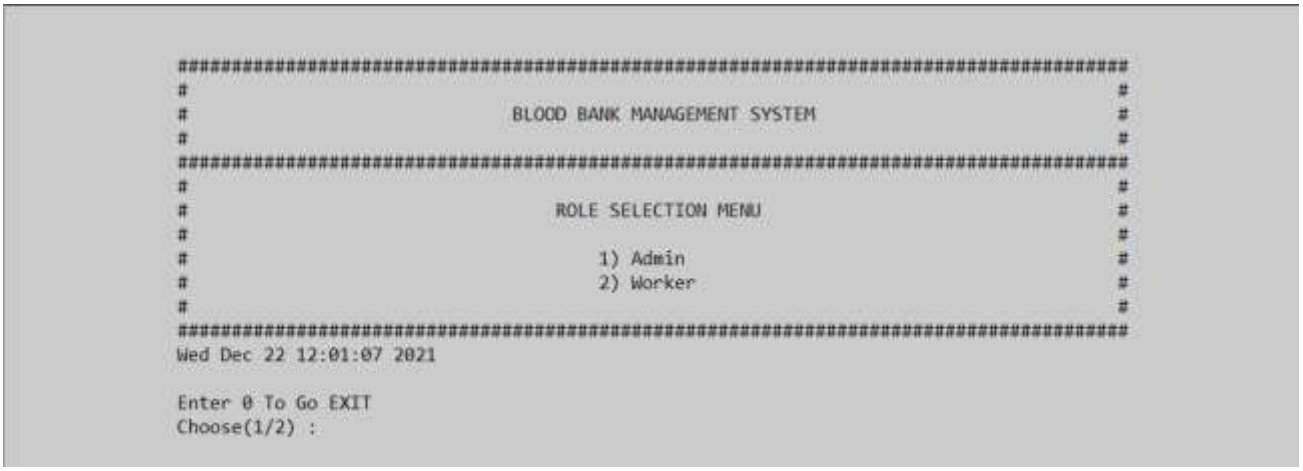


Figure 3.4(b): Shows the menu to select user's role

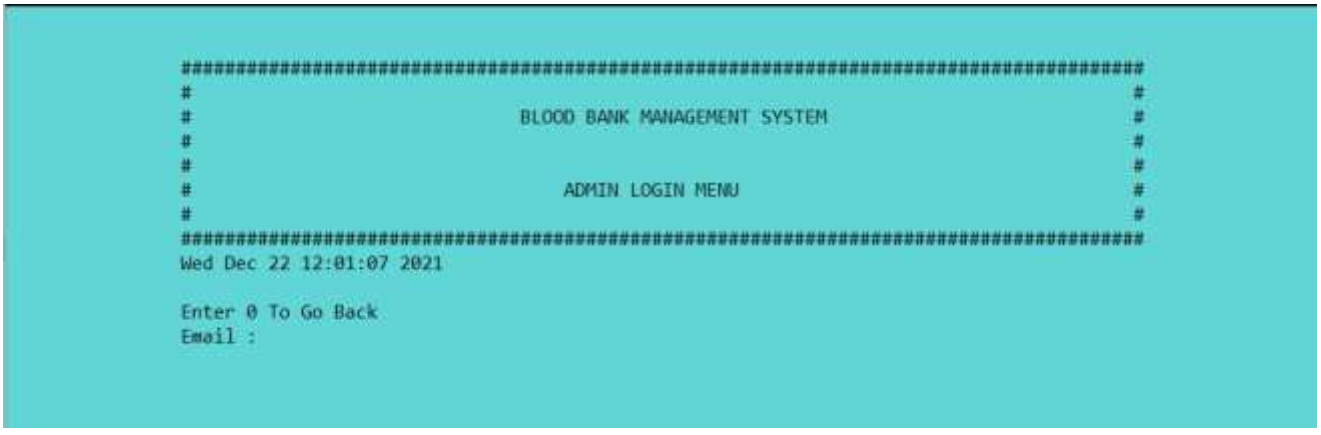


Figure 3.4(c) : Admin and Worker Login page

```
*********************************************************************************************
*                                                                                           *
*                                BLOOD BANK MANAGEMENT SYSTEM                               *
*                                                                                           *
*                                                                                           *
*                                   WORKER LOGIN MENU                                       *
*                                                                                           *
*********************************************************************************************
Wed Dec 22 12:01:07 2021

Enter 0 To Go Back
Email :
```

Figure 3.4(d): Worker Login Page

```
#############################################################################################
#                                                                                           #
#                                BLOOD BANK MANAGEMENT SYSTEM                               #
#                                                                                           #
#############################################################################################

                                      ADMIN MAIN MENU

_____________________________________________________________________________
|                                                                           |
|                                  1-   Donor's Data                        |
|                                  2-   Worker's Data                       |
|                                  3-   Blood Data                          |
|                                                                           |
|___________________________________________________________________________|
|                                  PUSAT DERMA DARAH                        |
|___________________________________________________________________________|
|                                  4-   Show All Pusat Derma Darah          |
|                                  5-   Modify Pusat Derma Darah Detail     |
|                                  6-   Add Pusat Derma Darah               |
|                                  7-   Delete Pusat Derma Darah            |
|                                                                           |
|___________________________________________________________________________|
|                                     HOSPITAL                              |
|___________________________________________________________________________|
|                                  8-   Show All Hospital                   |
|                                  9-   Modify Hospital Detail              |
|                                  10-  Add Hospital                        |
|                                  11-  Delete Hospital                     |
|                                                                           |
|___________________________________________________________________________|
|                                   ORDER BLOOD                             |
|___________________________________________________________________________|
|                                  12-  View Order                          |
|                                  13-  Create Order                        |
|                                  14-  Search Order                        |
|                                  15-  Delete Order                        |
|                                  16-  Modify Order Detail                 |
|___________________________________________________________________________|
Wed Dec 22 12:01:07 2021


ENTER "0" To Exit
Choose :
```

Figure 3.4(e): Shows admin menu when admin enter correct admin ID and password

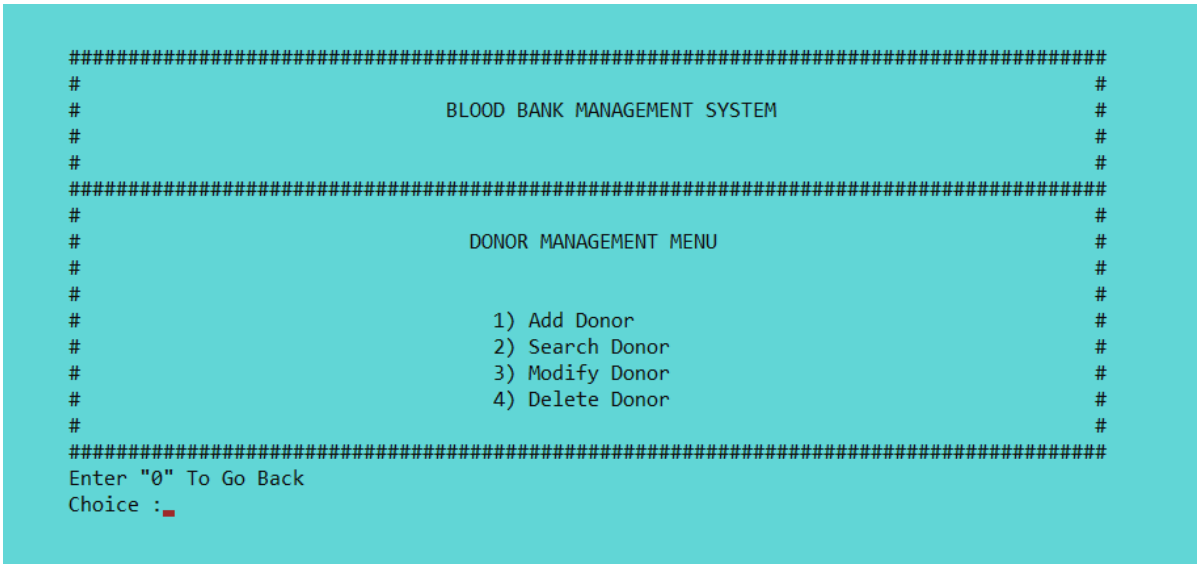


Figure 3.4(f): Shows Admin Handle Donor Menu

Figure 3.4(g): Donor Register Menu for Admin and Worker

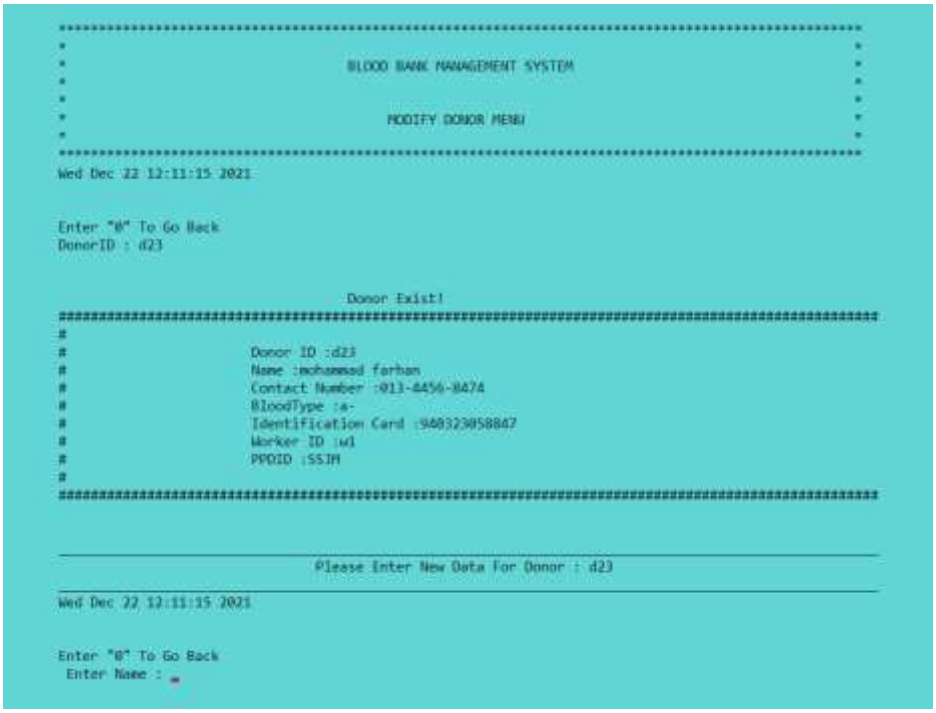


Figure 3.4(h): Donor Modify Menu for Admin and Worker

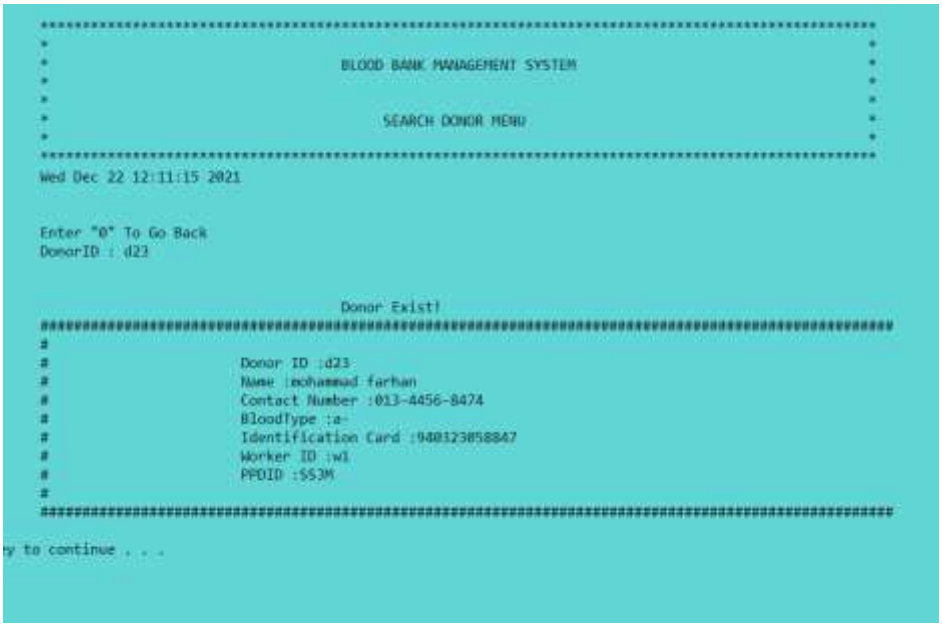


Figure 3.4(i): Donor Search Menu for Admin and Worker

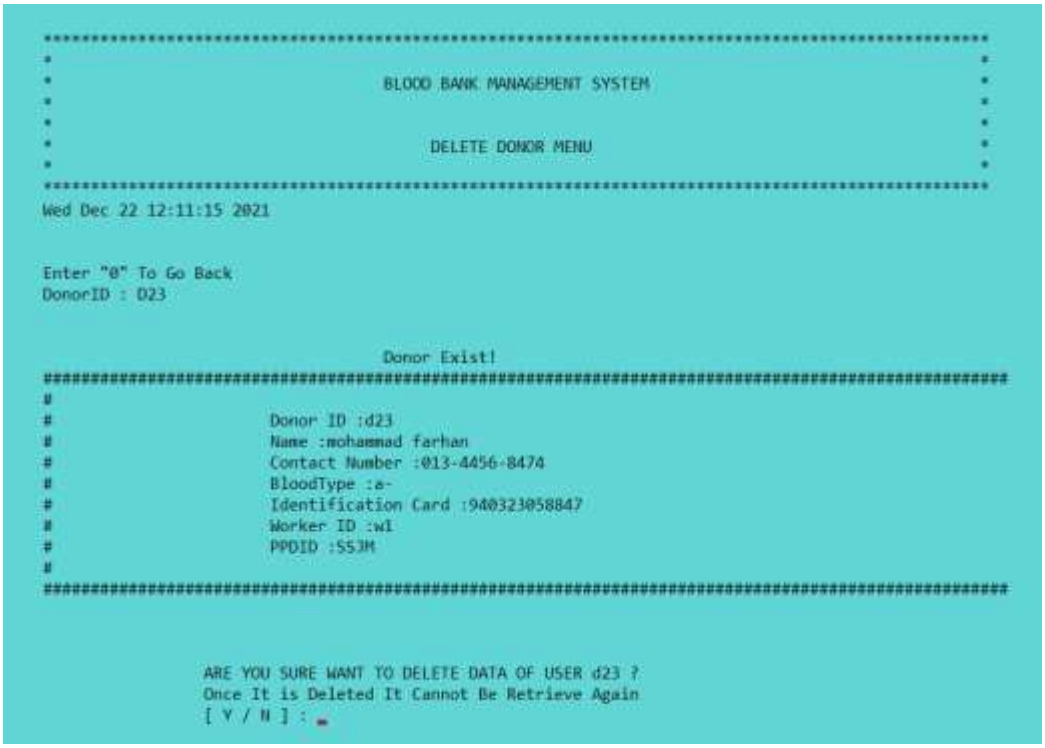


Figure 3.4(j): Donor Delete Menu for Admin

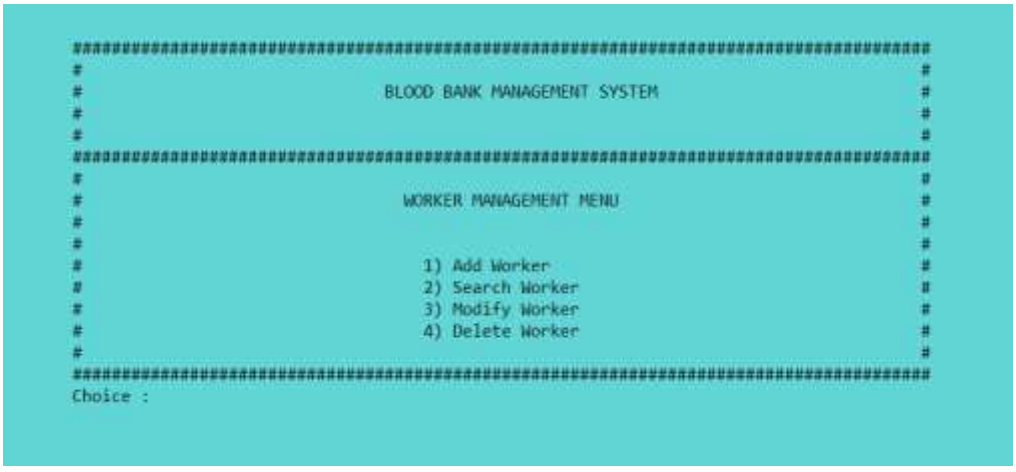


Figure 3.4(i): Admin Manage Worker Menu.

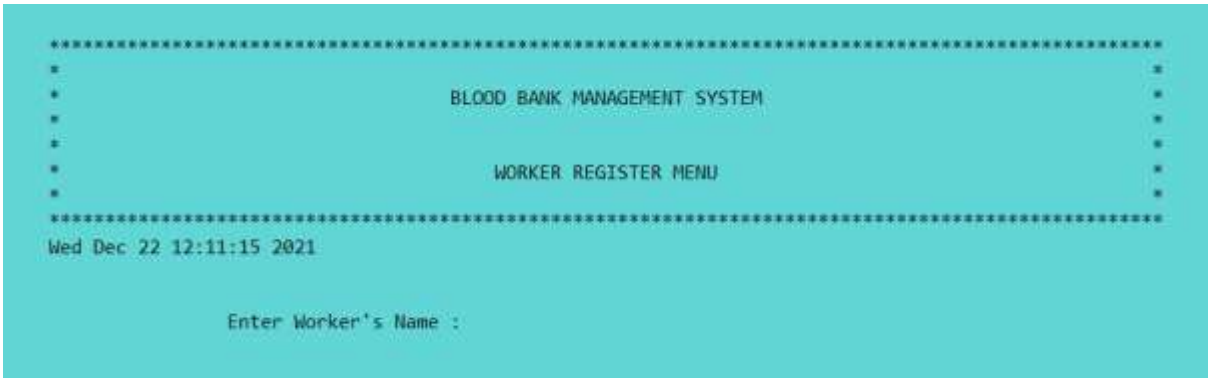


Figure 3.4(j): Register Worker Menu

Figure 3.4(k): Search Worker Menu

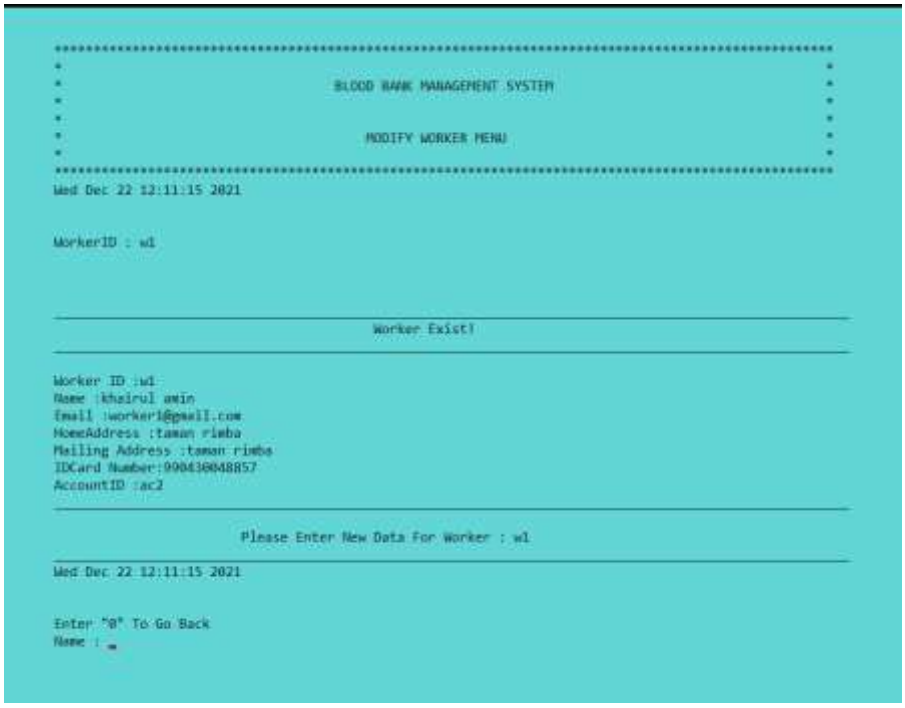


Figure 3.4(l): Modify Worker menu

Figure 3.4(m): Delete Worker Menu

Figure 3.4 (n): Pusat Derma Darah Detail Menu

Figure 3.4 (o): Modify Pusat Derma Darah Menu

Figure 3.4 (p): Register Pusat Derma Darah Detail Menu

Figure 3.4 (q): Delete Pusat Derma Darah Menu

Figure 3.4 (r): Hospital Detail Menu

Figure 3.4 (s): Modify Hospital Menu

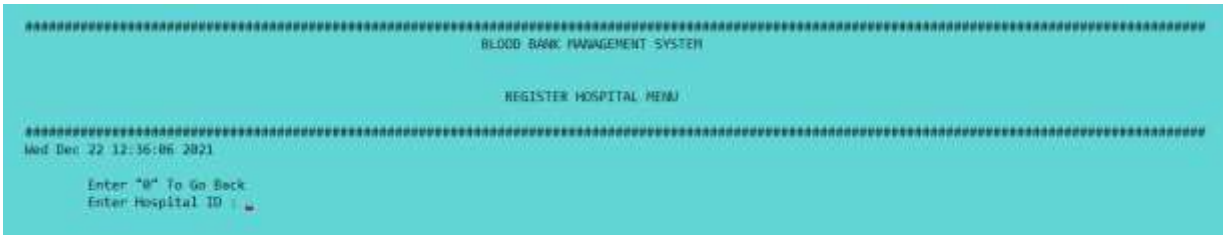


Figure 3.4 (t): Register Hospital Detail Menu

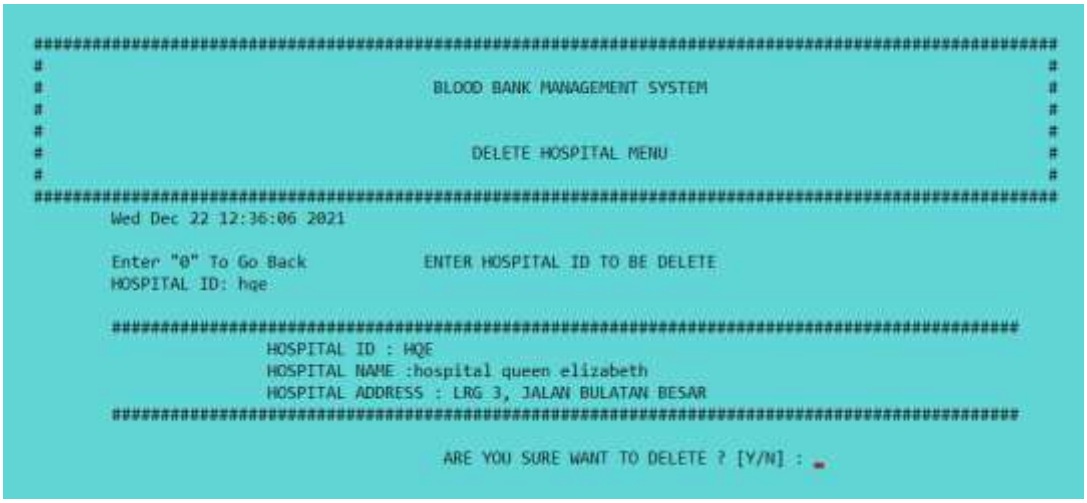


Figure 3.4 (u): Delete Hospital Menu

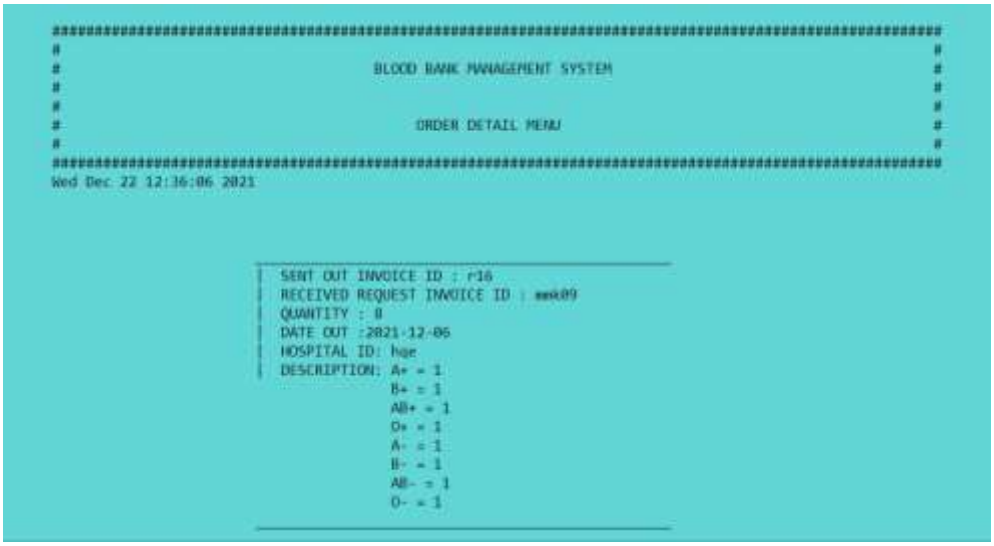


Figure 3.4 (v): Order Detail Menu

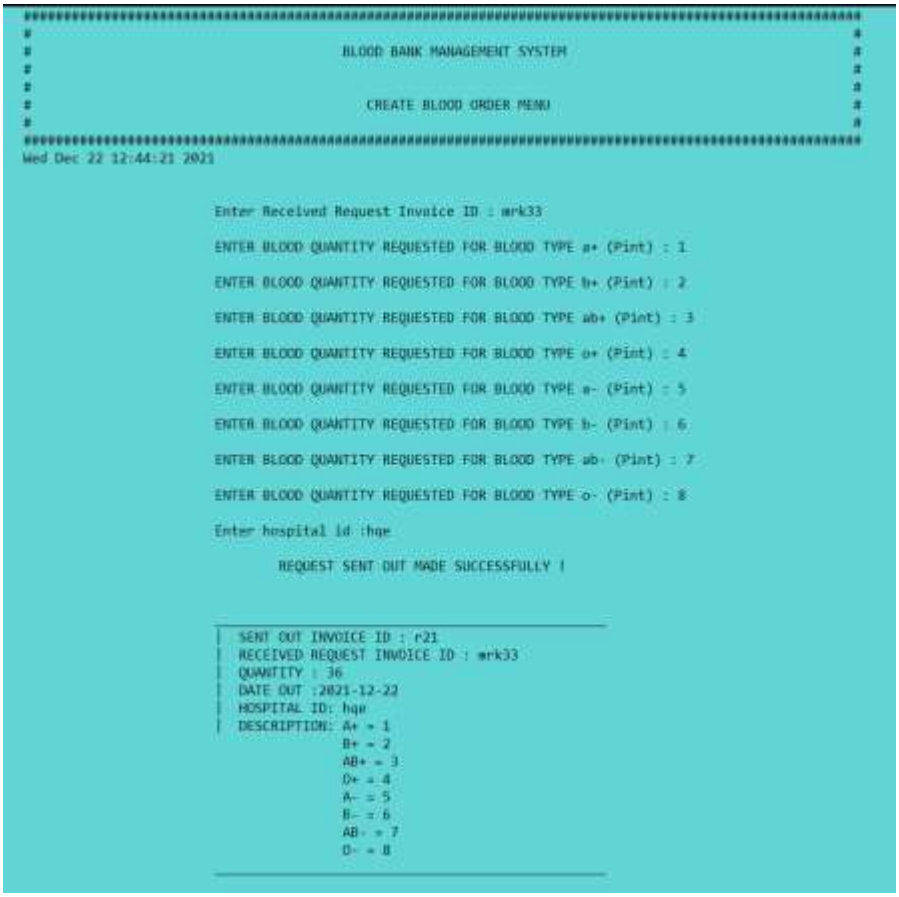


Figure 3.4 (w): Create Order Menu

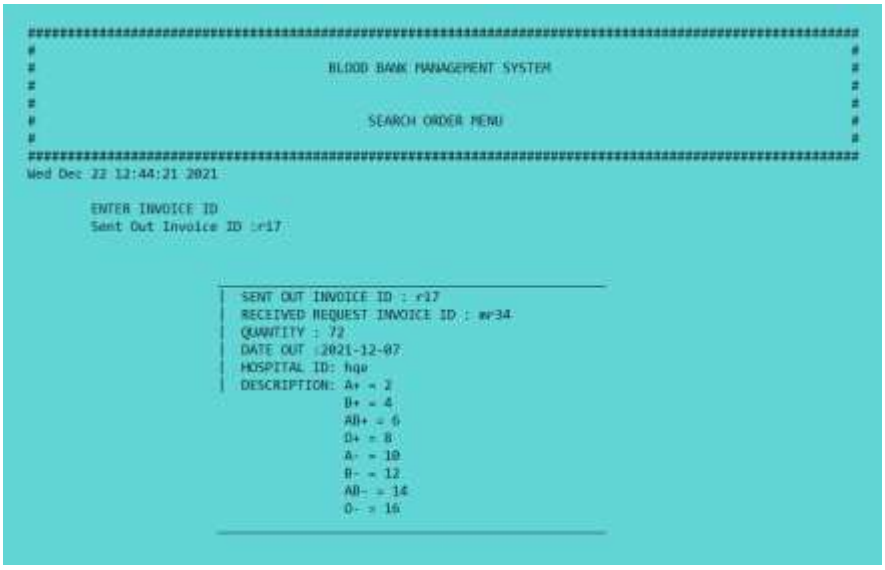


Figure 3.4 (x): Search Order Menu

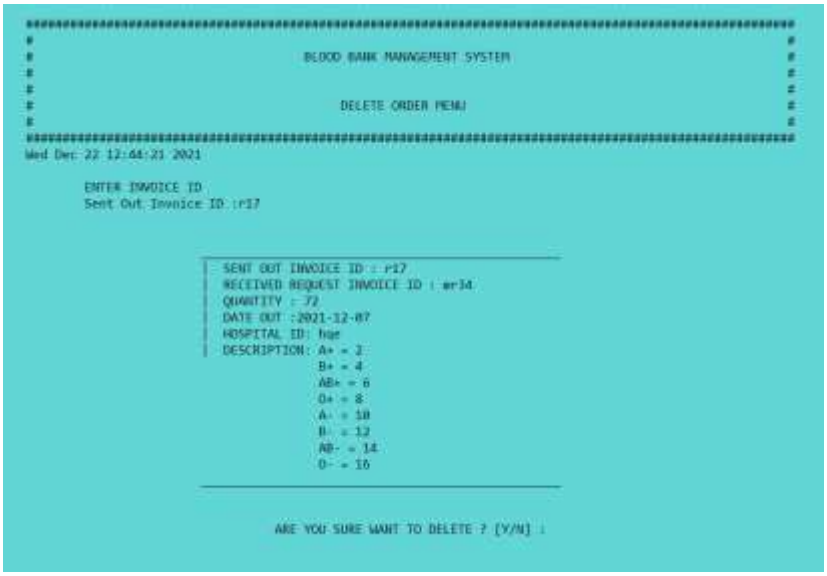


Figure 3.4 (y): Delete Order Menu

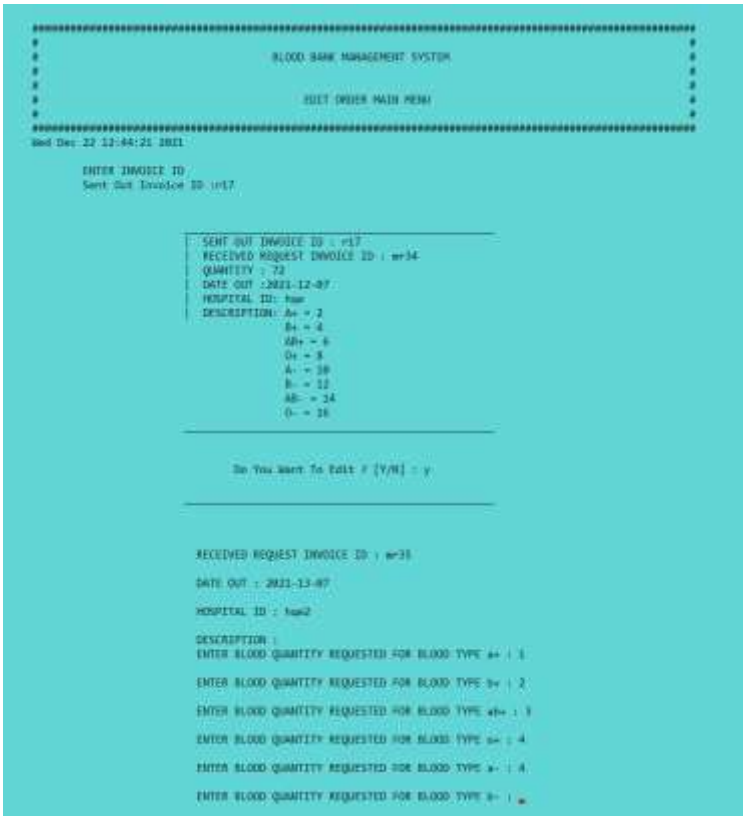


Figure 3.4 (z): Modify Order Menu

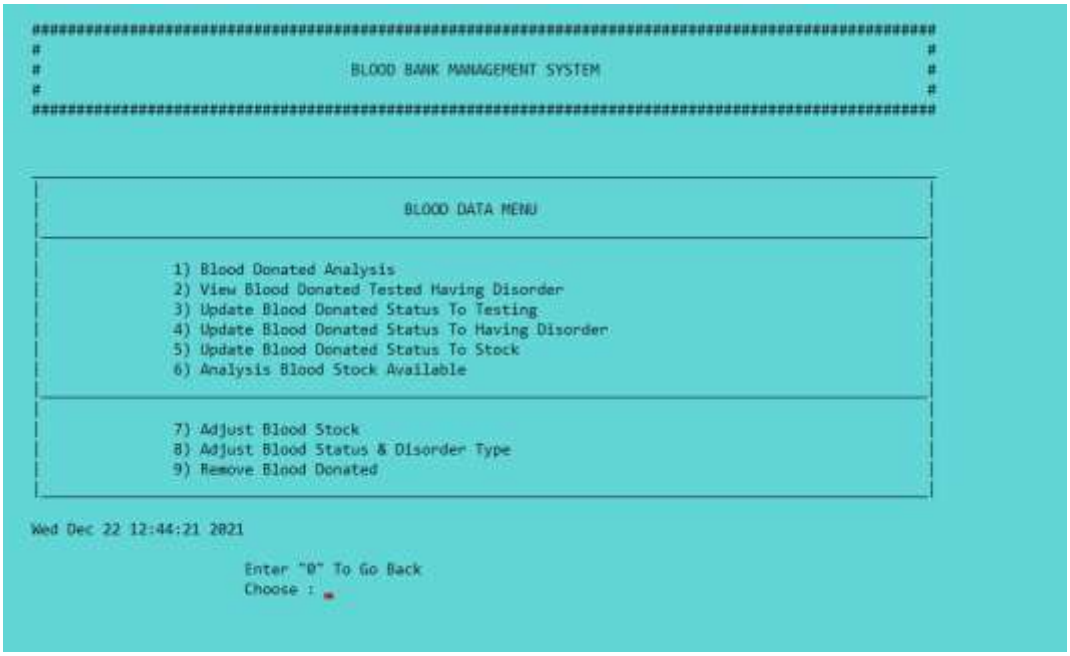
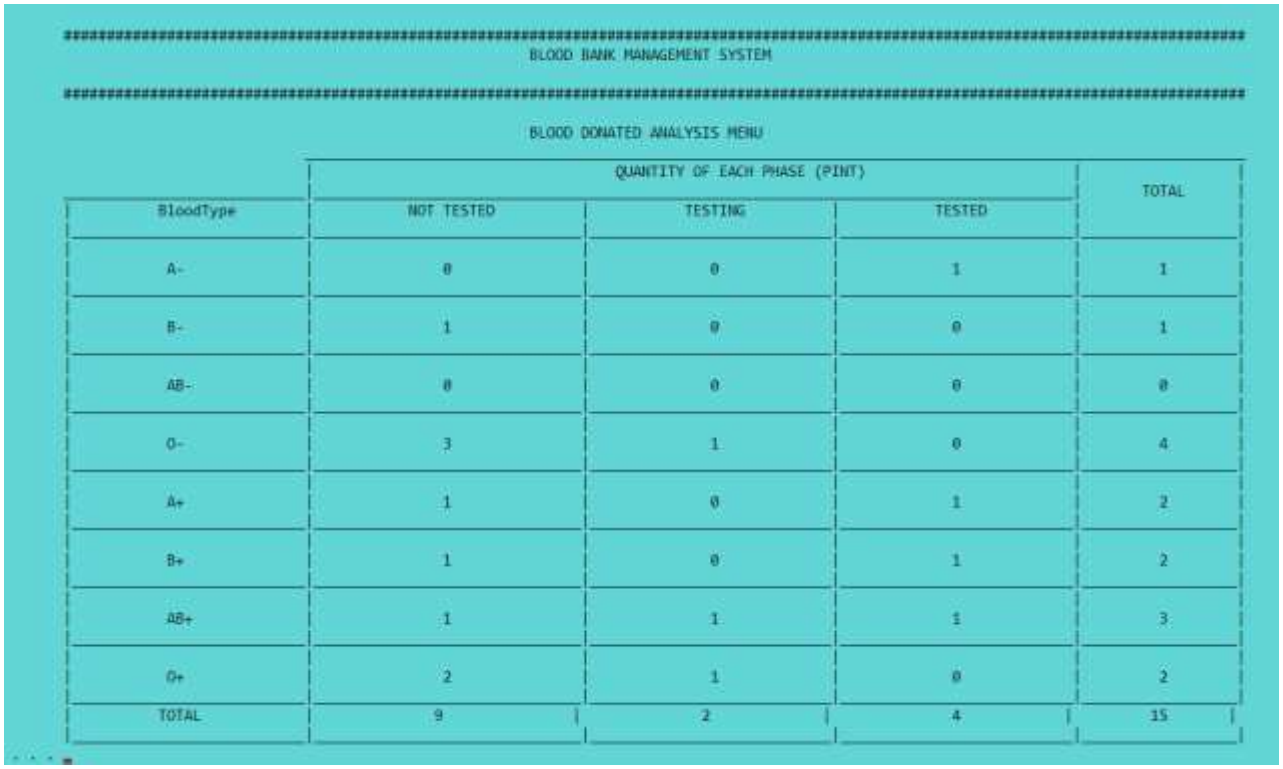
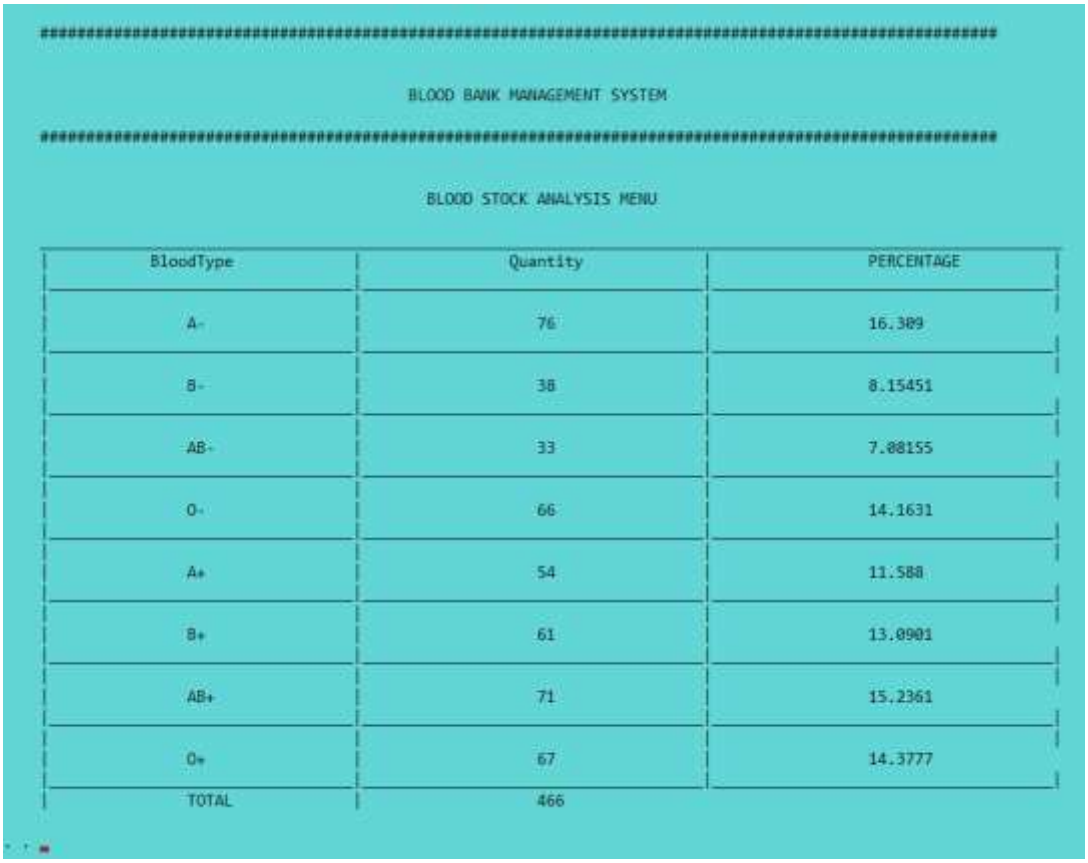


Figure 3.5 (a): Blood Data Menu for Admin



BloodType	QUANTITY OF EACH PHASE (PINT)			TOTAL
	NOT TESTED	TESTING	TESTED	
A-	0	0	1	1
B-	1	0	0	1
AB-	0	0	0	0
O-	3	1	0	4
A+	1	0	1	2
B+	1	0	1	2
AB+	1	1	1	3
O+	2	1	0	2
TOTAL	9	2	4	15

Figure 3.5 (b): Blood Donated Data Analysis Menu

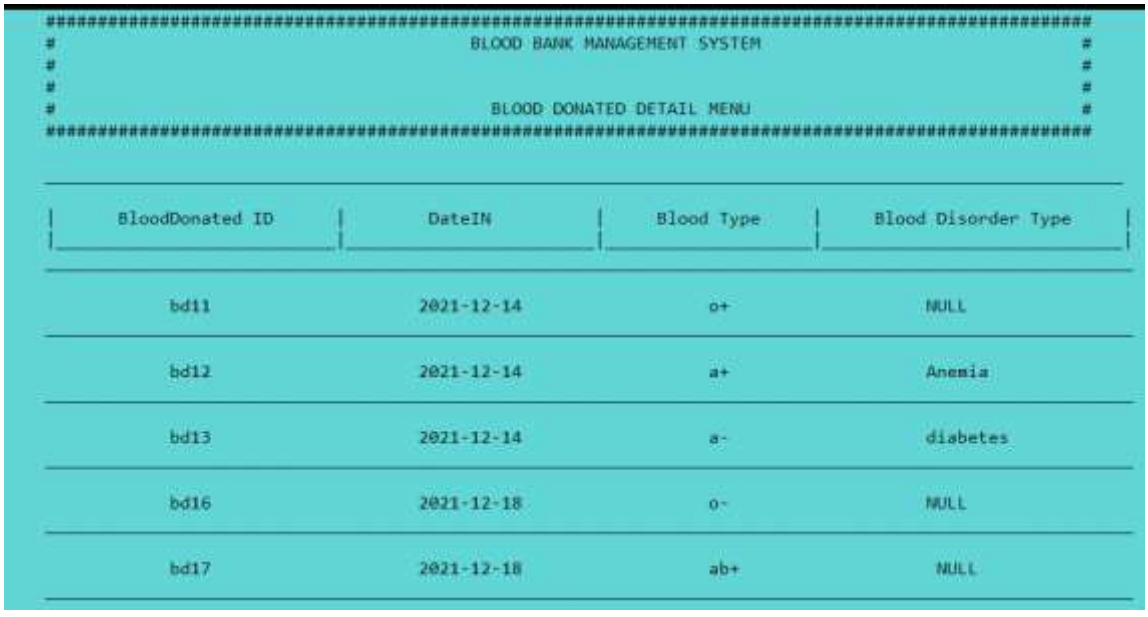


BLOOD BANK MANAGEMENT SYSTEM

BLOOD STOCK ANALYSIS MENU

BloodType	Quantity	PERCENTAGE
A-	76	16.309
B-	38	8.15451
AB-	33	7.08155
O-	66	14.1631
A+	54	11.588
B+	61	13.0901
AB+	71	15.2361
O+	67	14.3777
TOTAL	466	

Figure 3.5 (c): Blood Stock Analysis Menu



BLOOD BANK MANAGEMENT SYSTEM

BLOOD DONATED DETAIL MENU

BloodDonated ID	DateIN	Blood Type	Blood Disorder Type
bd11	2021-12-14	o+	NULL
bd12	2021-12-14	a+	Anemia
bd13	2021-12-14	a-	diabetes
bd16	2021-12-18	o-	NULL
bd17	2021-12-18	ab+	NULL

Figure 3.5 (d): Blood Donated Detail Menu

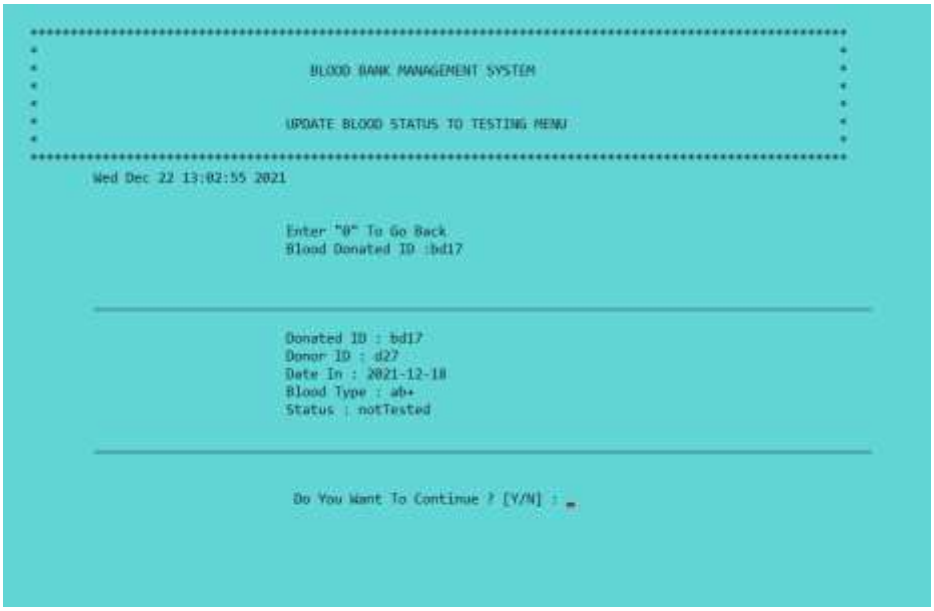


Figure 3.5 (e): Update Blood Status To Testing Phase Menu

Figure 3.5 (f): Update Blood Status To Tested Phase Menu

Figure 3.5 (g): Update Blood Status To Stock Menu

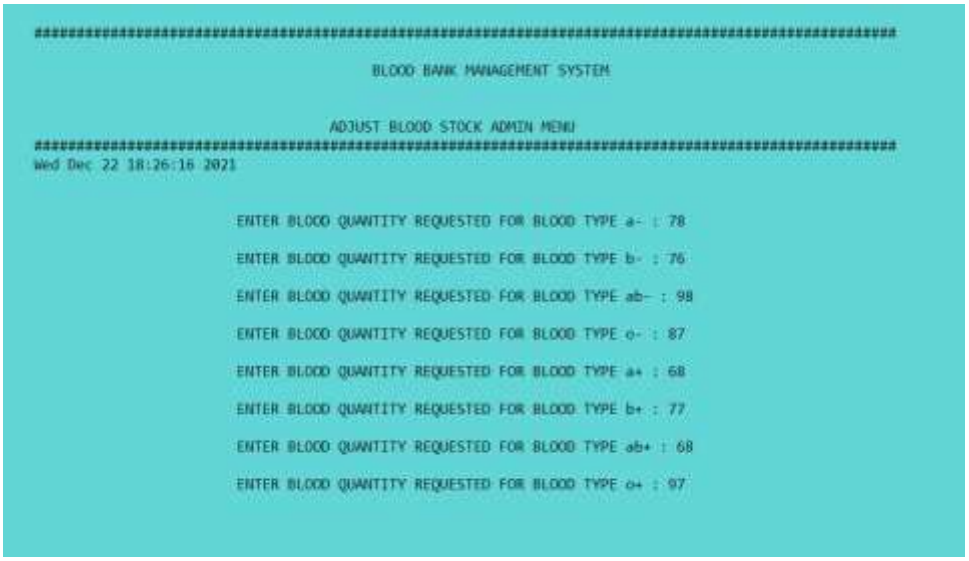


Figure 3.5 (h): Adjust Blood Stock Admin Men

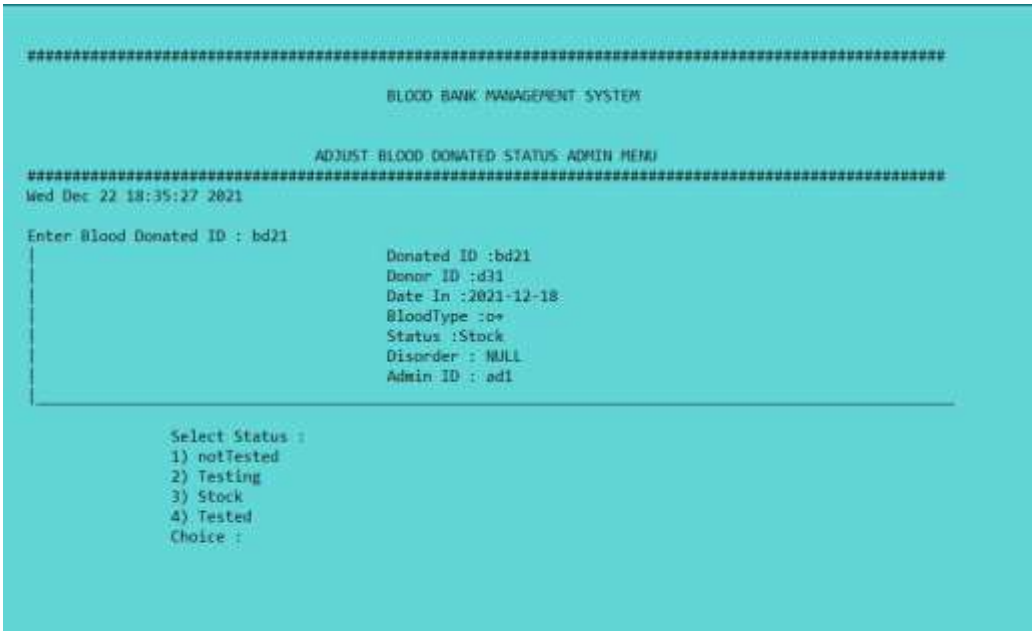


Figure 3.5 (i): Adjust Blood Donated Admin Menu

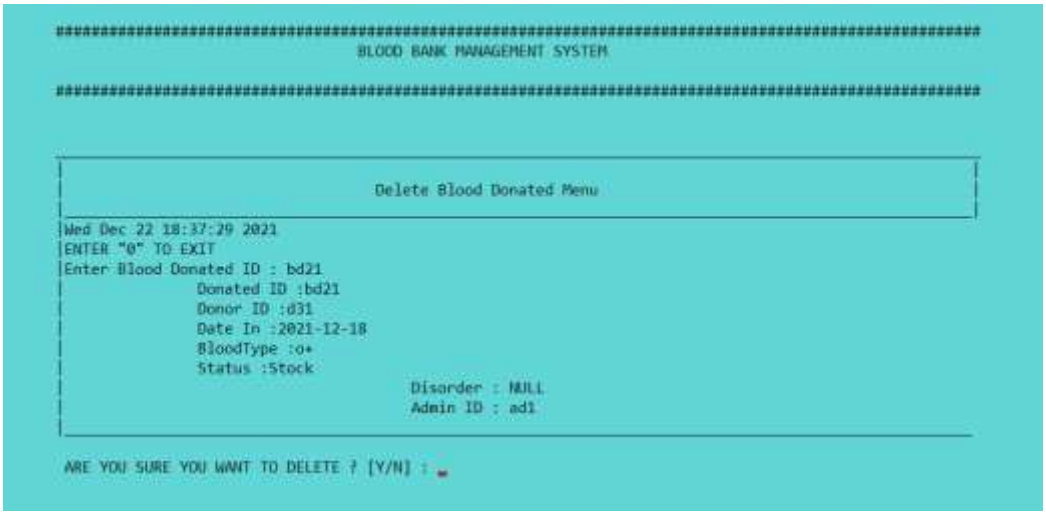


Figure 3.5 (j): Admin Delete Blood Donated Menu

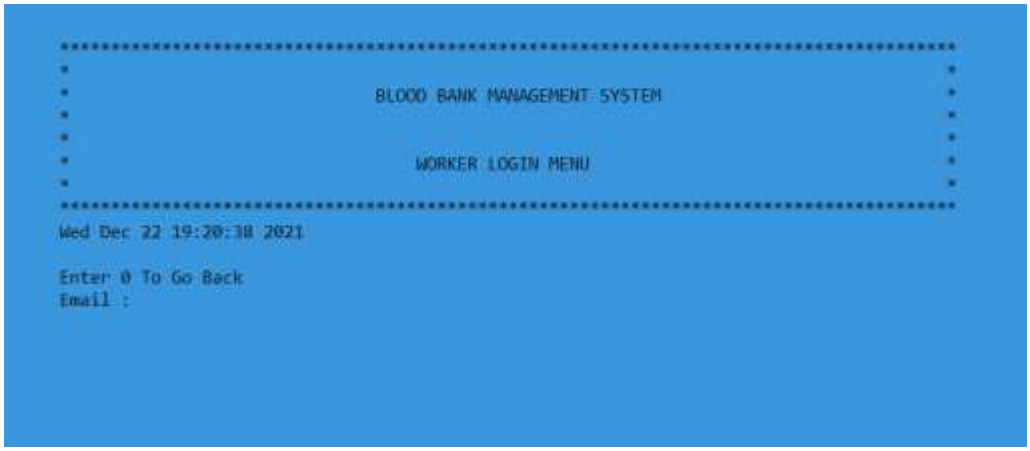


Figure 3.5 (k): Worker Login Menu

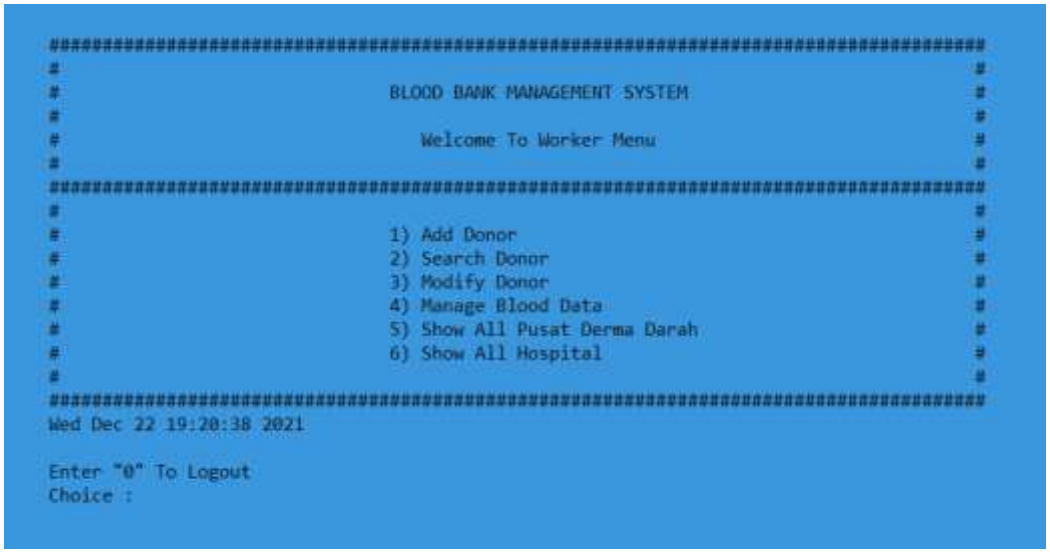


Figure 3.5 (l): Worker Menu

Chapter 4 : Implementation

4.1 Database

Data Manipulation Language (DML)

Data manipulation language that use is Structured Query Language (SQL). Blood Bank Management System, use retrieve, insert update and delete data. SQL also used to create tables in database of Blood Bank Management System.

4.1.1 Listing Table Rows

Command Used to Retrieve the content of a table

```
"SELECT * FROM pusatdermadarah"
```

4.1.2 Adding Table Rows

Command Used to Insert the content of a table

```
"INSERT INTO pusatdermadarah (PPDID, Name, Address) VALUES ('" + PPDID +
"','" + PPDName + "', '" + PPDAddress + "')"
```

4.1.3 Updating Table Rows

Command Used to Update the content of a table

```
"UPDATE pusatdermadarah SET Name='" + ppdname + "', Address='" + ppdaddress
+ "' WHERE ppdid = '" + ppdid + "'"
```

4.1.4 Deleting Table Rows

Command Used to Delete the content of a table

```
"DELETE FROM `pusatdermadarah` WHERE PPDID = '" + ppdid + "'"
```

4.2 Programming Technique

In this Blood Bank Management System, programming language used is C++ Console. In Workshop 1, only C++ language can be used to complete the project. PhpMyAdmin is used for the database as Xampp run as the localhost web server. In this system, few techniques are used such as loop and conditional control structure.

4.2.1 Connection To Database

```
//DONE
class db_response
{
public:
    static void ConnectionFunction()
    {
        conn = mysql_init(0);
        if (conn)
        {
            cout << "\t\t\t\t\tDatabase Initiated and Connecting\n\n" << endl;
            system("pause");
            system("cls");
        }
        else
            cout << "Failed To Connect" << mysql_errno(conn) << endl;


        conn = mysql_real_connect(conn, "localhost", "root", "", "bloodbankmanagement", 3306, NULL, 0);
        if (conn)
        {
            cout << "\n\n\n\n\n\n\t\t\t\t\t---+ Database Connected Successfully +---" << endl;
            cout << "\n\n\t\t\t\t\t        " << date_time;
            system("PAUSE");
            system("CLS");
        }
        else
        {
            cout << "\t\t\t\t\tFAILED TO CONNECT TO DATABASE" << mysql_errno(conn) << endl;
            system("PAUSE");
            exit(3);
        }
    }
};
```

Figure 4.1(a): Coding for Connecting to Database for Blood Bank Management System

4.2.2 Loop and Conditional

Figure 4.1(a): Example of do while loop technique in the program

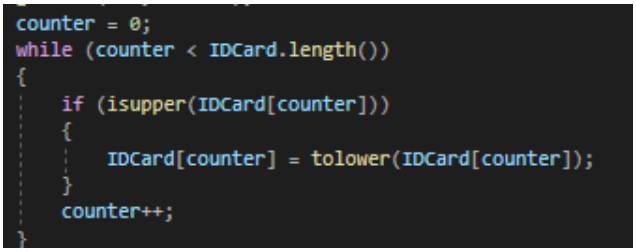


Figure 4.1(b): Example of while loop technique in the program

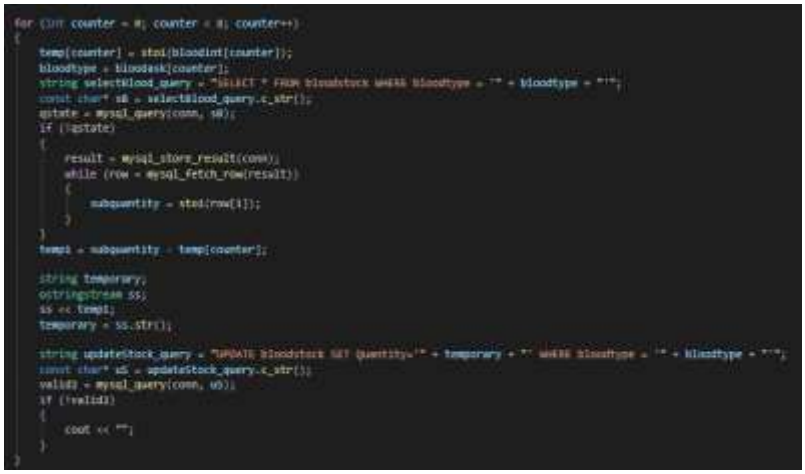


Figure 4.1(c): Example of For loop technique in the program

Conditional Statement

```
if (option == 1) { addWorker(); }
else if (option == 2) { SearchWorker(2); }
else if (option == 3) { SearchWorker(3); }
else if (option == 4) { SearchWorker(4); }
else  if (option == 0) { AdminHandle(); }
else
{
    HandleWorkerMenu();
}
```

Figure 4.1(d) : Example of if else conditional statement in the program

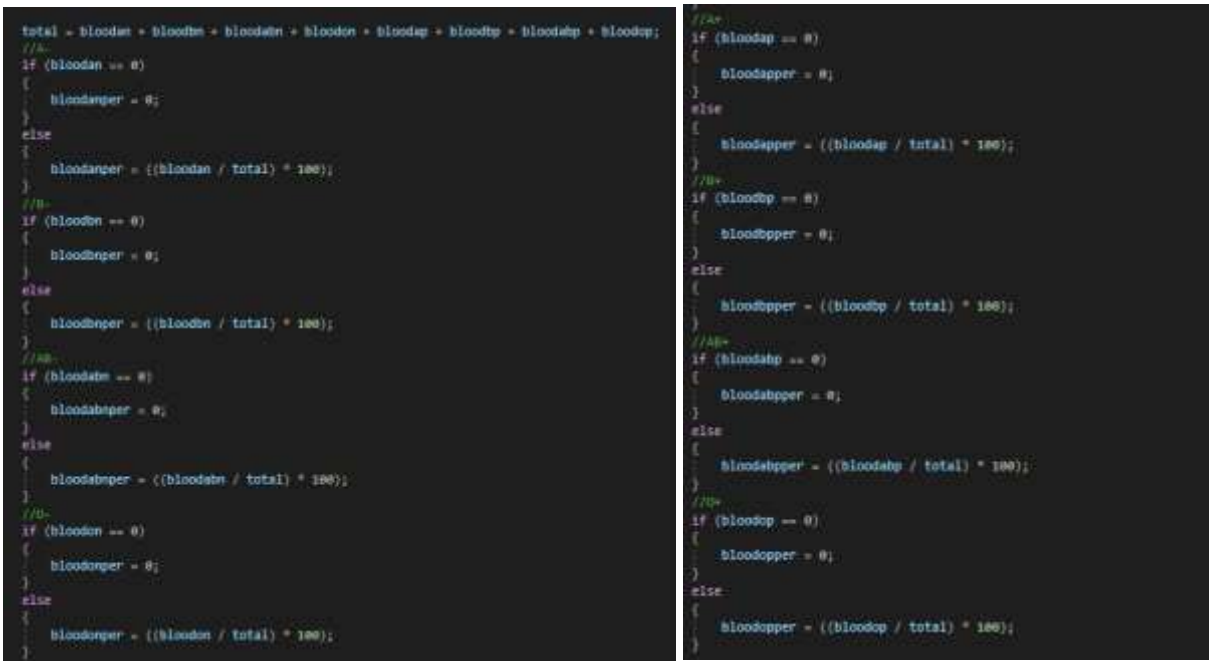
4.2.3 Switch and Pointer Case

```
switch (option)
{
case 0:
    atexit(logout);
    break;
case 1:
    addDonor(2);
    break;
case 2:
    SearchDonor(2, 2);
    break;
case 3:
    SearchDonor(2, 3);
    break;
case 4:
    HandleBlood(2);
    break;
case 5:
    ShowPPD(2);
    break;
case 6:
    ShowHospital(2);
    break;
default:
    goto  workermain;
    break;
```

Figure 4.1(e) : Example of switch case conditional statement in the program

Figure 4.1(f) : Example of pointer in the program

4.2.4 Calculation Function



```
total = bloodan + bloodbn + bloodabn + bloodon + bloodap + bloodbp + bloodabp + bloodop;
//A-
if (bloodan == 0)
{
    bloodanper = 0;
}
else
{
    bloodanper = ((bloodan / total) * 100);
}
//B-
if (bloodbn == 0)
{
    bloodbnper = 0;
}
else
{
    bloodbnper = ((bloodbn / total) * 100);
}
//AB-
if (bloodabn == 0)
{
    bloodabnper = 0;
}
else
{
    bloodabnper = ((bloodabn / total) * 100);
}
//O-
if (bloodon == 0)
{
    bloodonper = 0;
}
else
{
    bloodonper = ((bloodon / total) * 100);
}
```

```
//A+
if (bloodap == 0)
{
    bloodapper = 0;
}
else
{
    bloodapper = ((bloodap / total) * 100);
}
//B+
if (bloodbp == 0)
{
    bloodbpper = 0;
}
else
{
    bloodbpper = ((bloodbp / total) * 100);
}
//AB+
if (bloodabp == 0)
{
    bloodabpper = 0;
}
else
{
    bloodabpper = ((bloodabp / total) * 100);
}
//O+
if (bloodop == 0)
{
    bloodopper = 0;
}
else
{
    bloodopper = ((bloodop / total) * 100);
}
```

Figure 4.1(g): Example of how calculation is implemented in the program

```
string searchABNBlood_query = "SELECT COUNT(*) FROM `blooddonated` WHERE Status = 'notTested' AND BloodType = 'ab-'";
const char* sABNB = searchABNBlood_query.c_str();
valid = mysql_query(conn, sABNB);
if (!valid)
{
    result = mysql_store_result(conn);
    while (row = mysql_fetch_row(result))
    {
        bloodabn = stod(row[0]);
    }
}
```

Figure 4.1(h): Example of how calculation is implemented through PhpMyAdmin database the program

4.2.5 ERROR HANDLING

Error handling are used in the system. It is a response to an exceptional circumstance that arises while a program is running and will provide a way to transfer control from one part of a program to another.

```
try
{
    if (choicePosition == "0") { atexit(logout); }

    else if (choicePosition == "1")
    {
        AdLog = AdminLogin();
        if (AdLog == 1) { AdminHandle(); }
        else goto LoginBack;
    }
    else if (choicePosition == "2")
    {
        Wlog = WorkerLogin();
        if (Wlog == 2)
        {
            WorkerMenu();
        }
        else goto LoginBack;
    }
    else {
        throw 99;
    }
}
catch (int e)
{
    cout << "\n\n\t\tDO YOU WANT TO EXIT ? [Y/N] : ";
    cin >> exchoice;
    if (exchoice == "y" || exchoice == "Y")
    {
        atexit(logout);
    }
    else
    {
        system("cls");
        goto LoginBack;
    }
```

Figure 4.2(a): Example of error handling using try and catch on selecting roles

```
{
    result = mysql_store_result(conn);
    if (result->row_count == 1) //find user
    {
        string checkUserAdmin_query = "select * from admin where email = '" + email + "'";
        const char* cuA = checkUserAdmin_query.c_str();
        qstate = mysql_query(conn, cuA);
        if (!qstate)
        {
            result = mysql_store_result(conn);
            while (row = mysql_fetch_row(result))
            {
                user = row[2];
                id = row[1];
            }
            return 1;
        }
        else
        {
            goto AdminReLogin;
        }
    }
    else
    {
        goto AdminReLogin;
    }
}
else {
    goto AdminReLogin;
}
```

Figure 4.2(b): Example of error handling using else when users enter invalid username or password

CHAPTER 5 : Conclusion

Inconclusion, Blood Bank Management System is a tool to ease the management of donor, worker, blood donated and blood bank order data. By having the management system, every data won't need to be written on paper, where it is prone to damages and hectic to be manage. Blood Bank Management System will revolutionize the blood banking system and thus more blood transaction and donation can be done in the future. Despite using the database, Blood Bank management system has some constraint and can be improve in the future.

5.1 – Constraints

Main constraint of Blood Bank Management System is it can only access through one computer only which make it harder for other user to use it too at the same time. Besides, this system is Command Line Interface(CLI) which is a text-based user interface. It is quite difficult for user to use the system to the fullest since there is no interface such as Graphical User Interface(GUI). Secondly, database haven't connected to internet where it can't have a cloud backup where backup is available for 24 hours and data won't be missing if deleted to the computer destroyed in case of natural disaster or stolen.

5.2 – Future Improvements

Future improvements for Blood Bank Management System are for the system to improve to a Graphical User Interface (GUI). So, it is easier for user to understand and operate the system. Besides, it will be more interesting and better with GUI instead of CLI. In addition, it is better for the system to be a user-friendly system where user can use it both on mobile devices and PC to ease their work. With all the implementation, the system can be used easily without any limitation. Database and Blood Bank Management System will be connected to internet and can be access online 24 hours, so it has an online backup data in case of local data is destroyed or stolen.