

“Project Report”

<Bank Management System>

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Language Used:

C++

Abstract

This project aims to fulfill the requirements of customers that use online banking for payment. The design and development of this project provides a secured approach in managing bank customer's information. Any organization needs to manage customer requirements smoothly in order to be successful. Such acts help to strengthen the relationships between banks and their customers. Bank Management System has been designed to perform the tasks smoothly and easily which cannot be accomplished through any manual system efficiently. This project has interesting features like Creating New Account, Depositing and Withdrawing money, Displaying and managing account holders data, Transferring cash, Deleting all records and the Help section. The programming language used to develop this project is C++.

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1. Introduction

Banking activities are in fact considered to be of great importance to the national economy. Without these services, trading or business activities etc. cannot be carried on smoothly and efficiently. Banks are the distributors and main protectors of liquid capital which is of vital significance to a developing country and even to a developed country. Efficient administration of the banking system helps in the economic growth of the nation as it is also useful to trade and commerce. During the last couple decades, bank operations are being performed electronically, instead of manually and this is online banking.

Online banking allows the customers of a financial institution to conduct financial transactions on a secured website operated by the institution. It is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting the institution personally. It is an activity that is now not new to banks or their customers. Banks have been providing their services to the customers electronically for years through software programs to make their work much more efficient. Such software programs allow the users to access the banks directly.

In the past, banks were reluctant to provide their customers with online banking due to security concerns but now, such concerns are no more. A computer based management system is designed to make operations much more efficient and to allow the users to access the features of a bank without making any personal trips. We also aspire to ease the banking operations through our management system. Our project performs all essential functions of a bank quite efficiently and organizes the user's data with great care.

2. Problem Statement (Existing System)

The Bank Management System is an application that is used for maintaining a person's account in a bank. The system should provide access to the costumer to features such as creating an account, depositing/withdrawing the cash from his account etc. Systems that we stumbled upon had quite a lot of problems such as:

- ✚ Cannot create multiple accounts at the same time.
- ✚ No help section to provide contact information of head office of the organization.
- ✚ Some systems could create multiple accounts at the same time but the number was fixed.
- ✚ Some identified users on basis of their names. If two users have the same name, there were confusions and concerns about which account belonged to which user.
- ✚ Customer's information could not be saved in a master file.
- ✚ No option available to delete all records at the same time.
- ✚ No option available to view all records saved in the system.
- ✚ Interface was not user friendly.

The above mentioned problems could prove be quite deadly to the organization and customer relationship. The motivation to create a banking management system came from the desire to counter these problems in order to make online banking more efficient for the customers.

3. Solutions of problems by Proposed System

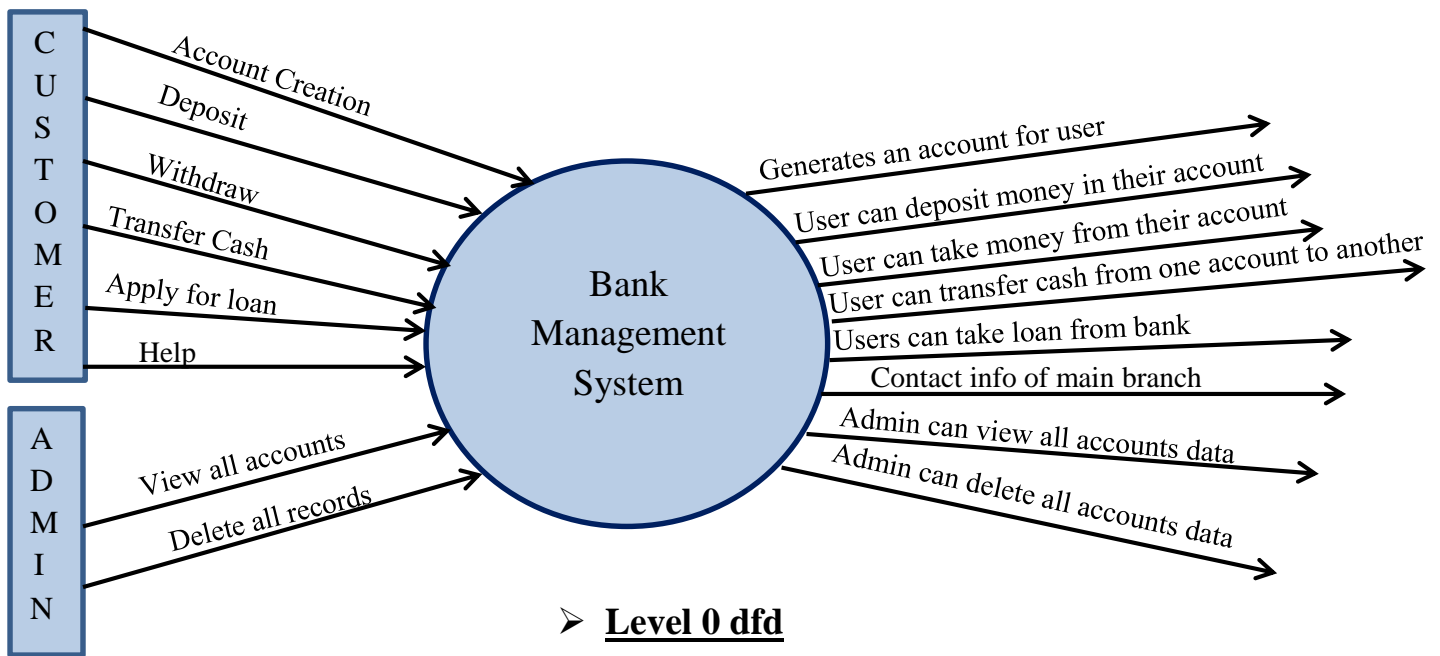
The purpose of our proposed system is to provide a platform which can help the users to access and perform the banking operations easily. This system will be extremely beneficial for the customers who have the intention to make all their transactions online. They will get various benefits in the field of management of accounts on a clean and user-friendly platform. Our system has the following benefits:

- ✚ It provides flexibility for secure and safe transaction.
- ✚ Using our system will reduce manual power needed to manage records in organizations.
- ✚ A computer system works way more accurately than manual labor.
- ✚ It has a faster performance as compared to manual power.
- ✚ It is User ID protected and is a relatively safe system.
- ✚ The interface is user friendly and clear enough so users can easily understand the system to make various transactions.
- ✚ The record entered is saved in a master file and can be viewed inside the application or in the form of a txt file.
- ✚ Complex banking transactions are efficiently handled.
- ✚ It is cost effective.
- ✚ Complex Banking operations and Transaction operations are efficiently handled by our system.

The above mentioned points are implemented in our application by the help of the programming language C++.

4. Project Scope

This project intends to introduce more user friendliness in all the banking transactions. All modules of the system have been made quite simple but only authorized personnel can access the records, the authorized personnel being the customers and administrators of the system. The records are up to date and are saved in master file. Accounts can be created per user demand. Users can also withdraw money, deposit money and apply for a loan. A help section has also been designed so that if users want, they can have the necessary information to contact the head office for more information on tricky matters.



5. Modules

4.1 Module 1: Create an account

Features:

- In this module, features regarding account creation will be handled.
- New users can easily register for our system by filling in the form.
- After filling in, they can also see their information being displayed.
- Multiple accounts can be created at one time, depending on the user input.

4.2 Module 2: Deposit money

Features:

- Users will be asked to input their account number.
- Only if the account exists can they deposit their money.
- No limit on depositing cash.

4.3 Module 3: Withdraw money

Features:

- Users will be asked to input their account number.
- Only if the account exists can they withdraw their money.
- There is a limit on withdrawing money.
- Users can withdraw only more than 500Rs and less than 25000Rs at one time.

4.4 Module 4: View all accounts

Features:

- A pin has to be entered in order to access this module.
- Pin is set so that only the system administrator is able to access this feature.
- All data of users will be stored in a master file (txt file).
- By help of this module, that information can be viewed inside the system in an organized format.

4.5 Module 5: Transfer Cash

Features:

- Users will be asked to input their account number.
- Only if the account exists can the operation continue.
- Cash can be transferred to another account number.
- No limit on amount of cash to be transferred.

4.6 Module 6: Apply for a loan

Features:

- Users will be asked to input their account number.
- Only if the account exists can the operation continue.
- Users can easily apply for a loan by choosing from the given rates by main branch.

- This module will also show how much interest will be charged and also shows the total amount of money to be paid back to the bank.

4.7 Module 7: Delete all records

Features:

- A pin has to be entered in order to access this module.
- Pin is set so that only the system administrator is able to access this feature.
- A prompt will be given to ensure that the user really wants to perform this task or not.
- All records stored in the txt file will be deleted.

4.8 Module 8: Help

In this module, the contact number, email and address of the head office of the organization is given.

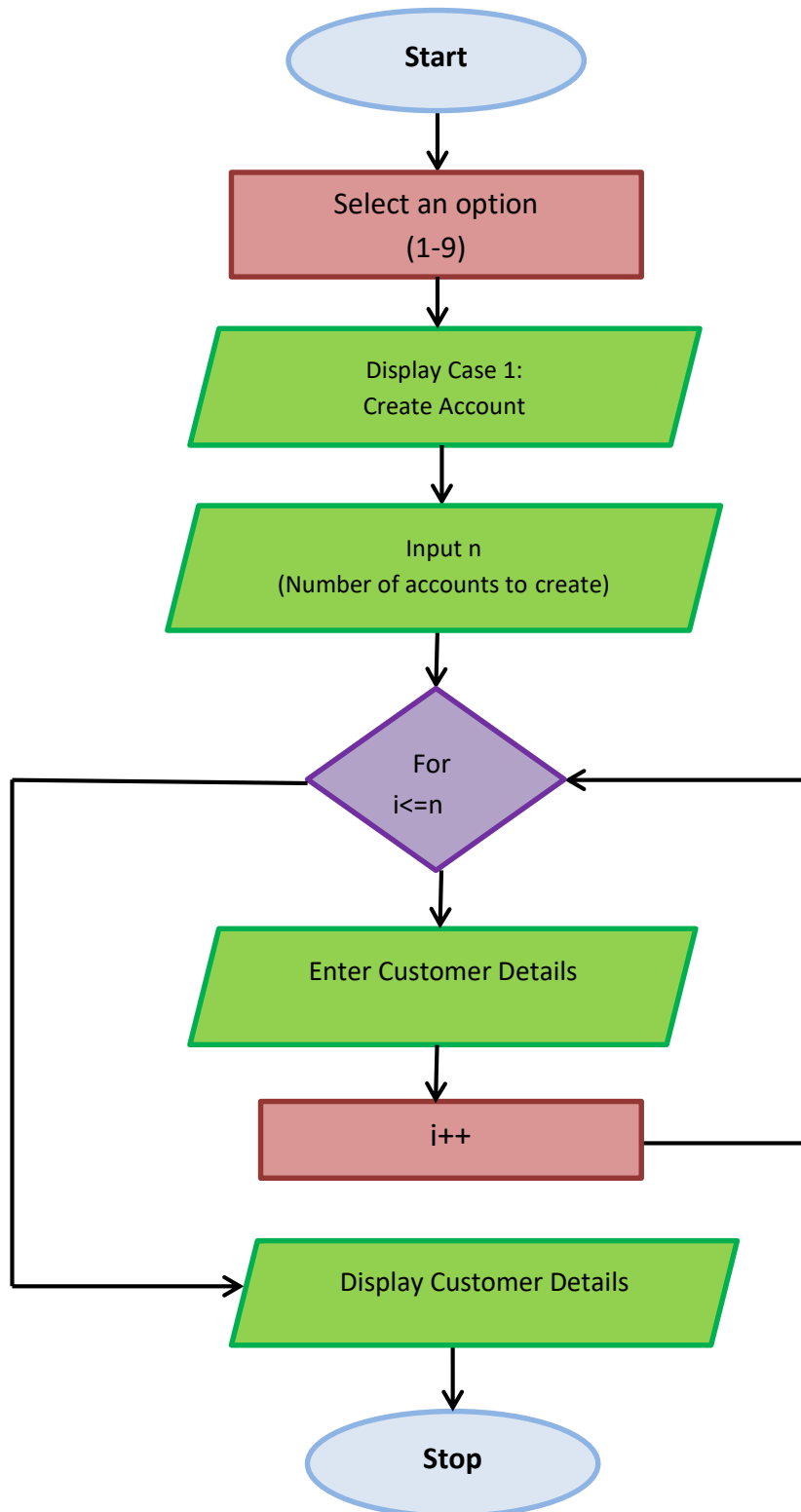
6. System Limitations

Following are some of the constraints and limitations of the system:

- ✚ The system is a console based application and does not have a graphical user interface.
- ✚ A C++ IDE is required to run this system.
- ✚ The IDE should be a latest one; most preferably Dev-C++ above version 5 should be used.
- ✚ The system uses pointers in module 6, so some users could have security concerns.

7. Design

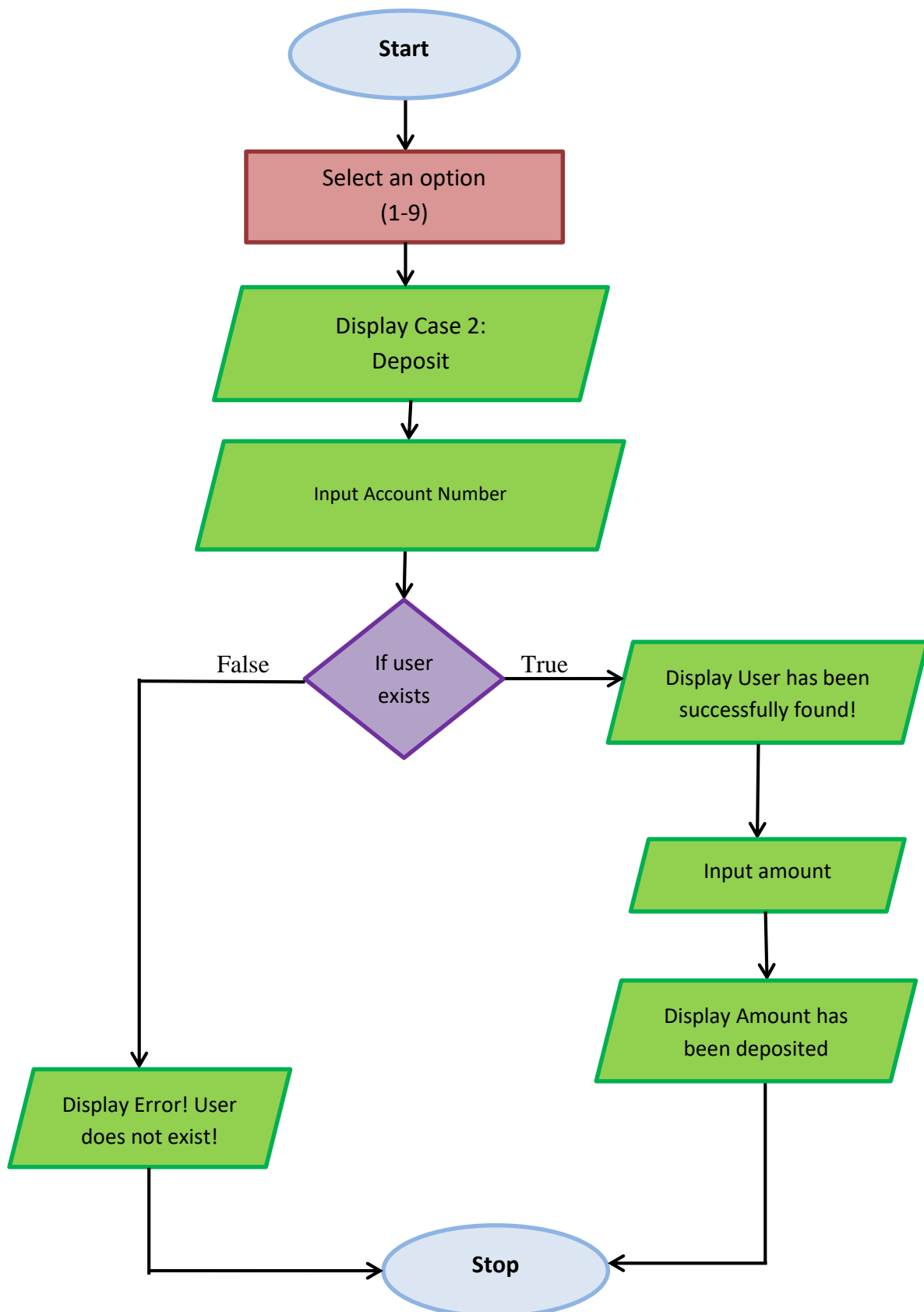
➤ Case 1: Create an account



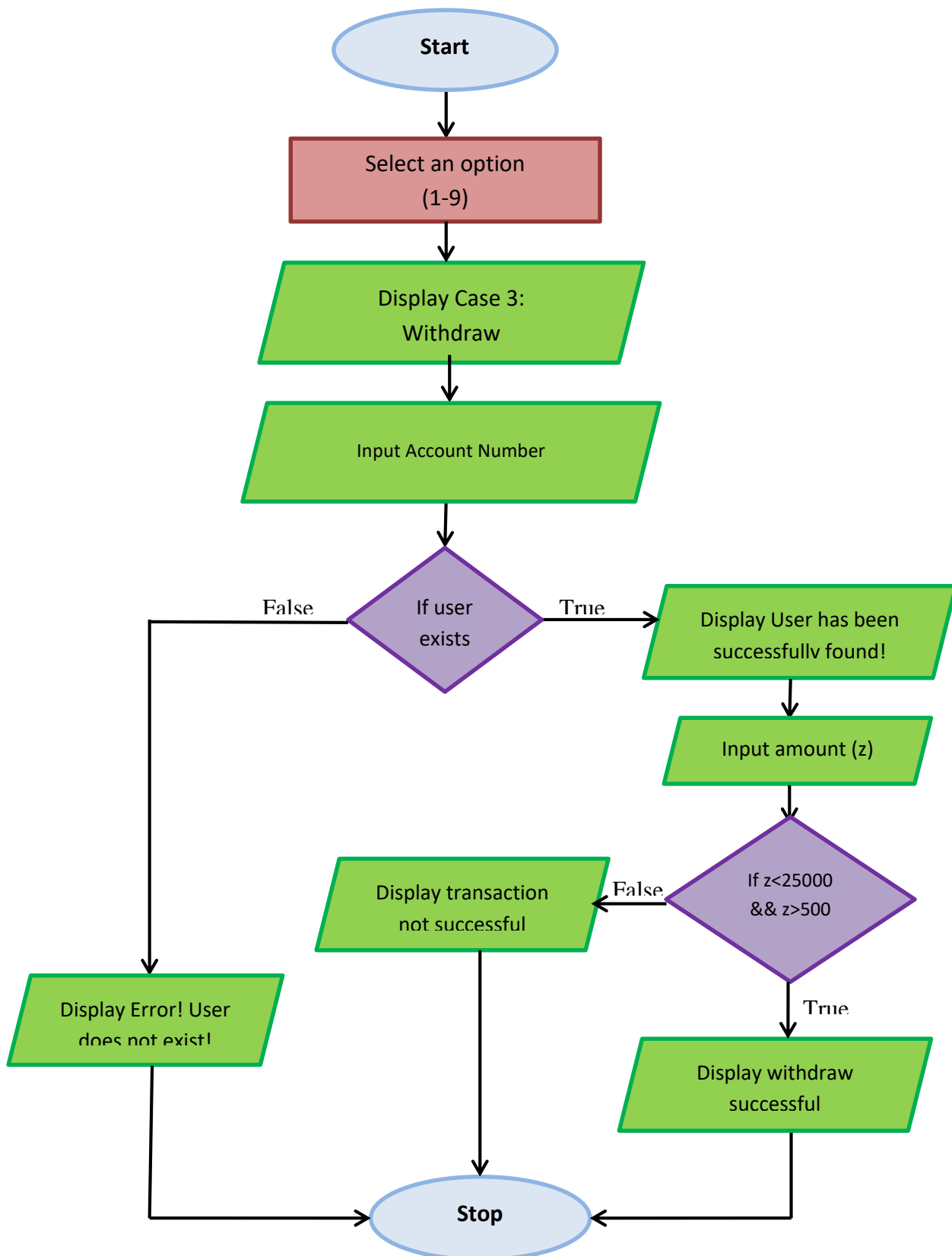
Note:

In all the flowcharts, stop means that a particular task has been performed and the user will return to the main menu, with the exception being case 9, where user will totally exit the system.

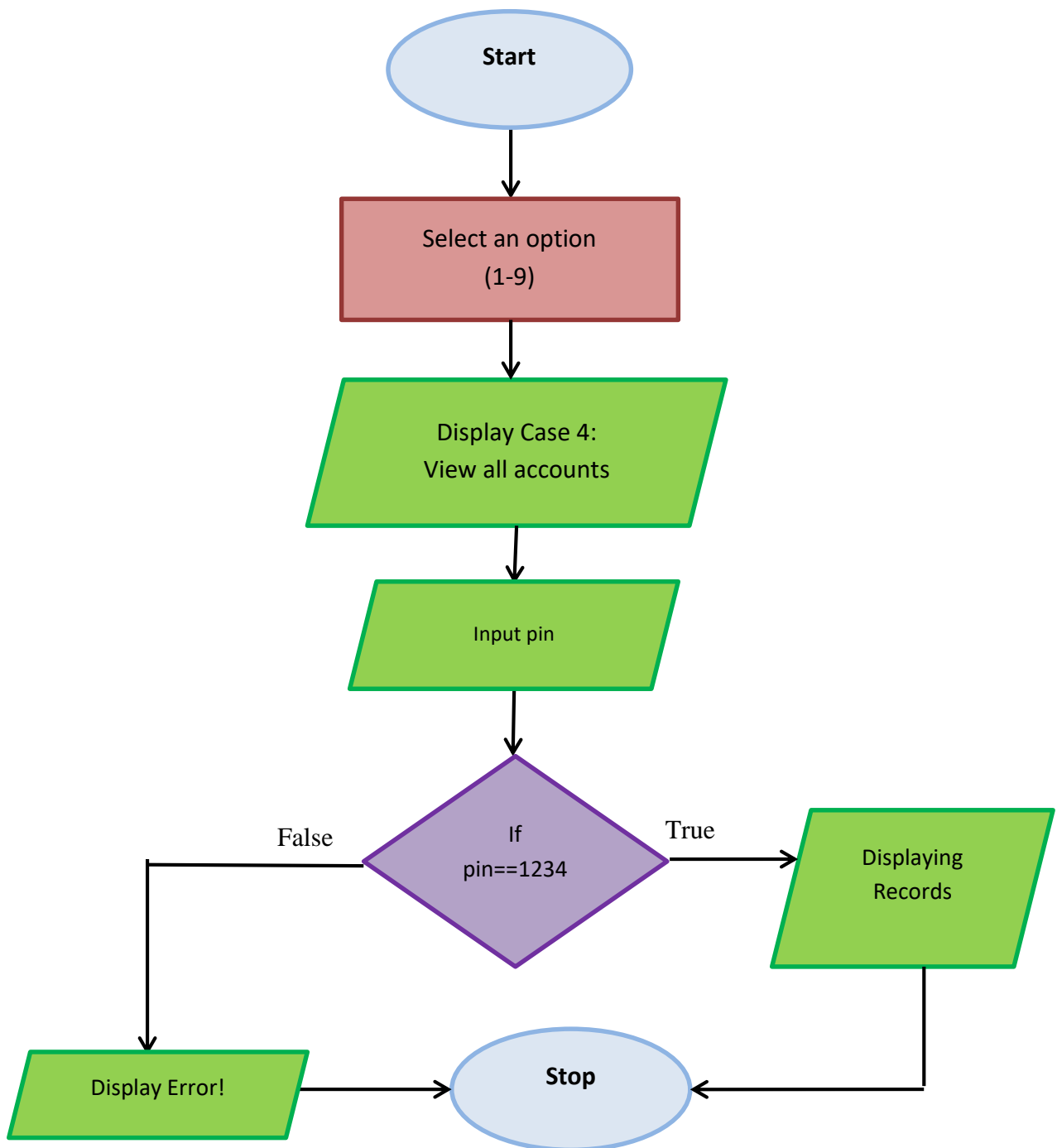
➤ Case 2: Deposit



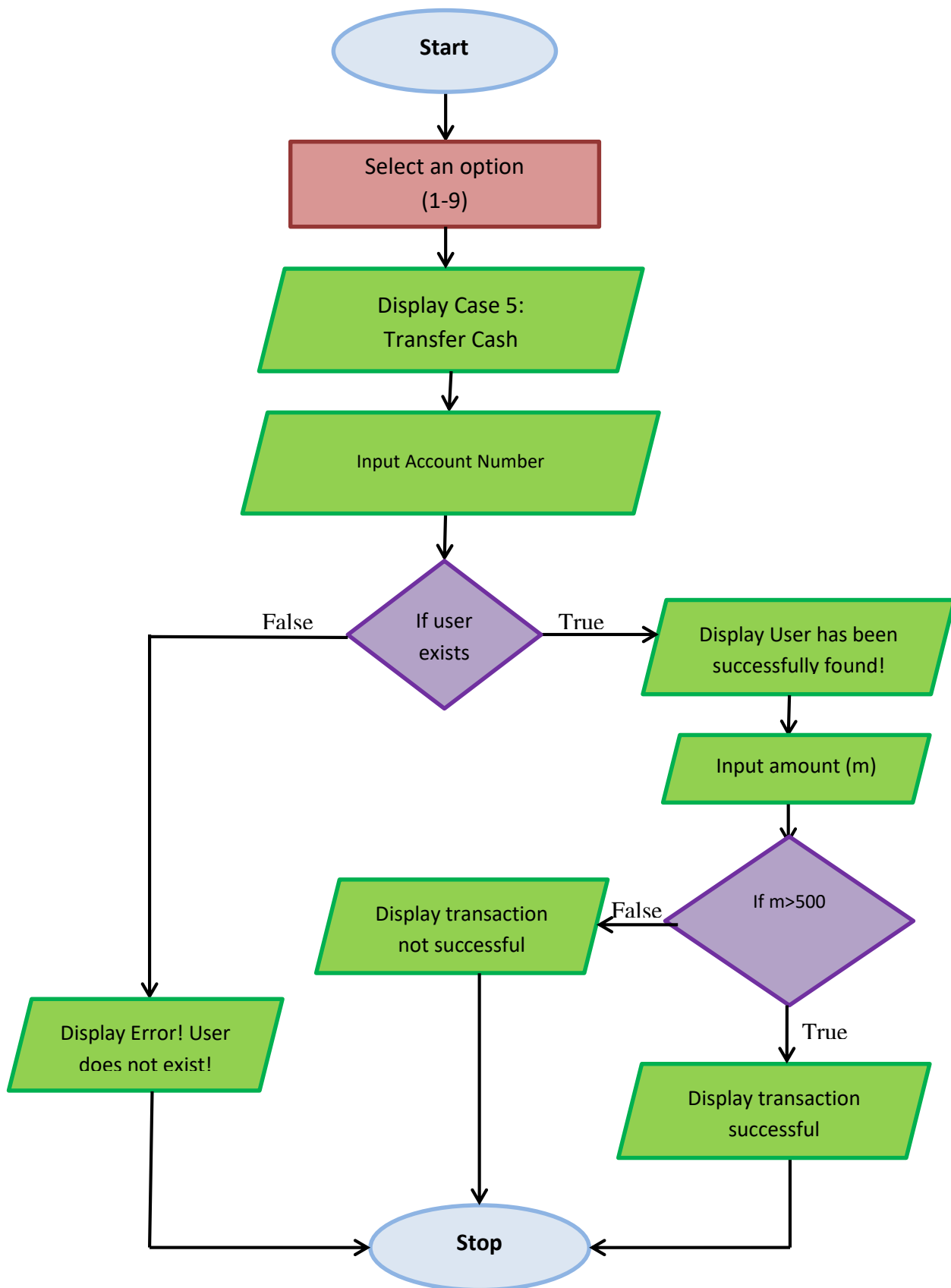
➤ Case 3: Withdraw



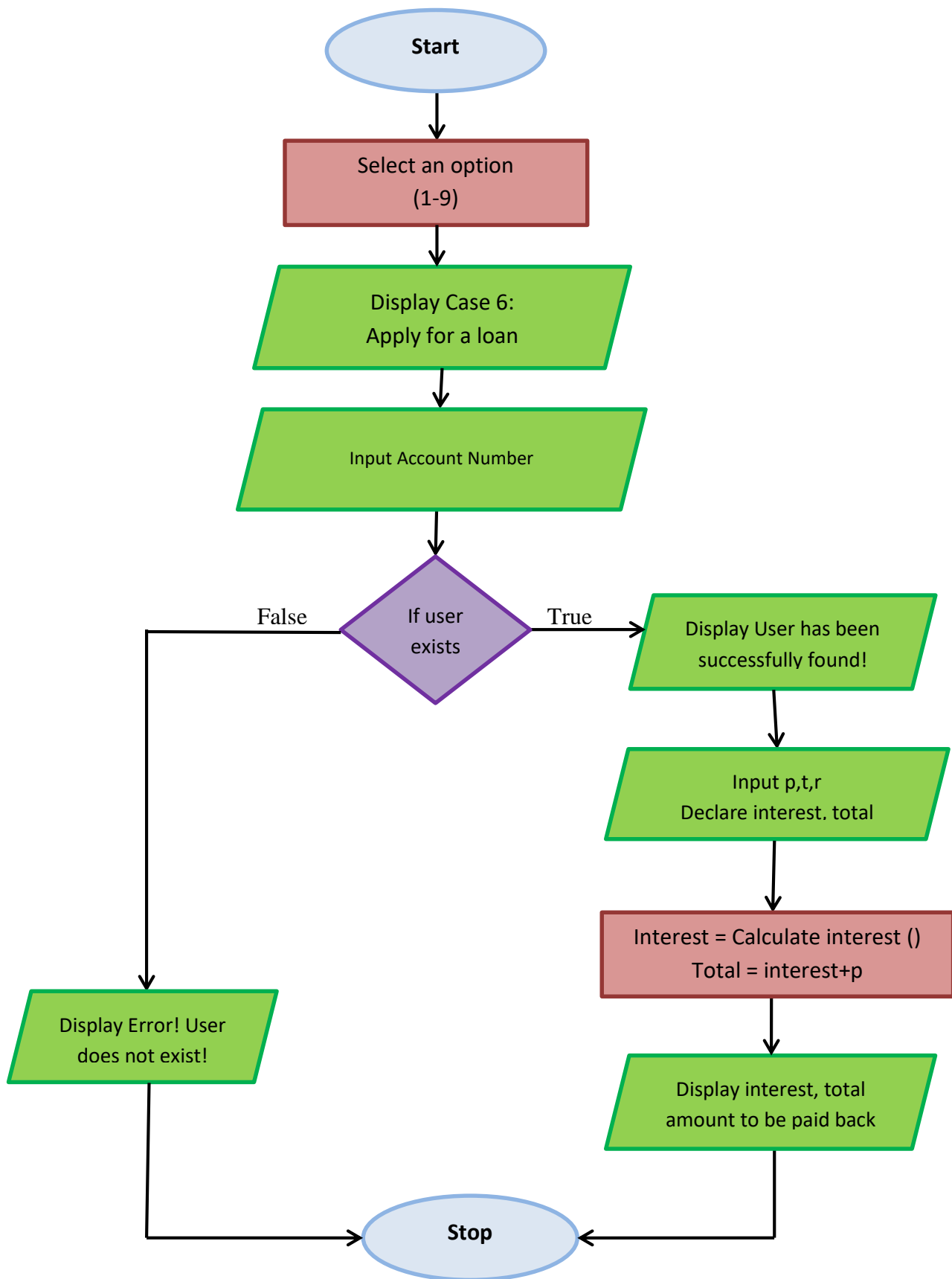
➤ **Case 4: View all accounts**



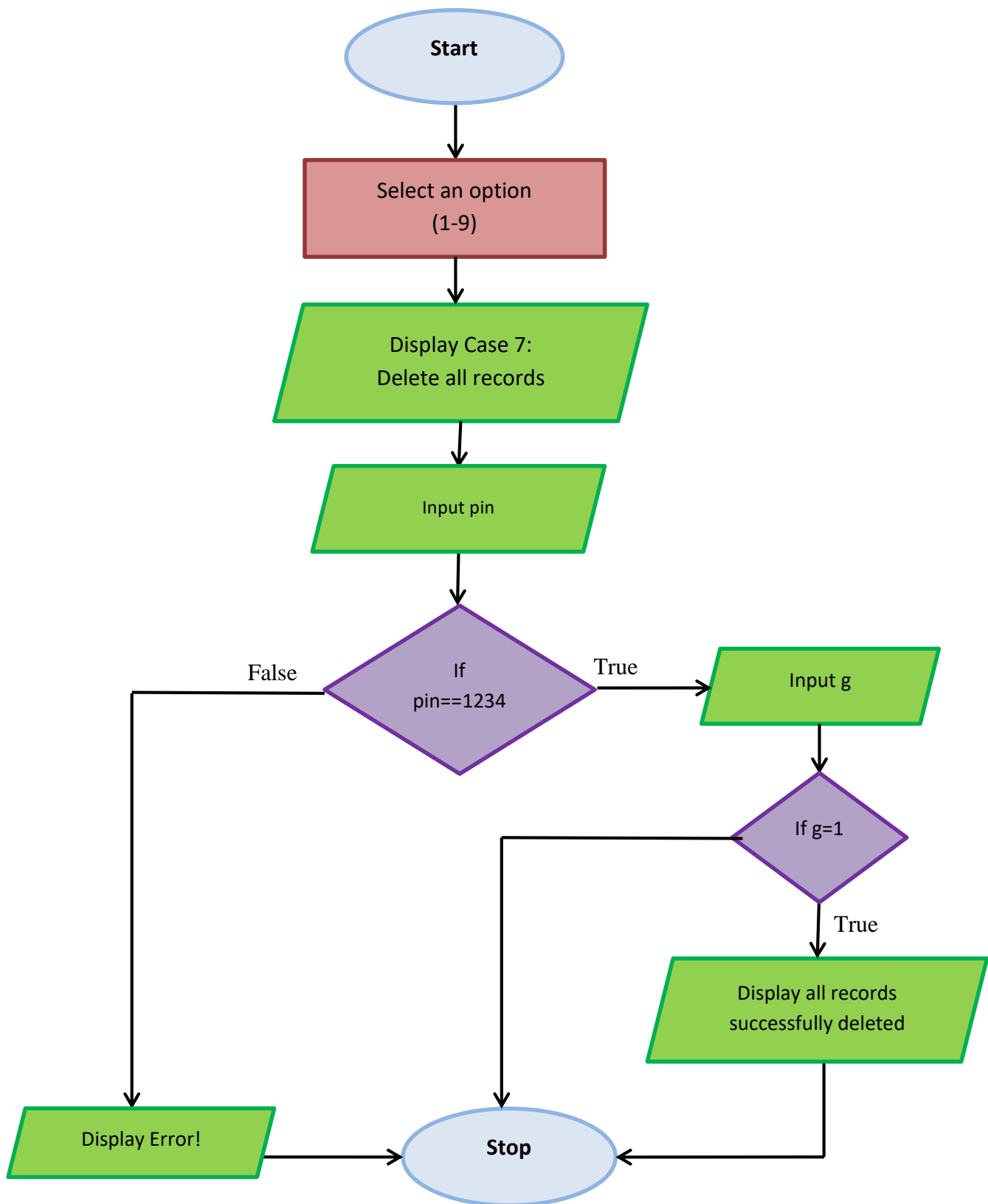
➤ Case 5: Transfer Cash



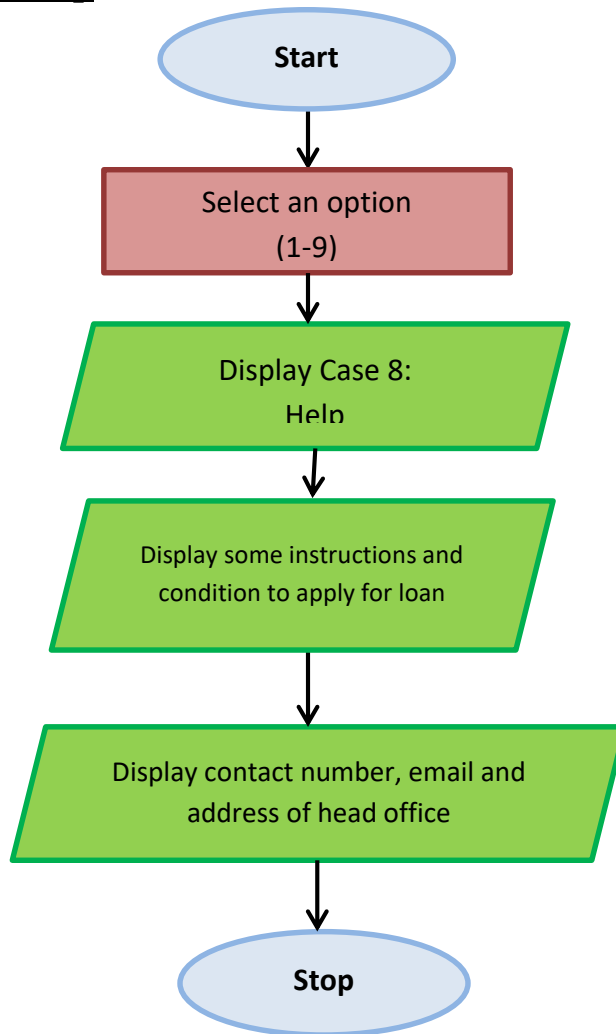
➤ Case 6: Apply for a loan



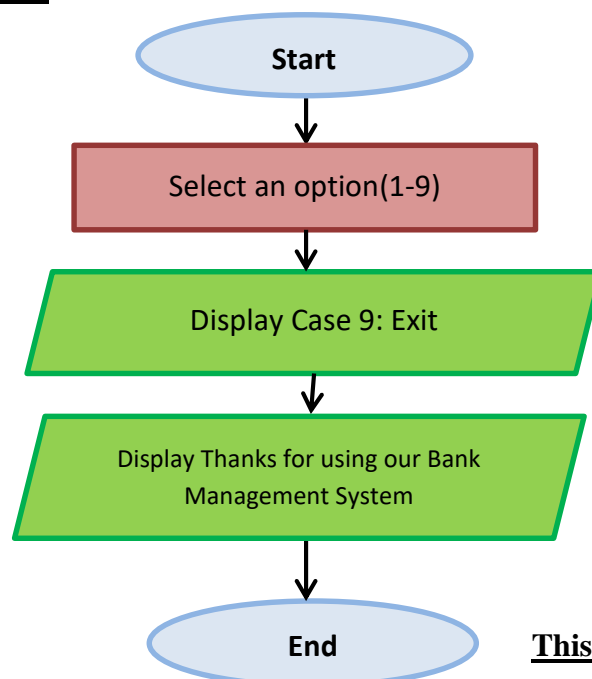
➤ Case 7: Delete all records



➤ **Case 8: Help**



➤ **Case 9: Exit**



This is where the program will truly stop.

8. Coding

```
#include <iostream>
#include <fstream>
#include <cstdlib>
#include<iomanip>
#include<string>

using namespace std;

/***** struct *****/

struct BankAccount{
    char fname[50];
    char lname[50];
    char address[100];
    char bname[50];
    int code,acc_num,acc_bal;

    void WriteToFile()
    {
        ofstream f1("BankAccount.txt",ios::app);

        f1<<fname<<setw(5)<<lname<<setw(18)<<address<<setw(20)<<bname<<setw
(15)<<code<<setw(17)<<acc_num<<setw(20)<<acc_bal<<setw(20)<<endl;
        f1.close();
    }
}b2;

/*****/

void customer(BankAccount);
void deposit();
void withdraw();
void transfer_cash();
void help();
void display_all();
float calculateInterest(float *p, float *t, float *r);
void del_records();
```

```

void apply_loan();

/***** Customer *****/
void customer(BankAccount b2)
{
    cout << "\n\tEnter First Name: ";
    cin>>b2.fname;
    cout << "\tEnter Last Name: ";
    cin>>b2.lname;
    cout << "\tEnter Email Address: ";
    cin>>b2.address;
    cout << "\tEnter Branch Name: ";
    cin>>b2.bname;
    cout << "\tEnter Bank Code: ";
    cin>>b2.code;
    cout << "\tEnter Account Number: ";
    cin>> b2.acc_num;
    cout << "\tEnter Account Balance: ";
    cin>>b2.acc_bal;

    b2.WriteToFile();

    cout << "\n\tDisplaying Information....." << endl;

    cout << "\n\tFirst Name: " << b2.fname << endl;
    cout << "\tLast Name: " << b2.lname << endl;
    cout << "\tEmail Address: " << b2.address << endl;
    cout << "\tBranch Name: " << b2.bname << endl;
    cout << "\tBank Code: " << b2.code << endl;
    cout << "\tAccount Number: " << b2.acc_num << endl;
    cout << "\tAccount Balance: " << b2.acc_bal << endl;
}
/*****/

void display_all()
{
    int pin;
    cout<<"\n\tEnter the pin: ";

```



```

        string line;
        string acc;
        ifstream f1;

        cout<<"\n\tIf you input incorrect account number, system will not repsond you.\n\tJust
press enter to reselect the option.";
        cout<<"\n\tEnter account number: ";
        cin>>acc;
        f1.open("BankAccount.txt");
        if(f1.is_open()){
            while (getline(f1, line)) {
                if (line.find(acc)!=string::npos) {
                    cout<<"\n\tUser has been successfuly found!";
                    int amt;
                    cout<<"\n\tEnter the amount you want to deposit(in Rs): ";
                    while(!(cin>> amt)) {
                        cout<<"\n\tInvalid input. Only integers allowed!";
                        cout<<"\n\n\tEnter the amount you want to
deposit(in Rs): ";

                        cin.clear(); //clearing wrong input
                        cin.ignore(100,'\n'); //discarding the wrong input
                        cin>>amt;
                        break;}
                    cout<<"\n\tAmount has been deposited!!!";}}
            f1.close();
        }
        else {
            cout << "Error!!!! File does not exist!"; }
    }

    /*****

void withdraw()
{
    cout << "\n\n\t\t\t*****" << endl;
    cout << "\t\t\t\t\t Withdraw\t\t" << endl;
    cout << "\t\t\t\t\t*****" << endl;

    string line;
    string acc;

```

```

ifstream f1;

cout<<"\n\tIf you input incorrect account number, system will not repsond you.\n\tJust
press enter to reselect the option.";
cout<<"\n\tEnter account number: ";
cin>>acc;
f1.open("BankAccount.txt");
if(f1.is_open()){
    while (getline(f1, line)) {
        if (line.find(acc)!=string::npos) {
            int z;

            cout<<"\n\tEnter the amount you want to withdraw(in Rs):
";

            while(!(cin>> z)) {
                cout<<"\n\tInvalid input. Only integers allowed!";
                cout<<"\n\n\tEnter the amount you want to
withdraw(in Rs): ";

                cin.clear(); //clearing wrong input
                cin.ignore(100,'\n'); //discarding the wrong input
                cin>>z;
                break;}
            if (z < 25000 && z > 500){
                cout<< "\n\tWithdrawing cash....."<<endl;
                cout<< "\n\tWithdraw successful!!!";}
            else{
                cout<<"\n\tTransaction not successful!!!"<<endl;
                cout<<"\n\tYou can only withdraw amount greater
than Rs 500 and upto or equal to 25000 in 1 day!!!!";}
        }
    }
    f1.close();
}
else {
    cout << "Error!!!! File does not exist!";
}
}

/*****

void transfer_cash()

```



```

        cout<< "\n\tTransfer successful";}
    else{
        cout<< "\n\tBalance not sufficient enough!"; }
    }
}
f1.close();
}
else {
    cout << "Error!!!! File does not exist!"; }

}

/*****

void help()
{
    cout << "\n\n\t\t\t\t\t*****" << endl;
    cout << "\t\t\t\t\t Help      " << endl;
    cout << "\t\t\t\t\t*****" << endl;
    cout<<"\n\tFollow the given instructions to make the transactions. \n\n\tSoon we
will add more options and your trust in our bank is much appreciated.";
    cout<< "\n\n\tTo apply for a loan, you must have an account,\n\n\tIn order to
create an account, press 1 and Enter.";
    cout<<"\n\n\tFor more information, contact our head office. \n\n\tContact
information is given below:";
    cout<<" \n\n\tPhone Number: 000-0000-0000 \n\tEmail:
banklimited@email.com \n\tAddress: Near to PIMS,Islamabad";
}

/*****

float calculateInterest(float *d, float *e, float *f)
{
    return ((*d)*(*e)*(*f))/100;
}

void apply_loan()
{
    cout << "\n\n\t\t\t\t\t*****" << endl;
    cout << "\t\t\t\t\t Apply for loan      " << endl;

```



```

        cout << "\t\t\t\t*****" << endl;

        string line;
        string acc;
        ifstream f1;

        cout<<"\n\tIf you input incorrect account number, system will not respond
you.\n\tJust press enter to reselect the option.";
        cout<<"\n\tEnter account number: ";
        cin>>acc;
        f1.open("BankAccount.txt");
        if(f1.is_open()){
            while (getline(f1, line)) {
                if (line.find(acc)!=string::npos) {
                    cout<<"\n\tUser has been successfully found!";
                    float p, t, r, interest,total;
                    cout << "\n\n\tEnter principal amount of loan(in
Rs): ";

                    while(!(cin>> p)){
                        cout<<"\n\tInvalid input. Only integers
allowed!";

                        cout<<"\n\tEnter again: ";
                        cin.clear(); //clearing wrong input
                        cin.ignore(100,'\n'); //discarding the wrong
input

                        cin>> p;
                        break; }
                    cout<< "\n\tEnter the time in which you will pay the
loan(in years): ";

                    while(!(cin>> t)) {
                        cout<<"\n\tInvalid input. Only integers
allowed!";

                        cout<<"\n\tEnter again: ";
                        cin.clear(); //clearing wrong input
                        cin.ignore(100,'\n'); //discarding the wrong
input

                        cin >> t;
                        break;}
                    cout<< "\n\tEnter the annual interest rate: ";
                    while(!(cin>> r)) {

```

```

        cout<<"\n\tInvalid input. Only integers
allowed!";

        cout<<"\n\tEnter again: ";
        cin.clear(); //clearing wrong input
        cin.ignore(100,'\n'); //discarding the wrong
input

        cin >> r;
        break;}

interest = calculateInterest(&p, &t, &r);
total = interest+p;
cout << "\n\tSimple Interest = " << interest << endl;
cout<<"\n\tTotal amount to pay back the bank(in
Rs): "<<total; }
    }
    f1.close();
    }
    else {
        cout << "Error!!!! File does not exist!"; }
}

/*****

void del_records()
{
    cout << "\n\n\t\t\t\t\t*****"
<< endl;
    cout << "\t\t\t\t\t Delete all records      " << endl;
    cout << "\t\t\t\t\t*****" <<
endl;

    int g;
    int pin;
    cout<<"\n\tEnter the pin: ";
    while(!(cin>> pin)){
        cout<<"\n\tInvalid input. Only integers allowed!";
        cout<<"\n\n\tEnter the pin: ";
        cin.clear(); //clearing wrong input
        cin.ignore(100,'\n'); //discarding the wrong input
        cin>>pin;
        break;}
    if(pin == 1234){

```



```

        cout << "\t\t\t\t 8 -- Help" << endl;
        cout << "\t\t\t\t 9 -- Exit" << endl;
        cout << endl << "\t\t\t\tEnter your selection(1-9): ";
        cin>> choice;
        system("cls");
        switch(choice)
        {
            case '1':
                cout <<
"\n\n\t\t\t\t*****" << endl;
                cout << "\t\t\t\t\t Create Account\t\t\t\t\t" << endl;
                cout <<
"\t\t\t\t\t*****" << endl;
                int n;
                cout<<"\n\tHow many customers do you want to add? ";
                while(!(cin>> n)) {
                    cout<<"\n\tInvalid input. Only integers allowed!";
                    cout<<"\n\n\tHow many customers do you want to
add? ";

                    cin.clear(); //clearing wrong input
                    cin.ignore(100,'\n'); //discarding the wrong input
                    cin>>n;
                    break;}
                for(int i; i<n ; i++){
                    cout<<"\n\tEnter customer "<<i+1<<"
details"<<endl;

                    customer(b2);}
                break;
            case '2':
                deposit();
                break;
            case '3':
                withdraw();
                break;
            case '4':
                display_all();
                break;
            case '5':
                transfer_cash();
                break;

```

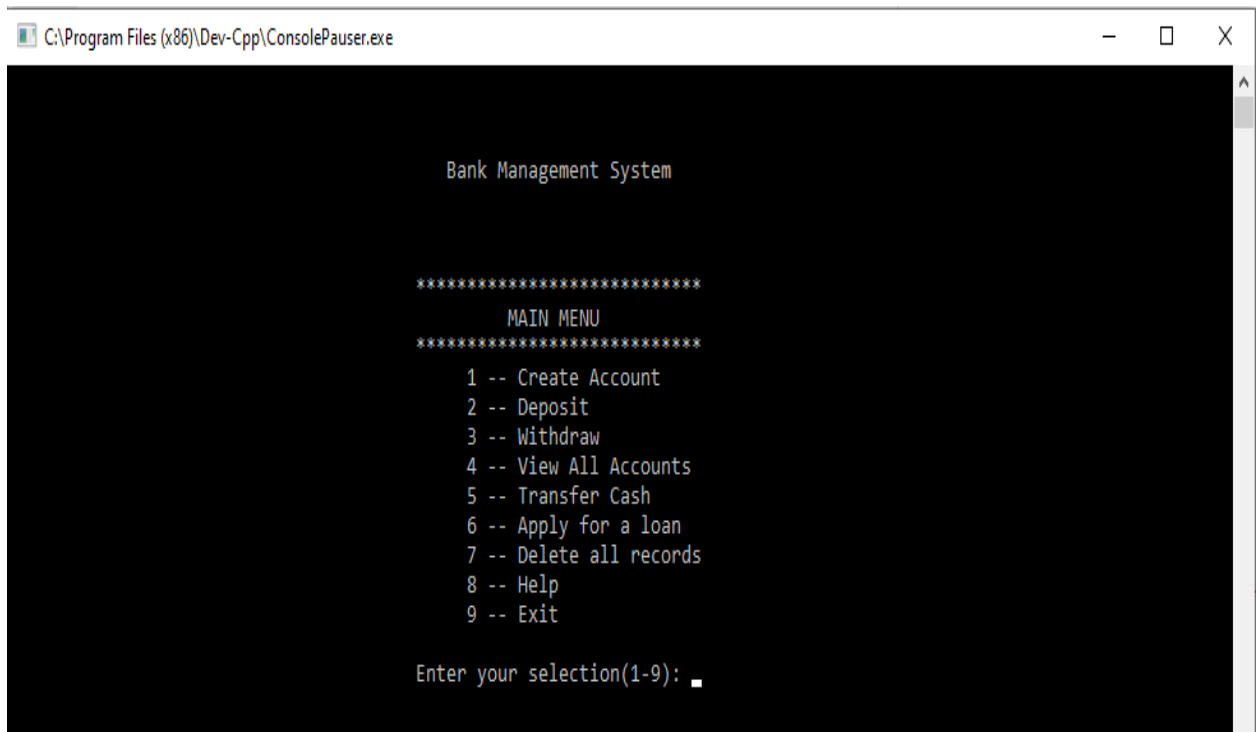
```

        case '6':
            apply_loan();
            break;
        case '7':
            del_records();
            break;
        case '8':
            help();
            break;
        case '9':
            cout<<"\n\n\n\n\n\n\n\t\t\tThanks for using our BANK
MANAGEMENT SYSTEM!";
            break;
        default :cout<<"\a";
    }
    cin.ignore();
    cin.get();
}
while(choice!='9');
return 0;
}

```

9. Implementation

➤ Main Menu



```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

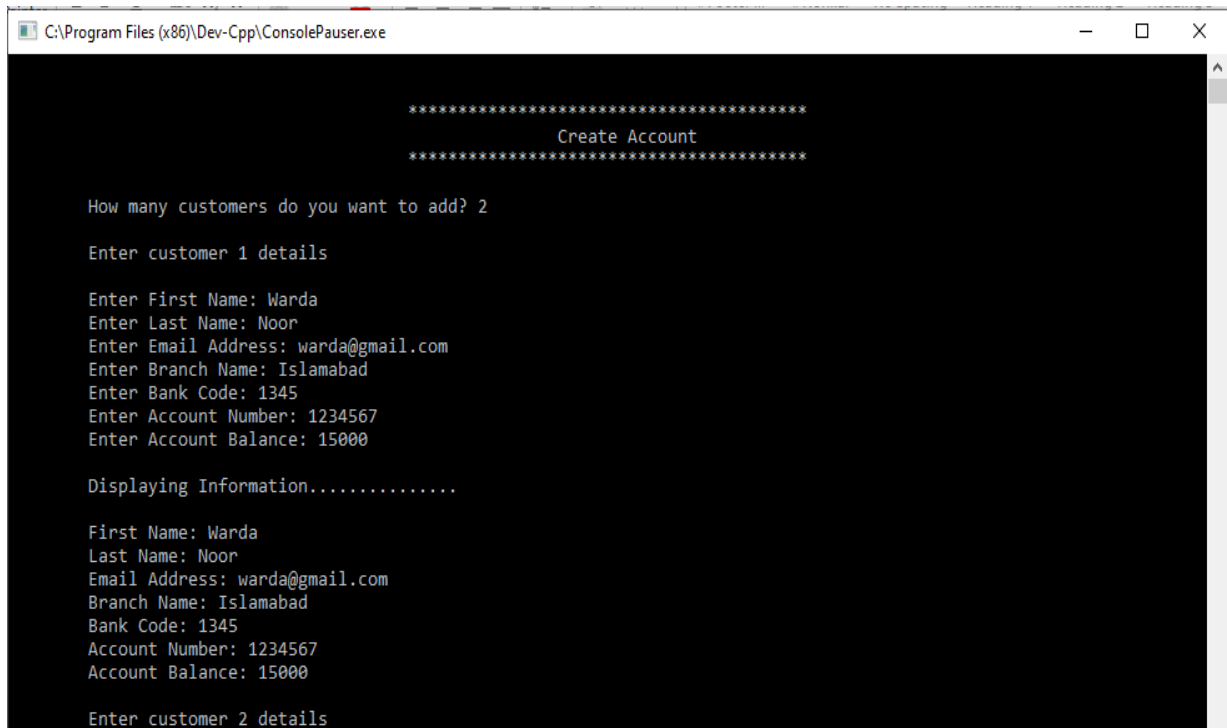
Bank Management System

*****
MAIN MENU
*****

1 -- Create Account
2 -- Deposit
3 -- Withdraw
4 -- View All Accounts
5 -- Transfer Cash
6 -- Apply for a loan
7 -- Delete all records
8 -- Help
9 -- Exit

Enter your selection(1-9):
```

➤ Case 1: Create an account



```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
Create Account
*****

How many customers do you want to add? 2

Enter customer 1 details

Enter First Name: Warda
Enter Last Name: Noor
Enter Email Address: warda@gmail.com
Enter Branch Name: Islamabad
Enter Bank Code: 1345
Enter Account Number: 1234567
Enter Account Balance: 15000

Displaying Information.....

First Name: Warda
Last Name: Noor
Email Address: warda@gmail.com
Branch Name: Islamabad
Bank Code: 1345
Account Number: 1234567
Account Balance: 15000

Enter customer 2 details
```

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

Last Name: Noor
Email Address: warda@gmail.com
Branch Name: Islamabad
Bank Code: 1345
Account Number: 1234567
Account Balance: 15000

Enter customer 2 details

Enter First Name: Dua
Enter Last Name: Rehan
Enter Email Address: dua@gmail.com
Enter Branch Name: Rawalpindi
Enter Bank Code: 1445
Enter Account Number: 1456789
Enter Account Balance: 30000

Displaying Information.....

First Name: Dua
Last Name: Rehan
Email Address: dua@gmail.com
Branch Name: Rawalpindi
Bank Code: 1445
Account Number: 1456789
Account Balance: 30000
```

➤ Case 2: Deposit

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
                        Deposit
*****

If you input incorrect account number, system will not repsond you.
Just press enter to reselect the option.
Enter account number: 1234567

User has been successfully found!
Enter the amount you want to deposit(in Rs): 50000

Amount has been deposited!!!
```

➤ Case 3: Withdraw

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
                        Withdraw
*****

If you input incorrect account number, system will not repsond you.
Just press enter to reselect the option.
Enter account number: 1234567

Enter the amount you want to withdraw(in Rs): 15000

Withdrawing cash.....

Withdraw successful!!!
```

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
Withdraw
*****

If you input incorrect account number, system will not repsond you.
Just press enter to reselect the option.
Enter account number: 1234567

Enter the amount you want to withdraw(in Rs): 450

Transaction not successful!!!

You can only withdraw amount greater than Rs 500 and upto or equal to 25000 in 1 day!!!!
```

➤ **Case 4: View all accounts**

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

Enter the pin: 1234

Displaying records.....

ACCOUNT HOLDERS LIST

=====
Name           Address           Bank Name      Bank Code      A/c no.         Balance
=====
Warda Noor     warda@gmail.com   Islamabad     1345           1234567         15000
AyeshaSahar    ayesha@gmail.com  Kharian       1222           1222334         15890
=====
```

➤ **Case 5: Transfer Cash**

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
Transfer Cash
*****

If you input incorrect account number, system will not repsond you.
Just press enter to reselect the option.
Enter account number: 1234567

Enter the account number to which you want to transfer money: 1225567

Enter the amount you want to transfer(in Rs): 15000

Transferring cash.....

Transfer successful
```


➤ Case 6: Apply for a loan

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
                Apply for loan
*****

If you input incorrect account number, system will not respond you.
Just press enter to reselect the option.
Enter account number: 1234567

User has been successfully found!

Enter principal amount of loan(in Rs): 150000

Enter the time in which you will pay the loan(in years): 3

Enter the annual interest rate: 4.5

Simple Interest = 20250

Total amount to pay back the bank(in Rs): 170250
```

➤ Case 7: Delete all records

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

*****
                Delete all records
*****

Enter the pin: 1234

Are you sure you want to proceed?
If yes, then press 1 to delete all records, if no, press 2: 1

All records successfully deleted!
```

```
C:\Program Files (x86)\Dev-Cpp\ConsolePauser.exe

Enter the pin: 1234

Displaying records.....

                ACCOUNT HOLDERS LIST

=====
Name           Address      Bank Name    Bank Code    A/c no.      Balance
=====
```

```
*****  
Delete all records  
*****
```

Enter the pin: 12333

Error!!!Incorrect pin, try again!

➤ Case 8: Help

```
*****  
Help  
*****
```

Follow the given instructions to make the transactions.

Soon we will add more options and your trust in our bank is much appreciated.

To apply for a loan, you must have an account,

In order to create an account, press 1 and Enter.

For more information, contact our head office.

Contact information is given below:

Phone Number: 000-0000-0000

Email: banklimited@email.com

Address: Near to PIMS, Islamabad