Banking System

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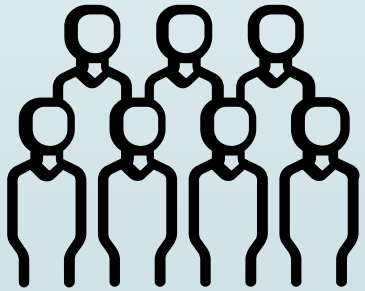


TOPICS

1.Requirement Analysis

2.Design Phase

3.Implementation

4.Testing & Verification

5.Result Analysis

6.Identify Limitations & Future Scalability

Requirements:

Hardware Requirements:

Ram:4Gb
Cpu: Both the JDK and JRE require at minimum a Pentium 2 266 MHz processor
Memory :128 M Minimum Disk Space

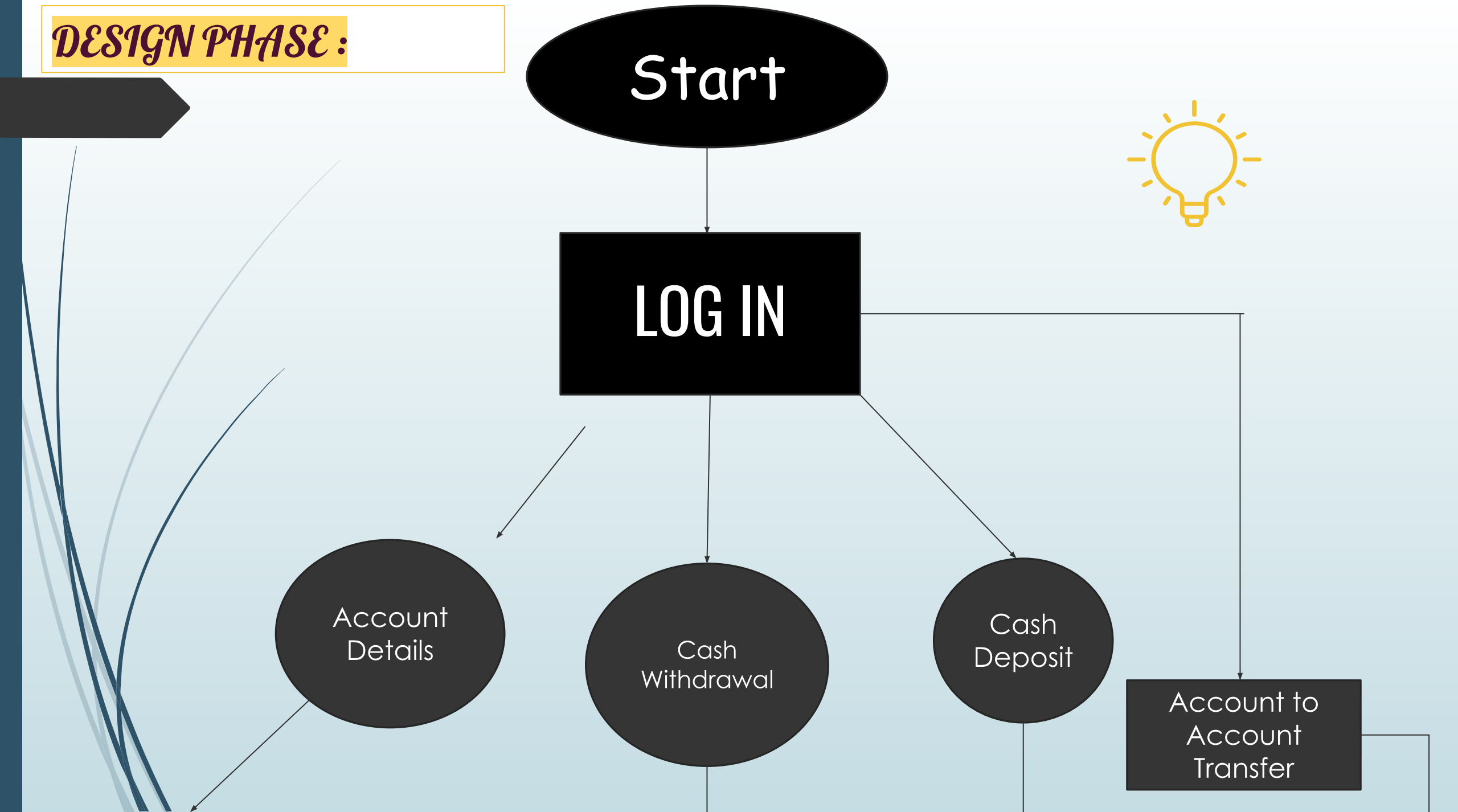
Software Requirements:

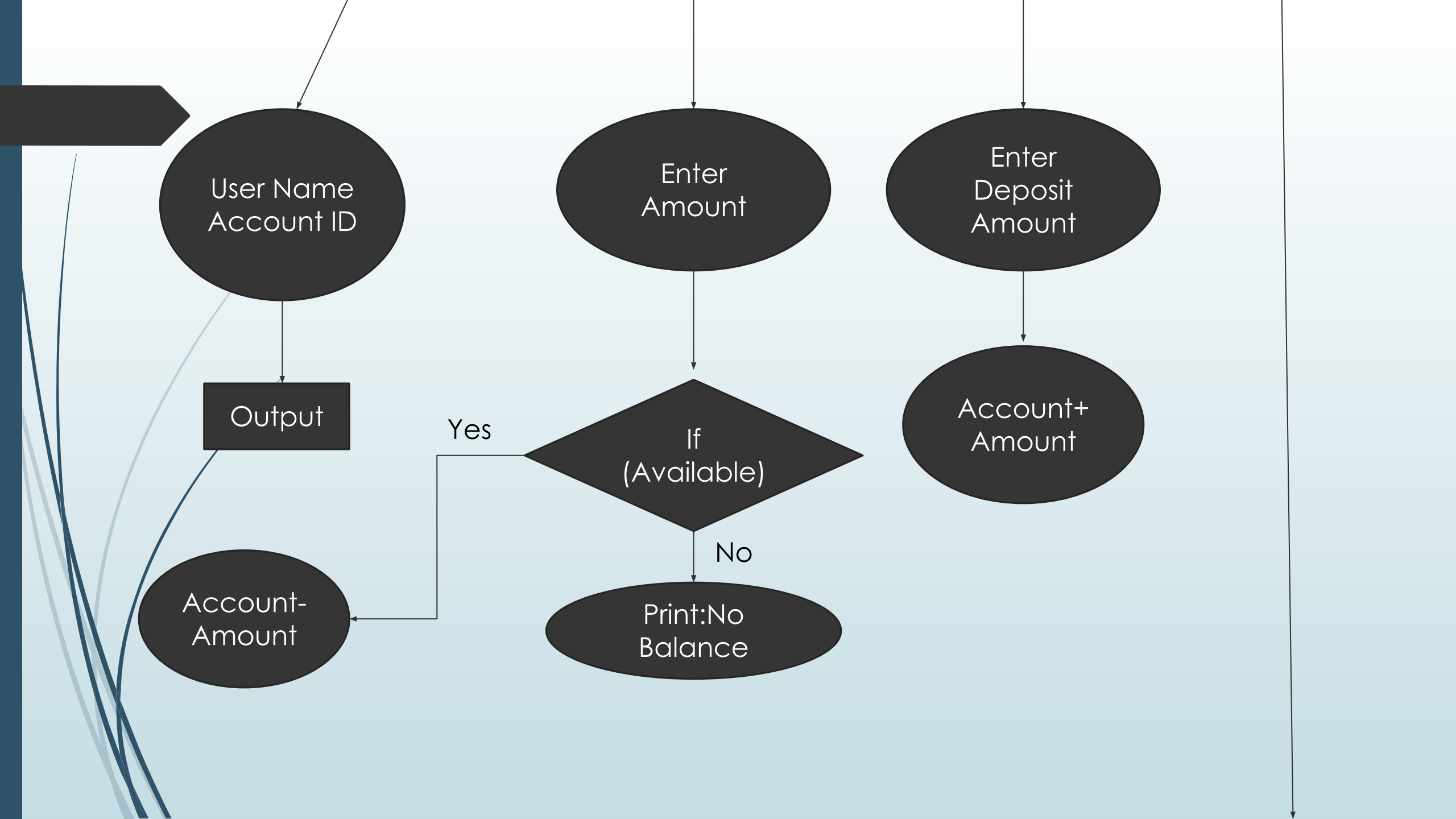
Jdk 1.8
Platform: Windows (64-bit)

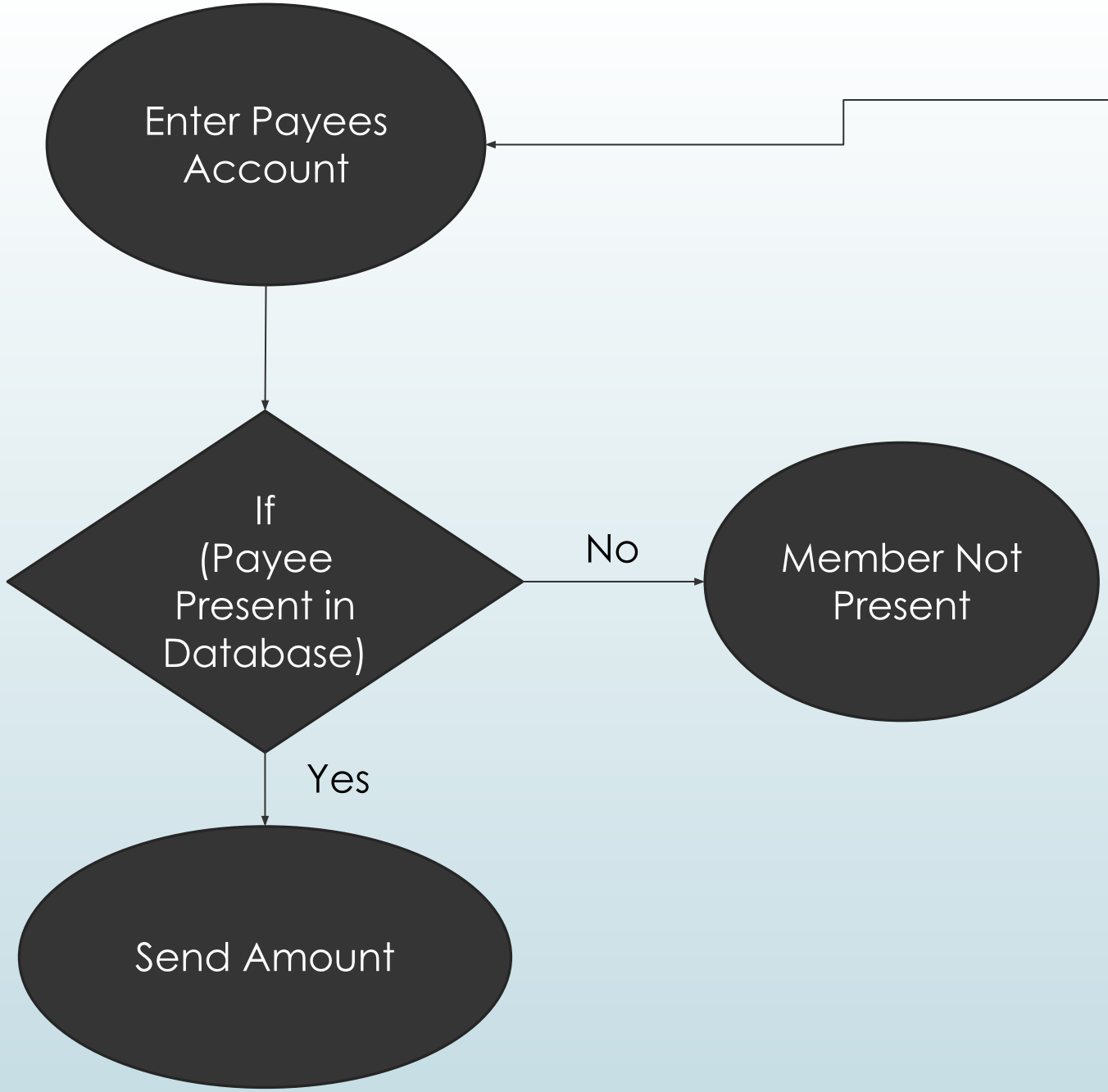
User Requirements:

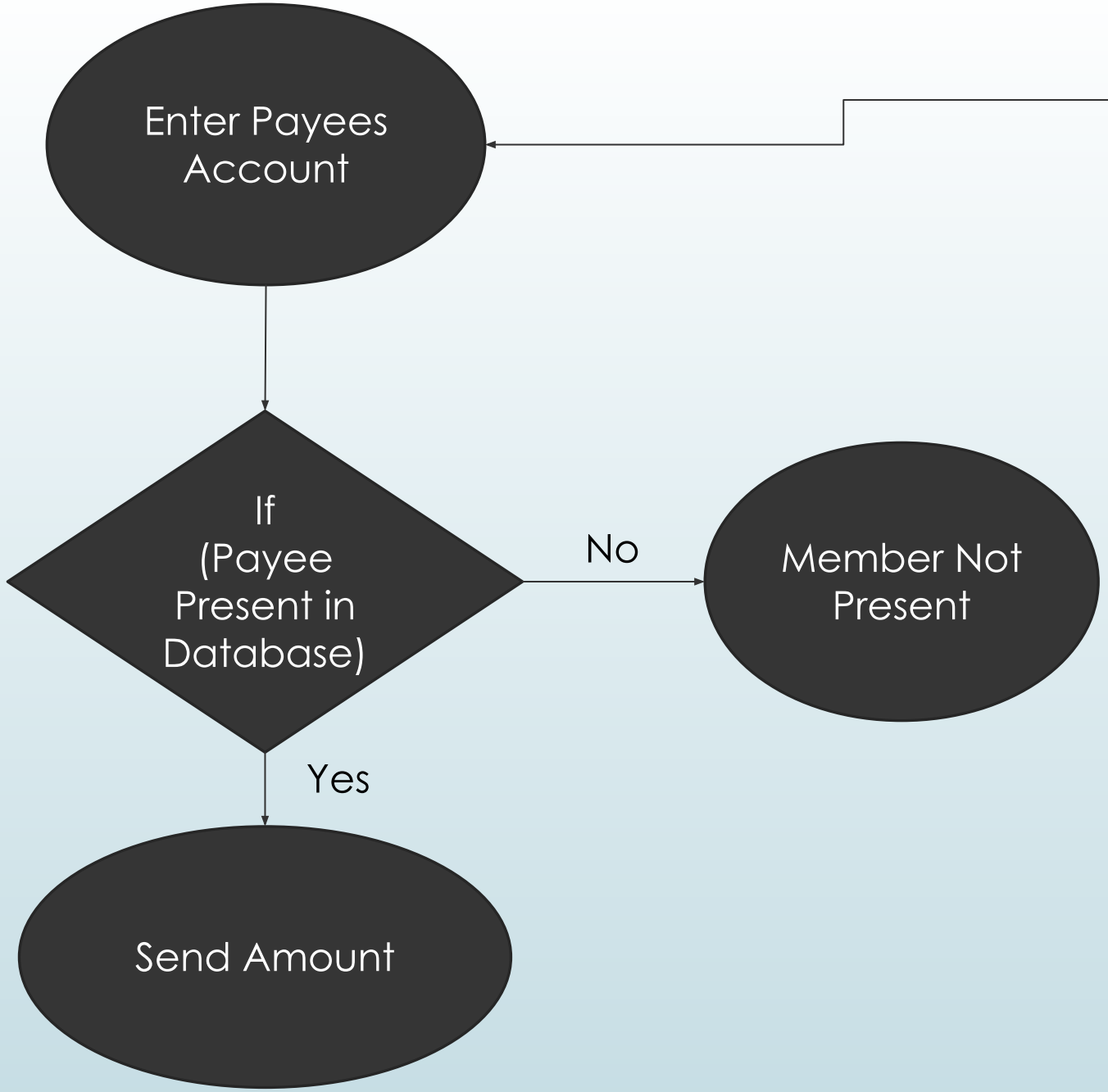
Account Number
Account Password

DESIGN PHASE :




User Name
Account ID
Enter
Amount
Enter
Deposit
Amount
Output
Yes
If
(Available)
Account+
Amount
Account-
Amount
No
Print:No
Balance


Enter Payees Account
If (Payee Present in Database)
No
Member Not Present
Yes
Send Amount


Enter Payees Account
If (Payee Present in Database)
No
Member Not Present
Yes
Send Amount

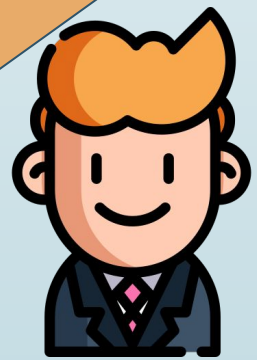
IMPLEMENTATION :

IMPLEMENATATION is very important phase where one has to properly the problem & code it using the Design phase

CODE :

```
1  import javax.swing.*;
2  import java.awt.event.*;
3  import java.awt.*;
4   class Vari
5  {
6          public String nm[]={"K Amit","Sumit","MadhuBala"};
7          public static int kl=9;
8          public static int km=9;
9          public  static int c[]={12181,12182,12183};
10         public static String s[]={"765","970","674"};
11         public static double amnt[]={10000.00,1500.74,89000.00};
12 }
13 /* first page */
```

This part of code contains initialization.
data which are which we are considering a different and related to them ,which will used throughout the program.

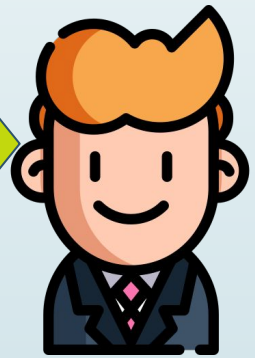


```java
/* first page */
class login extends Vari implements ActionListener
{
    int h=0;
    JFrame frame=new JFrame("Banking");
    JPanel p=new JPanel();
    JLabel l1=new JLabel("User ID");
    JLabel l2=new JLabel("Password");
    JLabel l3=new JLabel(" ");
    JTextField t1=new JTextField(12);
    JTextField t2=new JTextField(20);
    JButton b=new JButton("Login");
    JProgressBar pb=new JProgressBar(0,20);
    Timer tm=new Timer(300,this);
    public login()
    {
        frame.setVisible(true);
        frame.setLayout(null);
        p.setLayout(null);
        p.setSize(380,380);
        frame.setSize(400,400);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        p.setBackground(Color.lightGray);
        l1.setHorizontalAlignment(JLabel.LEFT);
        l2.setHorizontalAlignment(JLabel.LEFT);
        t1.setHorizontalAlignment(JTextField.CENTER);
        t2.setHorizontalAlignment(JTextField.CENTER);
        b.setHorizontalAlignment(JButton.CENTER);
        frame.add(p);
        p.add(l1);
        p.add(t1);
        p.add(l2);
        p.add(t2);
        p.add(pb);
        p.add(b);
        p.add(l3);
        l1.setBounds(100,30,100,30);
        t1.setBounds(210,30,100,30);
        l2.setBounds(100,70,100,30);
        t2.setBounds(210,70,100,30);
        l3.setBounds(100,250,300,30);
        b.setBounds(140,140,100,30);
        pb.setBounds(110,120,150,15);
```

This the declaration of GUI Variables which we are gonna use in our first page : login page
so you can understand each frame will have different gui material and separate code of it

lnside constructor login()
we are designing and placing GUI elements in a frame.

As it is constructor it is called when instance created

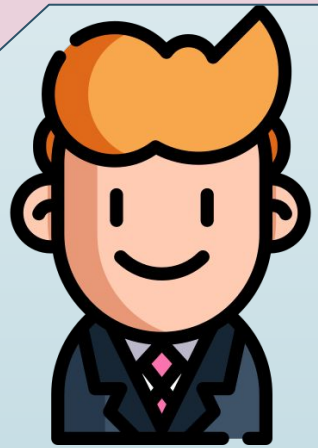


```
        pb.setBounds(110,120,150,15);
        b.addActionListener(new ActionListener(){
            public void actionPerformed(ActionEvent ec)
            {
                for(int i=0;i<3;i++)
                {
                    if(t1.getText().equals( Integer.toString(c[i]) ) && t2.getText().equals(s[i]))
                    {
                        l3.setText(" ");
                        kl=i;
                        tm.start();
                    }
                }
                if(kl==9)
                {
                    l3.setText("User ID or Password is incorrect");
                }
            }
        });
    }
    public void actionPerformed(ActionEvent ae)
    {

            if(h==20)
            {
                frame.dispose();
                new Firstpage();
            }
            h++;
            pb.setValue(h);
    }
}
/*first class ends */
```

ACTIONLISTENER IS A INTERFACE .

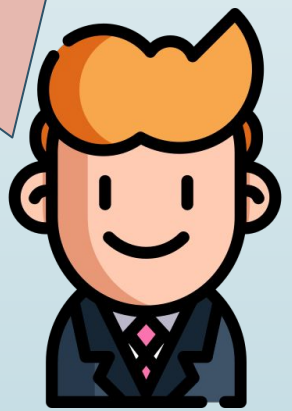
AS WE CALLED IT USING THE OBJECT OF BUTTON SO WHENEVER BUTTON IS CLICKED ACTION PERFORMED FUNCTION IS CALLED AND EXECUTES STATEMENT IN IT.

getText() & setText() methods are getting or updating data in some GUI materials like labels,textfield.
login frame ends from here



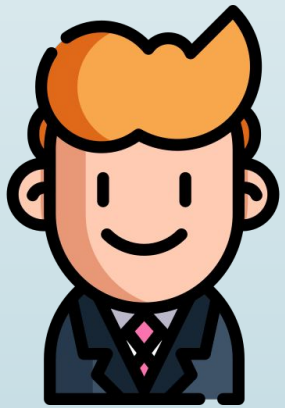
```
88  /*Second class Starts */
89   class Firstpage extends Vari implements ActionListener
90  {
91      JFrame f1=new JFrame("Select");
92      JLabel l1;
93      JButton b1,b2,b3,b4,b5;
94      Firstpage()
95      {
96          l1=new JLabel(" Click on one button to perform action ");
97          b1=new JButton("Account details ");
98          b2=new JButton("Cash Withdrawal");
99          b3=new JButton("Cash Deposit");
100         b4=new JButton("Account to Account transfer");
101         b5=new JButton("LOG OUT");
102         f1.setSize(700,700);
103         f1.setVisible(true);
104         f1.setLayout(null);
105         f1.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
106         f1.add(l1);
107         f1.add(b1);
108         f1.add(b2);
109         f1.add(b3);
110         f1.add(b4);
111         f1.add(b5);
112         l1.setBounds(230,30,300,30);
113         b1.setBounds(15,180,300,30);
114         b2.setBounds(370,180,300,30);
115         b3.setBounds(15,300,300,30);
116         b4.setBounds(370,300,300,30);
117         b5.setBounds(200,500,300,30);
118         b1.addActionListener(this);
119         b2.addActionListener(this);
120         b3.addActionListener(this);
121         b4.addActionListener(this);
122         b5.addActionListener(this);
123     }
```

It is the second frame after a successfull login they will be entering this page .
Same as the first page it contains some GUI materials declaration and constructor for frame designing .

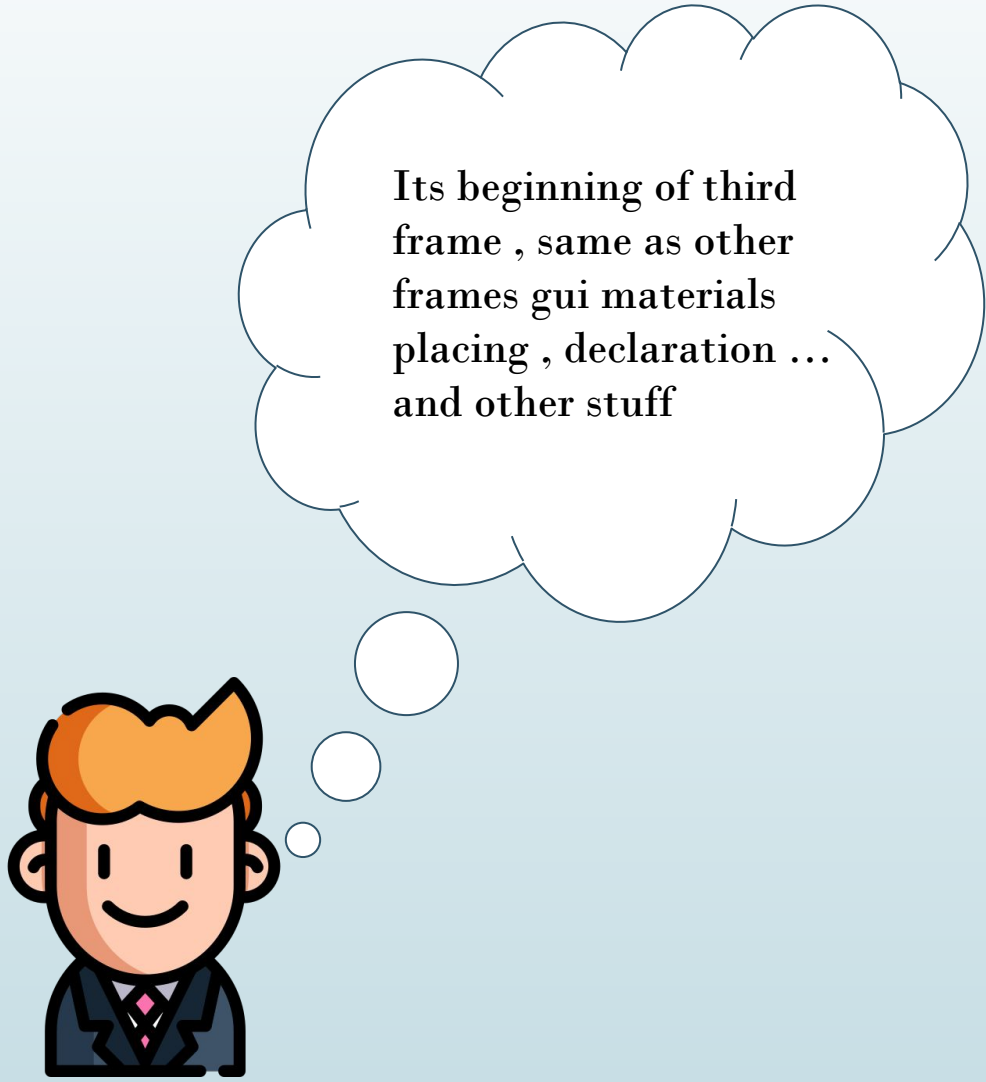


```
123     }
124     public void actionPerformed(ActionEvent e1)
125     {
126         if(e1.getSource()==b1)
127         {
128             f1.dispose();
129             Secondpage sp1=new Secondpage();
130         }
131         if(e1.getSource()==b2)
132         {
133             f1.dispose();
134             Fifthpage ff1=new Fifthpage();
135         }
136         if(e1.getSource()==b3)
137         {
138             f1.dispose();
139             Thirdframe tf1=new Thirdframe();
140         }
141         if(e1.getSource()==b4)
142         {
143             f1.dispose();
144             Fourthpage fp1 = new Fourthpage();
145         }
146         if(e1.getSource()==b5)
147         {
148             kl=9;
149             f1.dispose();
150             new login();
151         }
152     }
153     public static void main(String[] args)
154     {
155         new Firstpage();
156     }
157 }
158
159 /* Secondpage Ends */
```

In the interface actionlistener()
getSource( ) is a method for getting using what the action is performed , like in this case it tells us which which button is clicked , then respective action will take place as different buttons have different functionalities.
and with this 2nd Frame end here

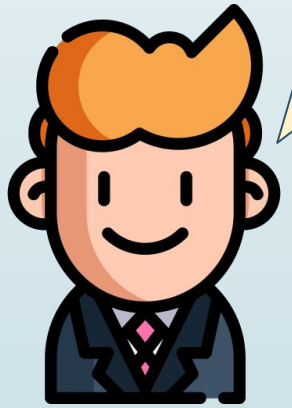


```
/*Third page Starts */

 class Secondpage extends Vari implements ActionListener
{
    JFrame f2=new JFrame("Account Details");
    JLabel l11,l12,l13,l14,l15,l16,l17;
    JButton bb1;
    Secondpage()
    {
        l11=new JLabel("User Name : ");
        l12=new JLabel("Account Number : ");
        l13=new JLabel("Account Balance : Rs");
        l14=new JLabel("XY BANK");
        l15=new JLabel(" ");
        l16=new JLabel(" ");
        l17=new JLabel(" ");
        bb1=new JButton("BACK");
        f2.setSize(500,500);
        f2.setVisible(true);
        f2.setLayout(null);
        f2.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        f2.add(l11);
        f2.add(l12);
        f2.add(l13);
        f2.add(l14);
        f2.add(l14);
        f2.add(l15);
        f2.add(l16);
        f2.add(l17);
        f2.add(bb1);
        String sa=Integer.toString(c[kl]);
        String s1a=Double.toString(amnt[kl]);
        l15.setText(nm[kl]);
        l16.setText(sa);
        l17.setText(s1a+"   only");
        l11.setBounds(20,30,100,30);
        l12.setBounds(20,90,200,30);
        l13.setBounds(20,150,200,30);
        l14.setBounds(220,0,100,30);
        l15.setBounds(100,30,100,30);
        l16.setBounds(150,90,100,30);
        l17.setBounds(150,150,100,30);
        bb1.setBounds(220,300,100,30);
        bb1.addActionListener(this);
    }
```



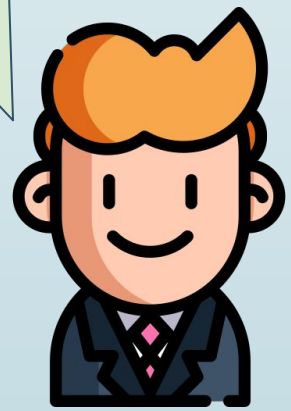
```
195         ll1.setBounds(20,30,100,30);
196         ll2.setBounds(20,90,200,30);
197         ll3.setBounds(20,150,200,30);
198         ll4.setBounds(220,0,100,30);
199         ll5.setBounds(100,30,100,30);
200         ll6.setBounds(150,90,100,30);
201         ll7.setBounds(150,150,100,30);
202         bb1.setBounds(220,300,100,30);
203         bb1.addActionListener(this);
204     }
205     public void actionPerformed(ActionEvent e2)
206     {
207         f2.dispose();
208         new Firstpage();
209     }
210 }
211 /*third frame ends */
```

Main purpose of this frame is to show the user Details .
Third frame ends from here.



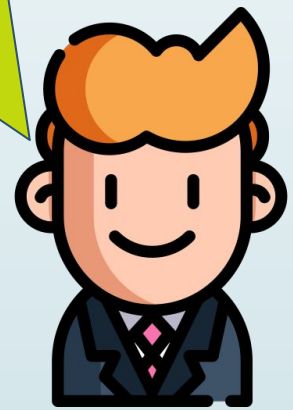
```
212 /*Fourth frame Starts */
213  class Thirdframe extends Vari implements ActionListener
214 {
215     JFrame f4=new JFrame("Cash Deposit");
216     JLabel lll1,lll2;
217     JTextField ttt1,ttt2;
218     JButton bbb1,bbb2,bbb3;
219     Thirdframe()
220     {
221         lll1=new JLabel("Enter Amount");
222         lll2=new JLabel(" ");
223         ttt1=new JTextField(20);
224         bbb1=new JButton("Deposit ");
225         bbb2=new JButton("Back");
226         bbb3=new JButton("Exit");
227         f4.setSize(700,700);
228         f4.setVisible(true);
229         f4.setLayout(null);
230         f4.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
231         f4.add(lll1);
232         f4.add(ttt1);
233         f4.add(bbb1);
234         f4.add(bbb2);
235         f4.add(bbb3);
236         f4.add(lll2);
237         lll1.setBounds(165,30,300,30);
238         ttt1.setBounds(300,30,300,30);
239         bbb1.setBounds(240,180,300,30);
240         bbb2.setBounds(240,300,300,30);
241         lll2.setBounds(280,120,300,30);
242         bbb3.setBounds(240,500,300,30);
243         bbb1.addActionListener(this);
244         bbb2.addActionListener(this);
245         bbb3.addActionListener(this);
246     }
```

Its Fourth frame.
As it beginning of the frame it contains usual GUI material(i.e: button ,
text field, label, frame) declaration and its arrangement.
Purpose of this page is :
for depositing money.



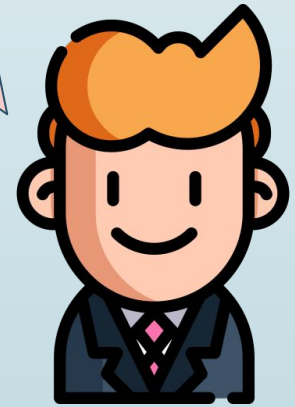
```
247     public void actionPerformed(ActionEvent e3)
248     {
249         if(e3.getSource()==bbb1)
250         {
251             String grx=ttt1.getText();
252             double dep_amnt=Double.parseDouble(grx);
253             amnt[k1]=amnt[k1]+dep_amnt;
254             l112.setText("Deposit Successfull !!");
255         }
256         else if(e3.getSource()==bbb2)
257         {
258             f4.dispose();
259             Firstpage fp3 =new Firstpage();
260         }
261         else
262         {
263             f4.dispose();
264         }
265     }
266 }
267 /* Fourth page ends */
```

As it is deposit amount , so here we are getting data from textfield and converting to double type as by default textfield's contains string type data.
Then we are adding that amount to our bank balance.
our fourth frame ends here .



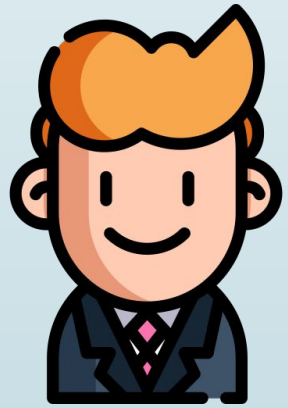
```
/* Fifth page starts */

 class Fourthpage extends Vari implements ActionListener
{
    JFrame f4=new JFrame("ACCOUNT TO ACCOUNT TRANSFER");
    JLabel llll1,llll2,llll3,llll4;
    JTextField tttt1,tttt2,tttt3,tttt4;
    JButton bbbb1,bbbb2;
    Fourthpage()
    {
        llll1=new JLabel("Enter Account Number to You want to send");
        llll2=new JLabel("Enter Amount you want to send");
        llll3=new JLabel(" ");
        tttt1=new JTextField(10);
        tttt2=new JTextField(10);
        bbbb1=new JButton("TRANSFER");
        bbbb2=new JButton("BACK");
        llll4=new JLabel(" ");
        f4.setSize(600,600);
        f4.setVisible(true);
        f4.setLayout(null);
        f4.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        f4.add(llll1);
        f4.add(llll2);
        f4.add(tttt1);
        f4.add(llll3);
        f4.add(tttt2);
        f4.add(bbbb1);
        f4.add(bbbb2);
        f4.add(llll4);
        llll1.setBounds(50,100,400,30);
        llll2.setBounds(50,150,300,30);
        tttt1.setBounds(370,100,200,30);
        tttt2.setBounds(300,150,200,30);
        bbbb1.setBounds(200,300,200,30);
        bbbb2.setBounds(200,400,200,30);
        llll3.setBounds(220,250,300,30);
        llll4.setBounds(220,210,300,30);
        bbbb1.addActionListener(this);
        bbbb2.addActionListener(this);
    }
```

It is Fifth frame.
And the purpose this frame to
Transfer money from one account to another.

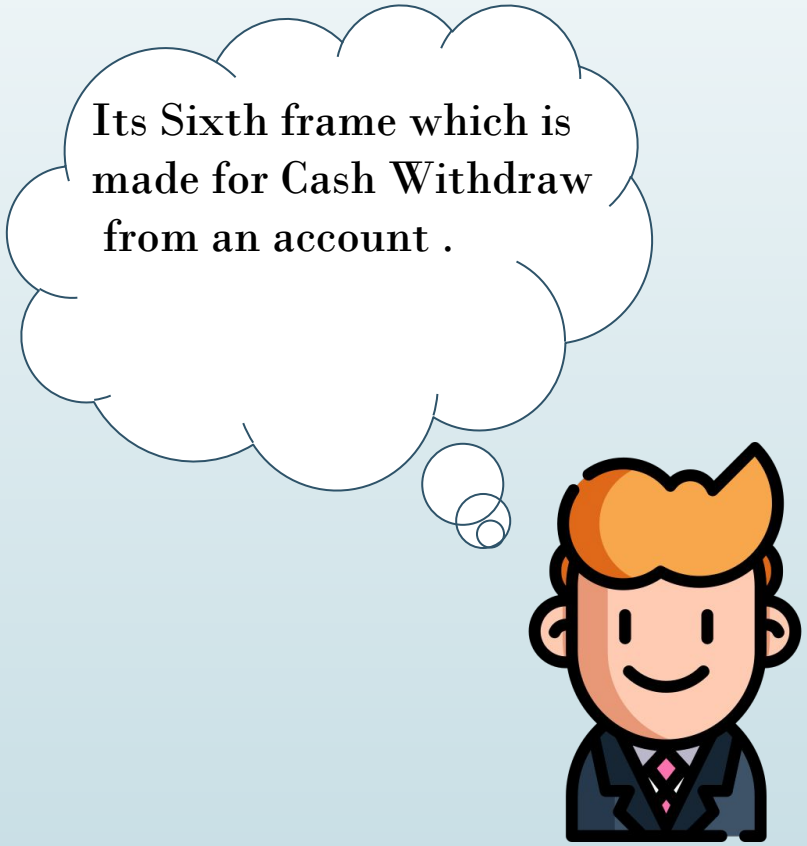


```
309     public void actionPerformed(ActionEvent e5)
310     {
311         if(e5.getSource()==bbbb1)
312         {
313             double trn_amnt=Double.parseDouble(tttt2.getText());
314                 for(int i=0;i<3;i++)
315                 {
316                     if(tttt1.getText().equals( Integer.toString(c[i]) ))
317                     {
318                         km=i;
319                     }
320                 }
321                 if(km==9)
322                 {
323                     llll4.setText("Transfer Failed !");
324                     llll3.setText("User Not found");
325                 }
326                 else if(amnt[kl]>trn_amnt)
327                 {
328                     amnt[km]=amnt[km]+trn_amnt;
329                     amnt[kl]=amnt[kl]-trn_amnt;
330                     llll3.setText("Transfer Successfull");
331                     llll4.setText(" ");
332                     km=9;
333                 }
334                 else
335                 {
336                     llll4.setText("Transfer Failed !");
337                     llll3.setText("You dont have enough balance");
338                 }
339         }
340         else
341         {
342             f4.dispose();
343             Firstpage ff4=new Firstpage();
344         }
345     }
346 }
347 /*Fifth page ends */
```

In this part we are getting input from textfield : whose account should you send and how much you will be sending. once we find that account number in our data and sender has money greater than he wants , then money from sender's account will be subtracted and send to the entered account number . So ends our Fifth frame .



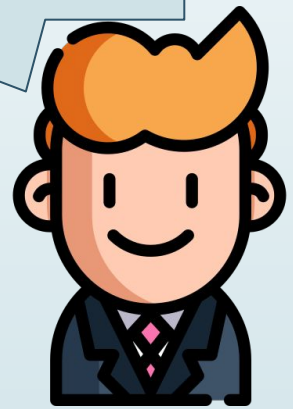
```
/*Sixth page starts */
class Fifthpage extends Vari implements ActionListener
{
    JFrame f5=new JFrame(" Cash WithDrawal ");
    JLabel lllll1,lllll2,lllll3;
    JTextField ttttt1,ttttt2;
    JButton bbbbb1,bbbbb2,bbbbb3;
    Fifthpage()
    {
        lllll1=new JLabel("Enter Amount");
        lllll2=new JLabel(" ");
        lllll3=new JLabel(" ");
        ttttt1=new JTextField(20);
        bbbbb1=new JButton("Withdraw");
        bbbbb2=new JButton("Back");
        bbbbb3=new JButton("Exit");
        f5.setSize(700,700);
        f5.setVisible(true);
        f5.setLayout(null);
        f5.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        f5.add(lllll1);
        f5.add(ttttt1);
        f5.add(bbbbb1);
        f5.add(bbbbb2);
        f5.add(bbbbb3);
        f5.add(lllll2);
        f5.add(lllll3);
        lllll1.setBounds(165,30,300,30);
        lllll2.setBounds(280,130,300,30);
        ttttt1.setBounds(300,30,300,30);
        bbbbb1.setBounds(240,180,300,30);
        bbbbb2.setBounds(240,300,300,30);
        bbbbb3.setBounds(240,500,300,30);
        lllll3.setBounds(280,100,300,30);
        bbbbb1.addActionListener(this);
        bbbbb2.addActionListener(this);
        bbbbb3.addActionListener(this);
    }
```



```
386     public void actionPerformed(ActionEvent e6)
387     {
388
389         if(e6.getSource()==bbbbb1)
390         {
391            double wth_amnt=Double.parseDouble(ttttt1.getText());
392             if(amnt[kl]>wth_amnt)
393             {
394                 amnt[kl]=amnt[kl]-wth_amnt;
395                 lllll2.setText("Withdraw Successfull");
396                 lllll3.setText("");
397             }
398             else
399             {
400                 lllll3.setText("Withdraw Failed !");
401                 lllll2.setText("you dont have enough Money!!");
402             }
403         }
404         else if(e6.getSource()==bbbbb2)
405         {
406             f5.dispose();
407             Firstpage fp4 =new Firstpage();
408         }
409         else
410         {
411             f5.dispose();
412         }
413     }
414 }
415 /* Sixth page ends */
```

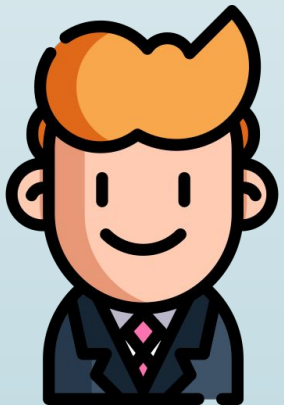
it is similar to deposit case but here we are reduced amount from login person and and giving him cash $$$.

So here ends our last frame ...



```
416  /*main class*/
417  public class Banking
418  {
419      public static void main(String[] args)
420      {
421          login bnk=new login();
422      }
423  }
```

It's our main class from which we are gonna call our login class .
so whenever we are gonna execute the our program Login page will appear first .



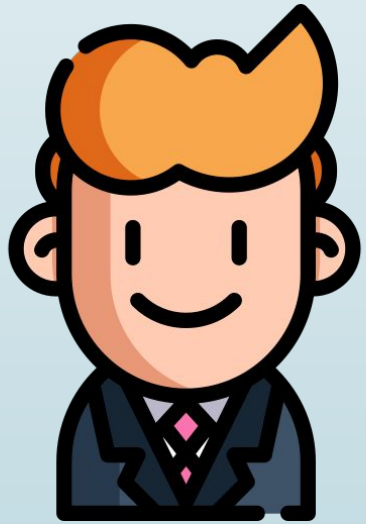
So before talking about other topics , you should get to know how to execute this program :

1)open our command prompt and move to the directory where you saved it using “ cd ” command .

2)type javac Banking.java in command prompt .

3) then type java Banking .

4) Then you will a java file opening .

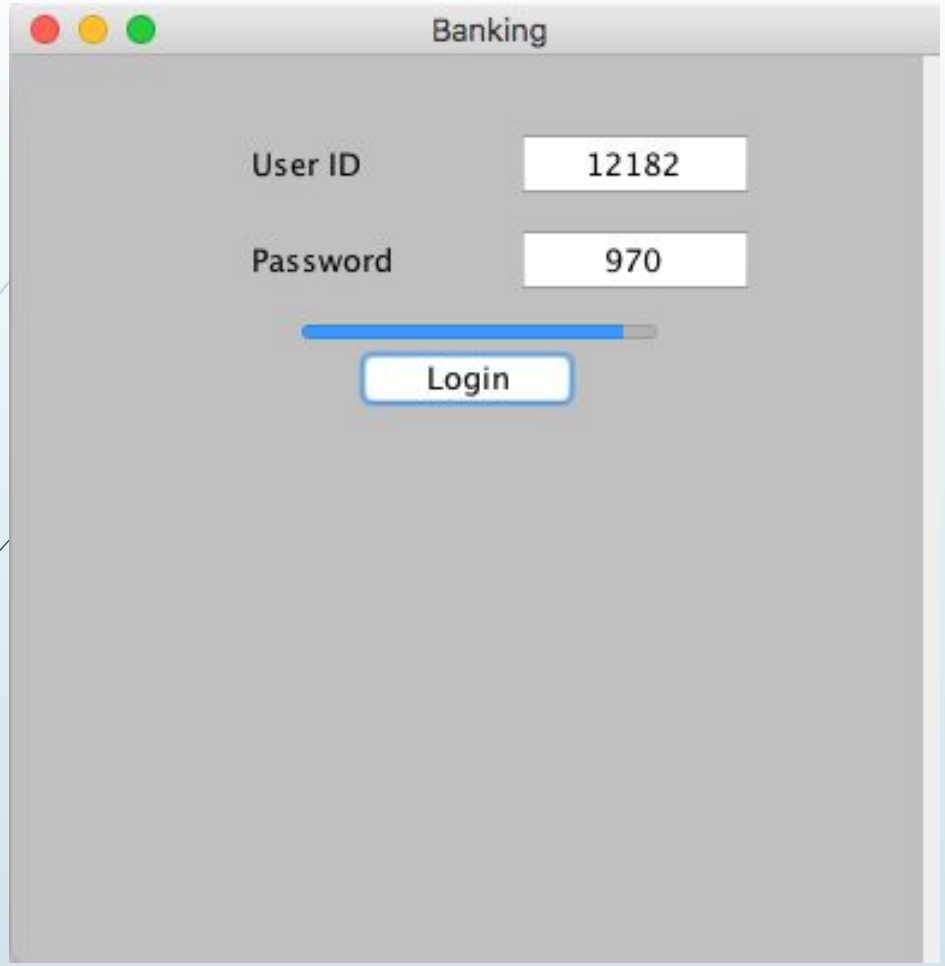


Testing and verification :

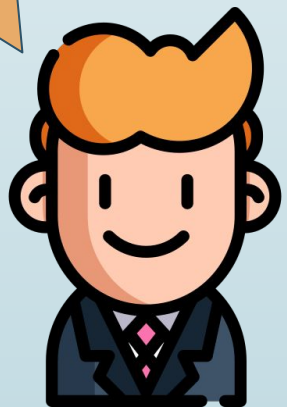
After designing and implementing a solution for a problem next thing one should do is verifying whether its matching with the required result or not.

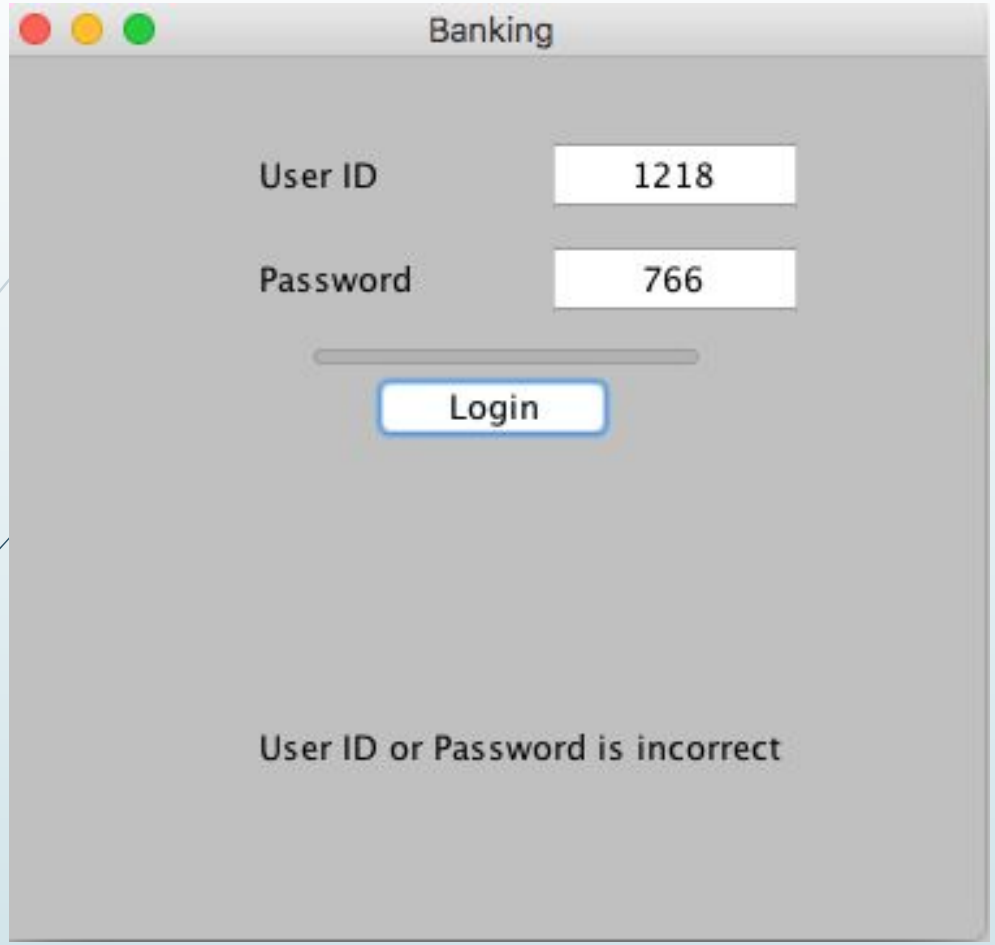
If it is not even near you expectation you should keep on modifying it .

If it matches requirement you should test it for different cases most likely one might find a bug or error which might effect your program in future .

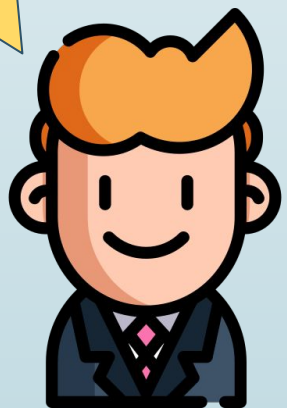


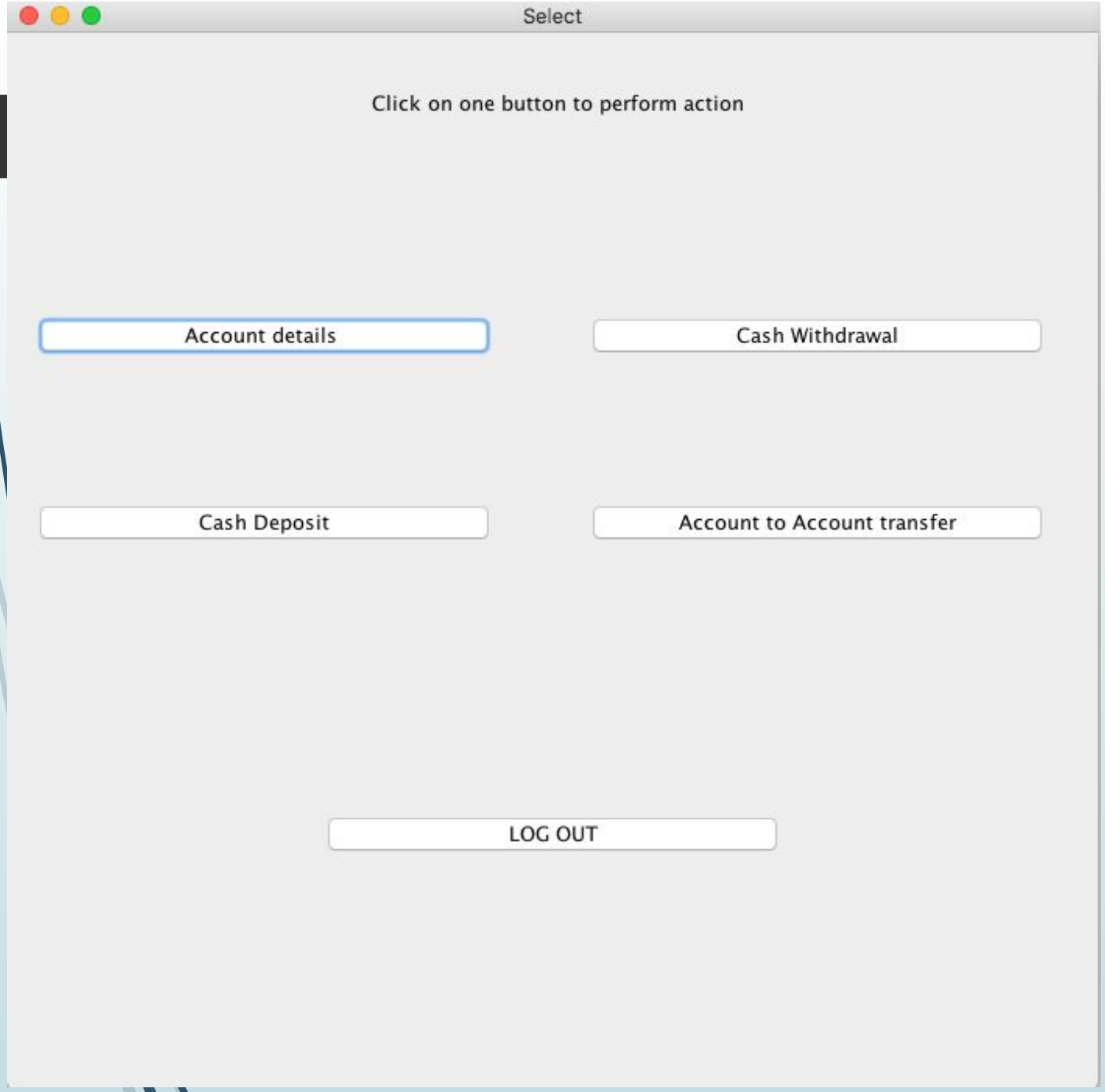
Its normal exection where you entered proper user id and password .





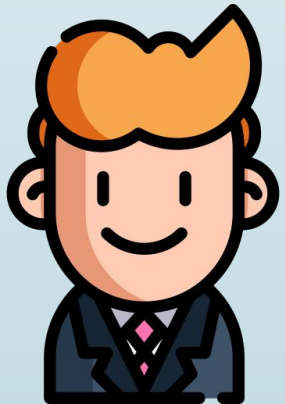
Its case where you entered incorrect user id and password .

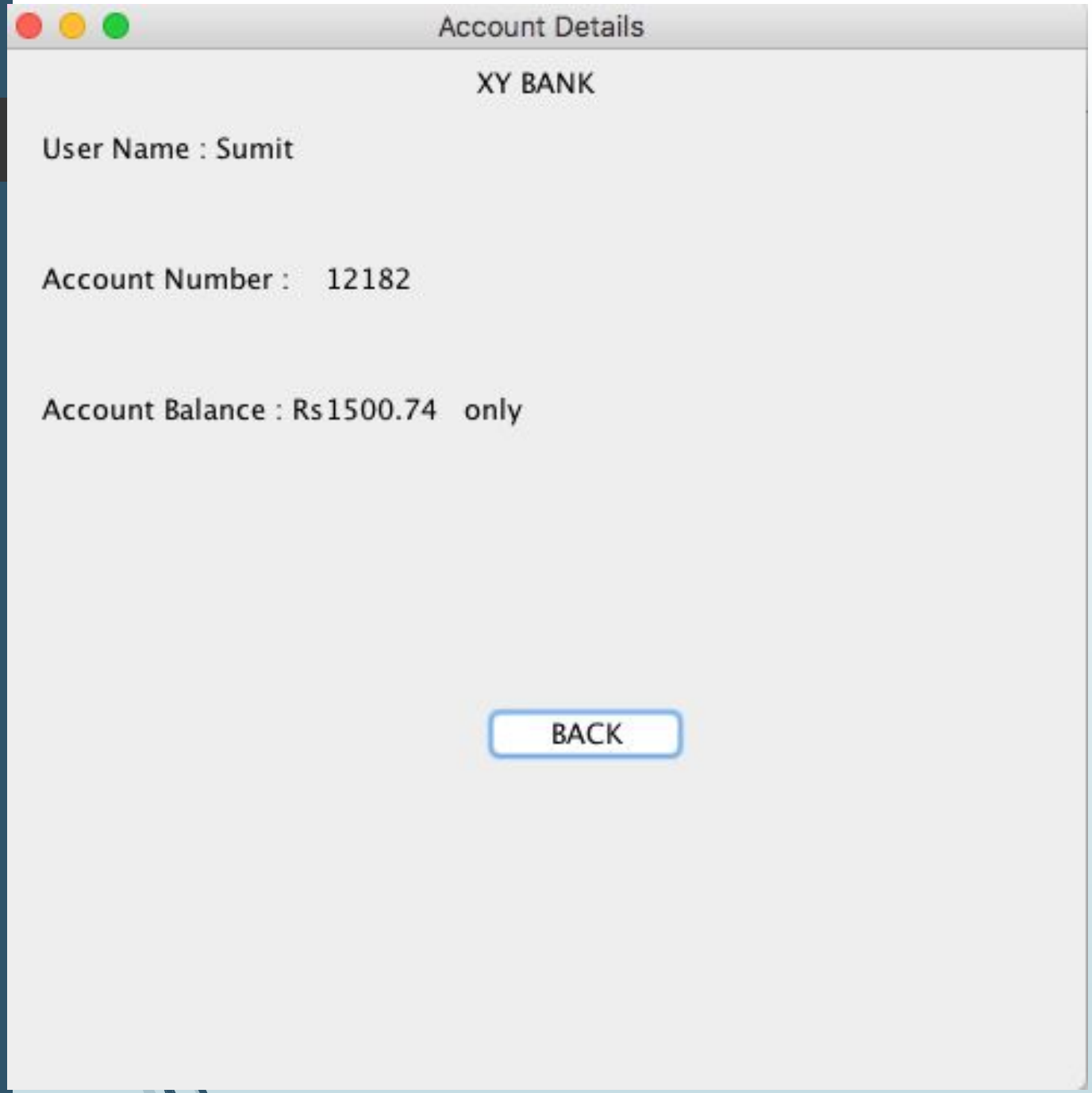




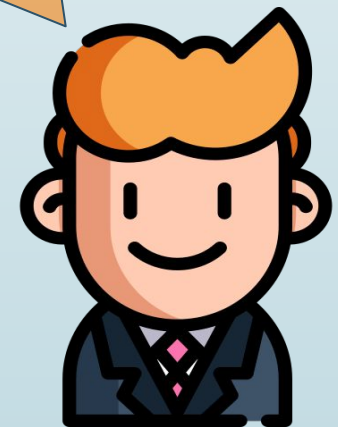
After you Successfully Login its what it looks like. You have to select any of the Five buttons perform an action . Function of Different Buttons :

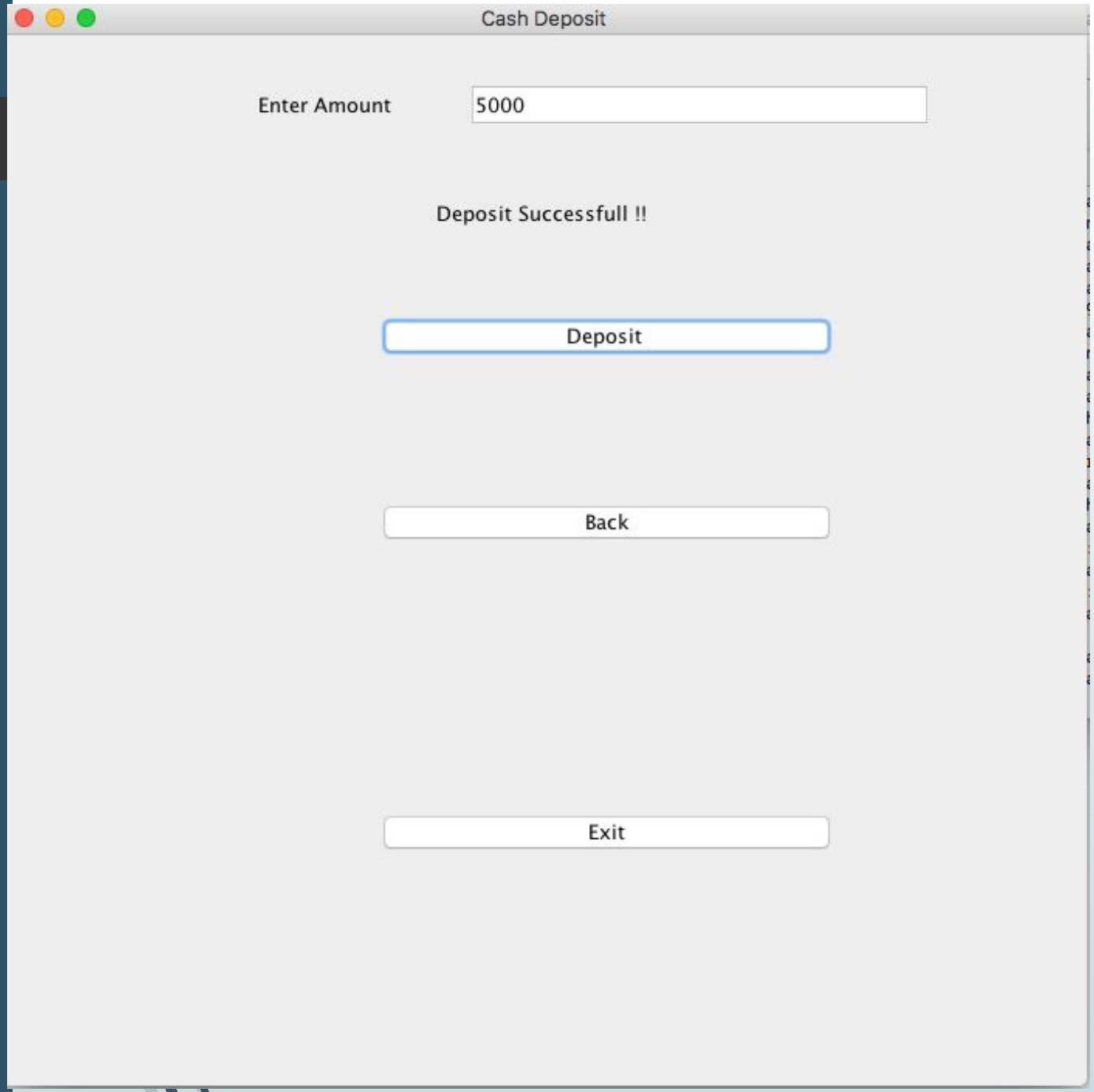
1) Account details : gives your account details
2)Cash Withdrawal : Withdraws money from your account .
3)Cash Deposit : Deposits cash to your account.
4)Account to Account Transfer : It transfers money from one account to another account.
5)Log out : you log out from current account.





Its what it looks like when you press account details button . And by pressing back button you can go back to pervious page(button selection).

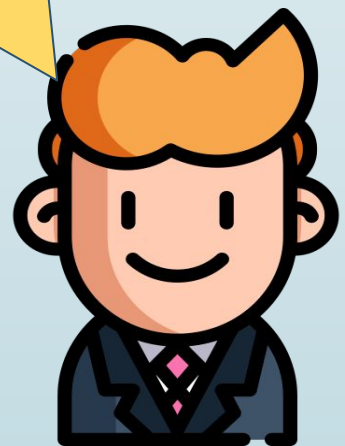




Its Deposit frame you can deposit money .

back button brings you back to the previous page(selection of buttons).

exit button closes the whole program.



Account Details

XY BANK

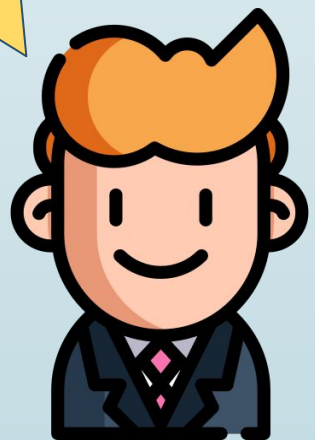
User Name : Sumit

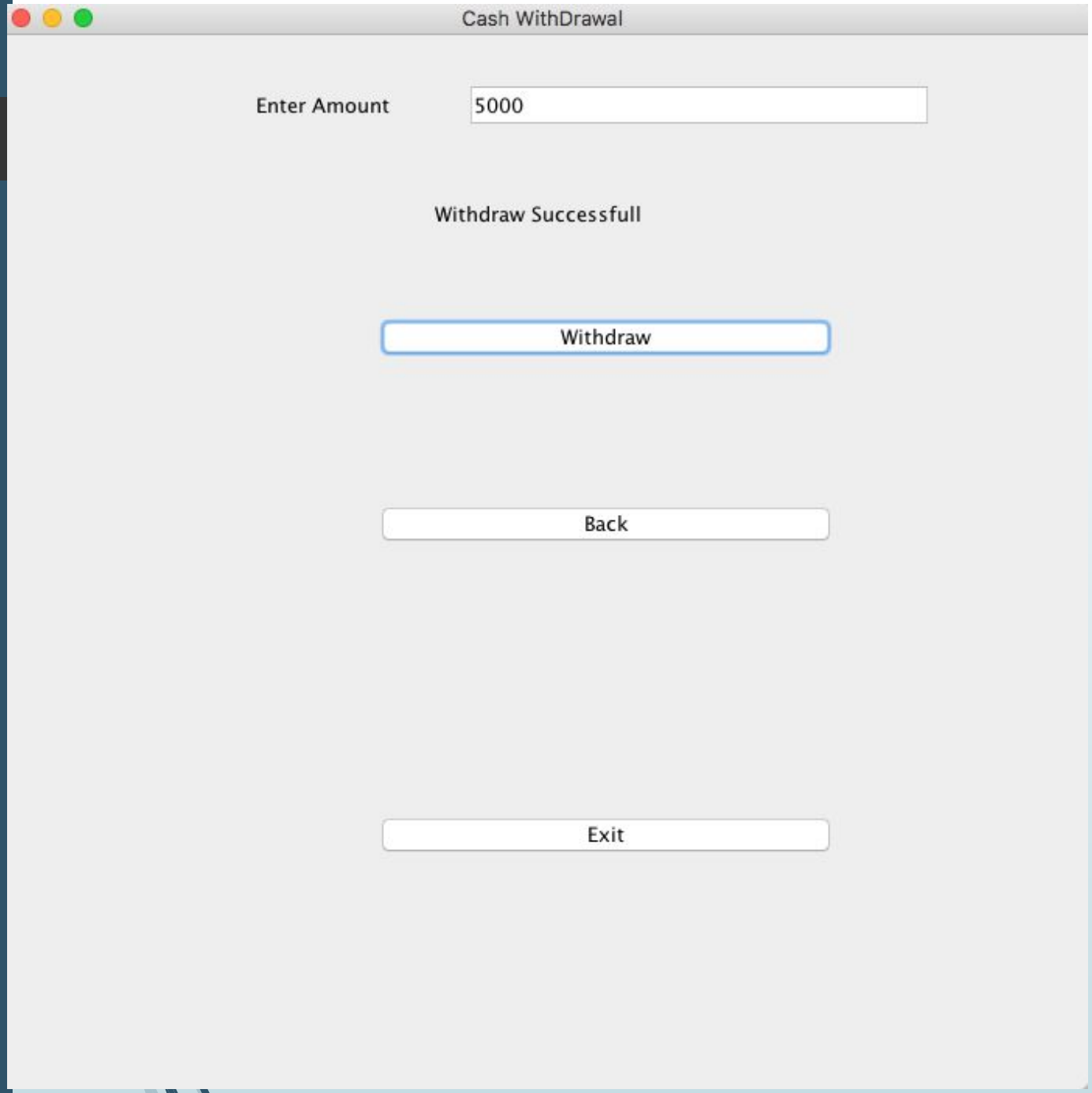
Account Number : 12182

Account Balance : Rs6500.74 only

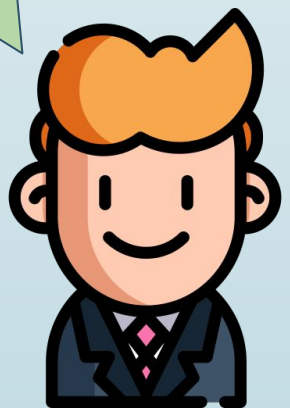
BACK

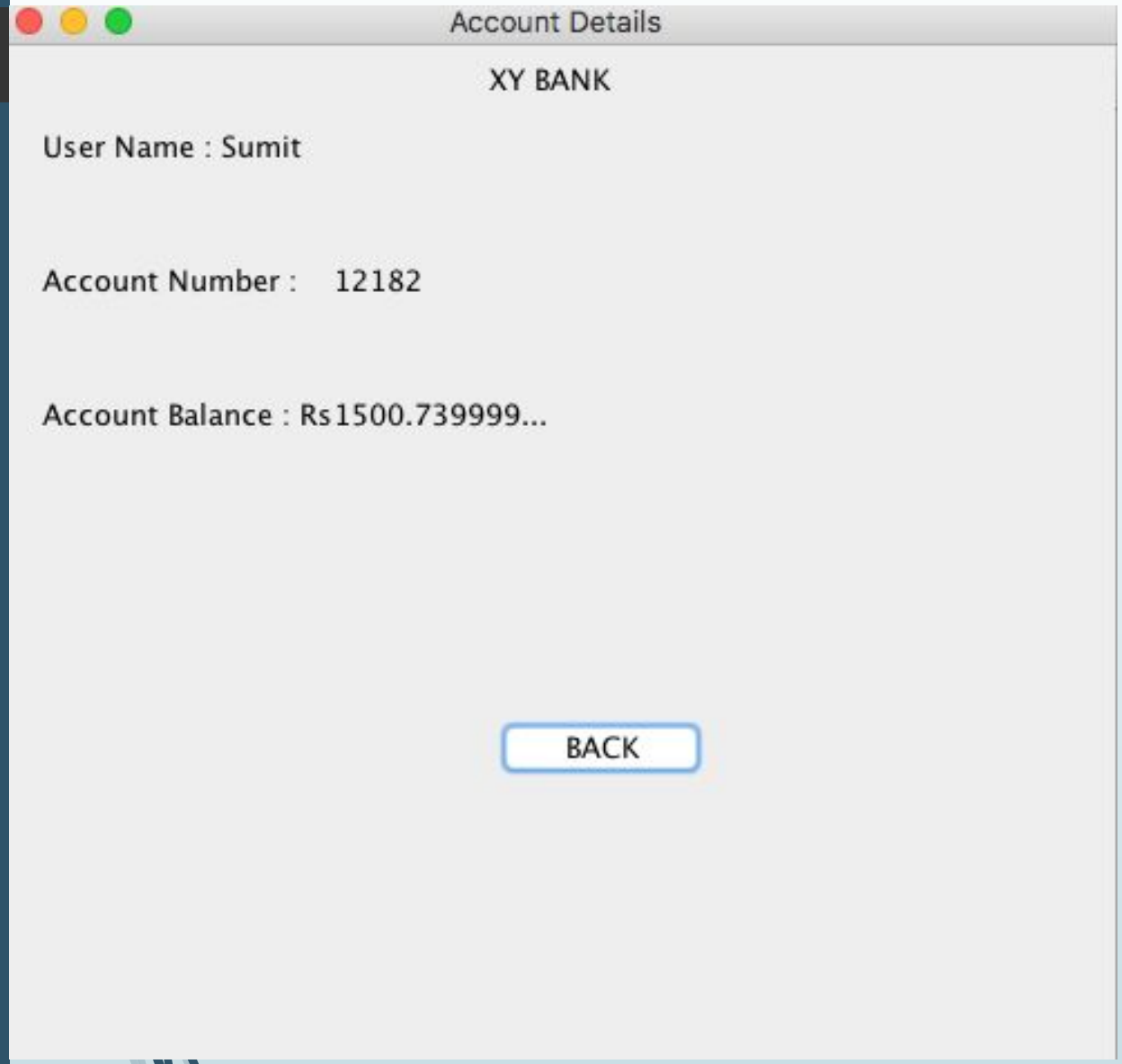
so we can see here our account balance is increased by Rs 5000 due to depositing.



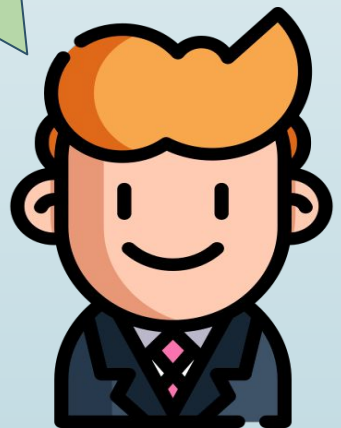


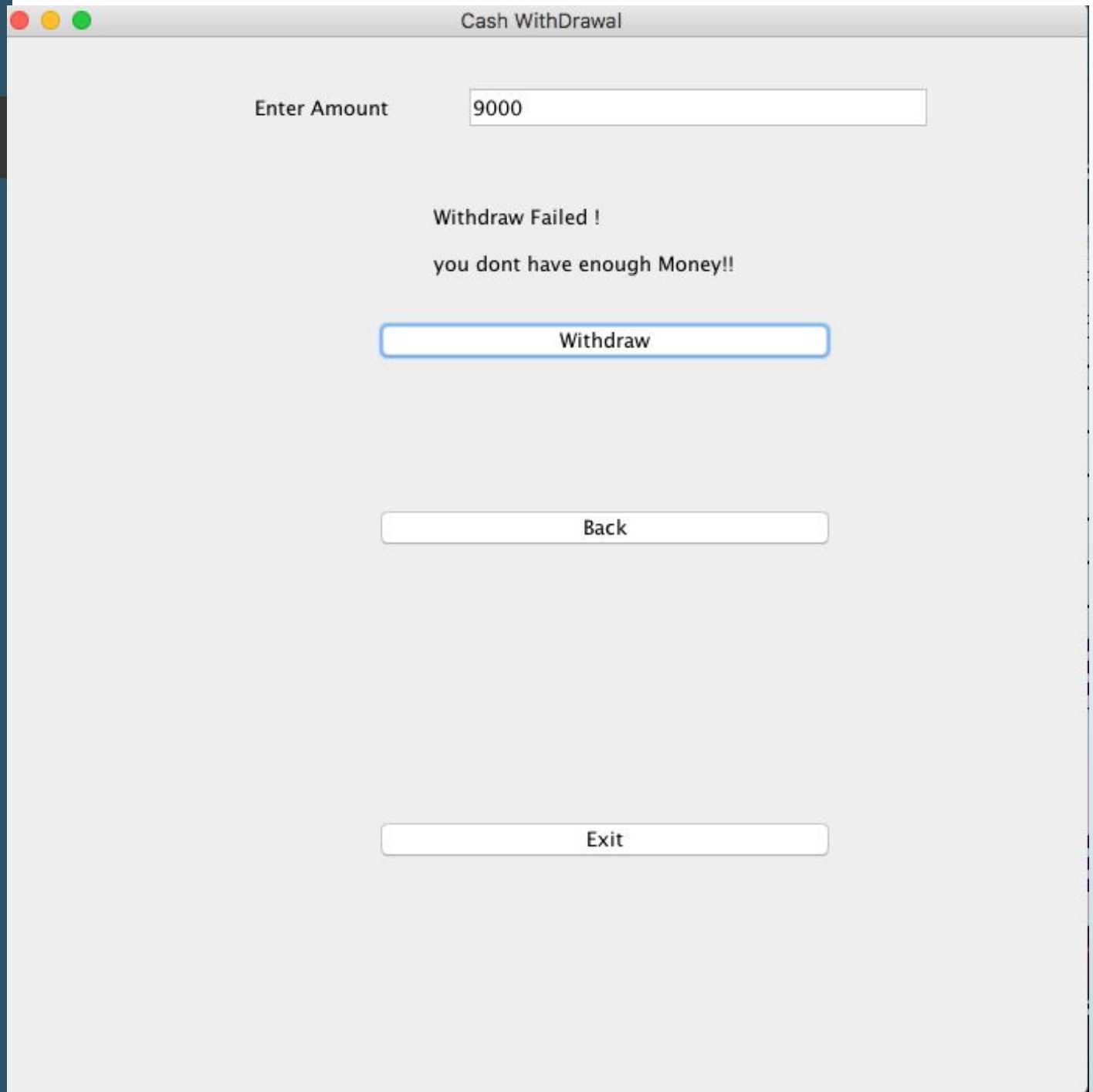
It is money withdraw section. where you can withdraw money from our account .



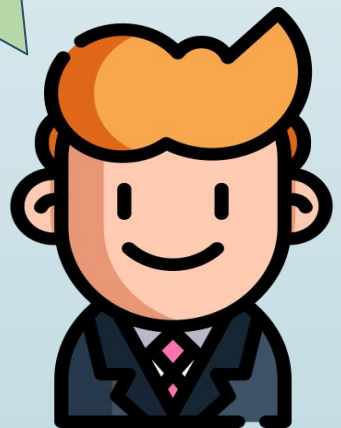


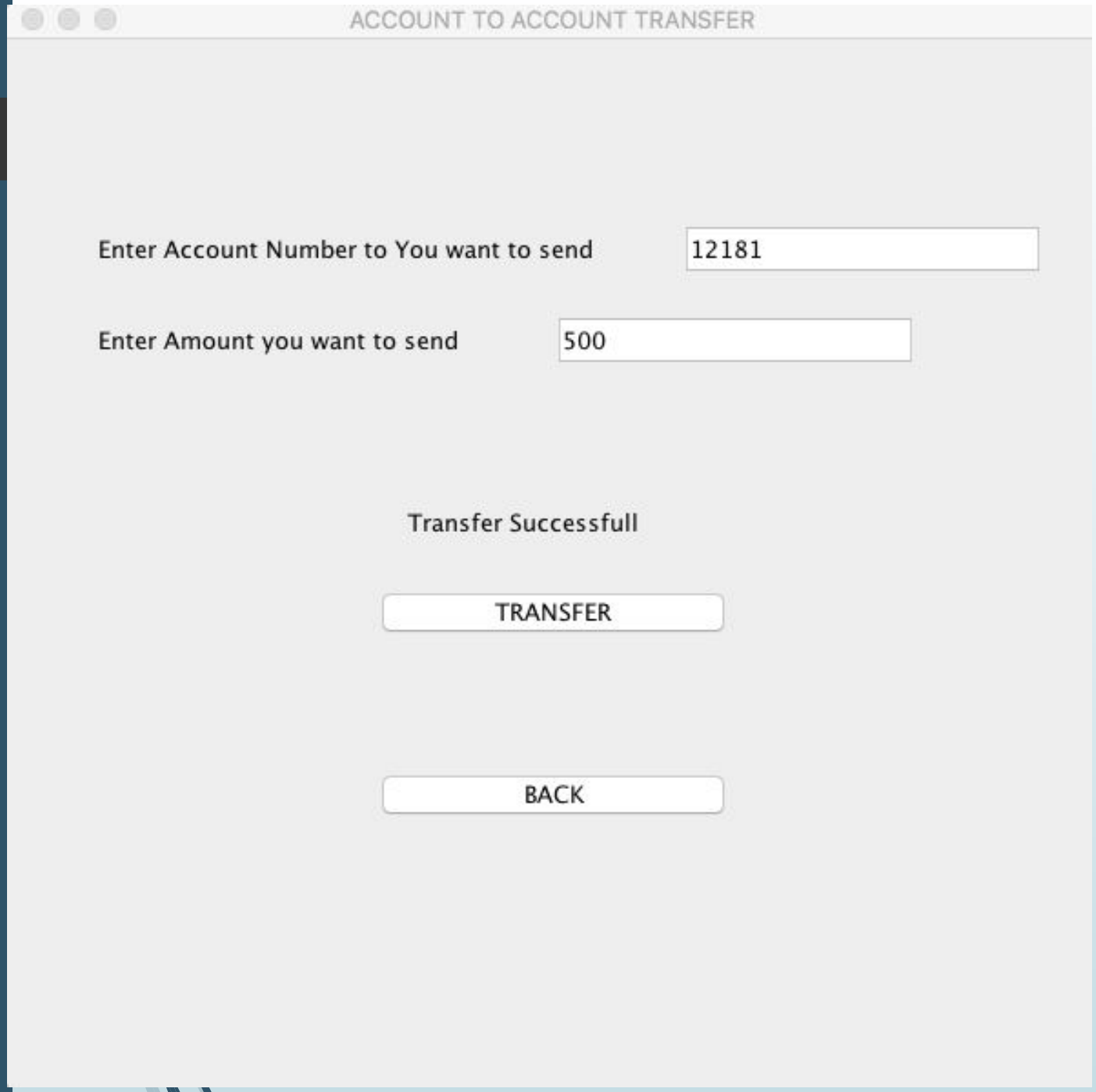
So we can see here in account detail section that Rs 5000 is taken out of my account .



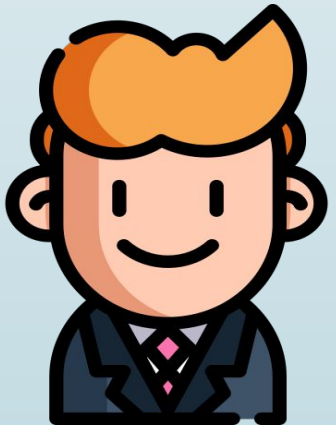


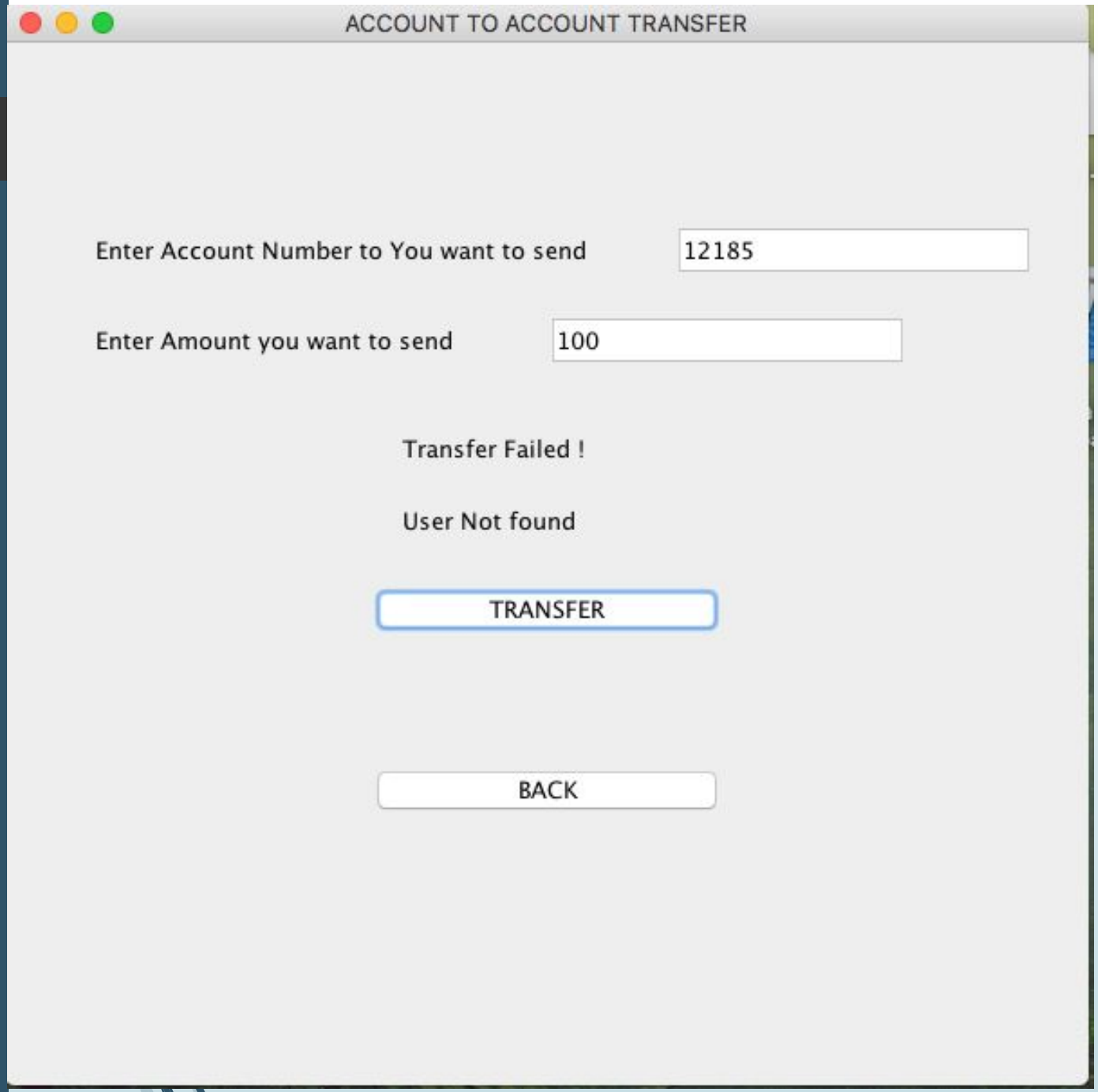
When you try to withdraw more money then you have in balance it what it looks like .



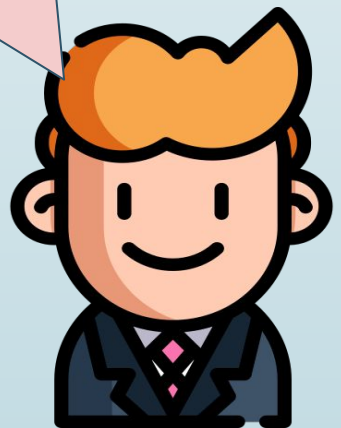


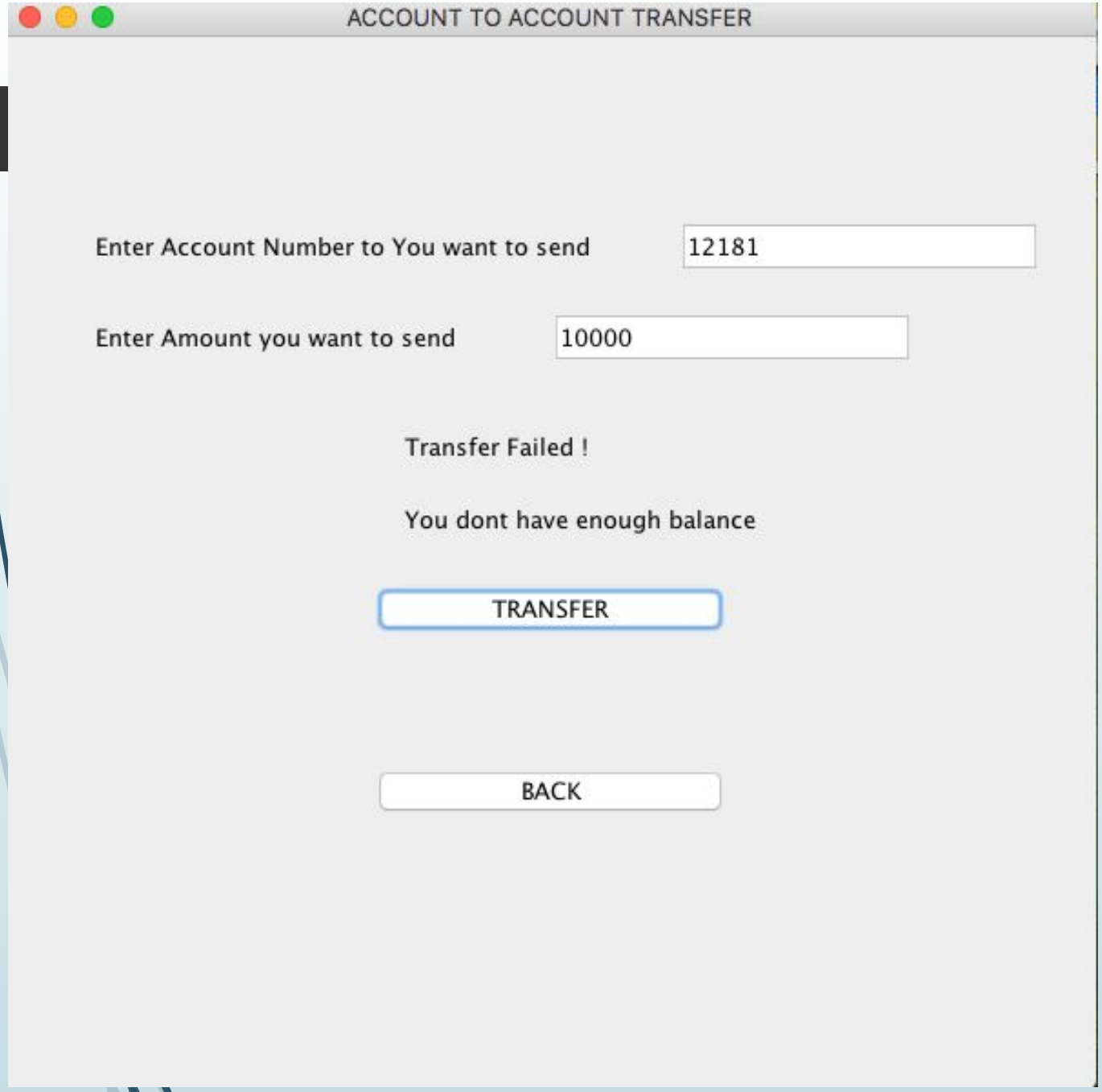
Its account to account transfer frame , where you can send money from one account to another account .
All you have to do is enter both the details (Account_number and amount) correctly and click on transfer button , it will send the money .
And back buttons takes back to the previous frame.





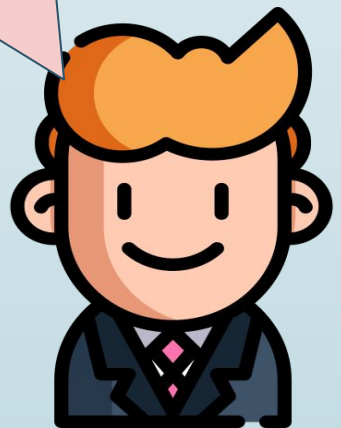
It's the case you entered the wrong the Account number.
As the user isn't present in our data so it will show “user not found”.

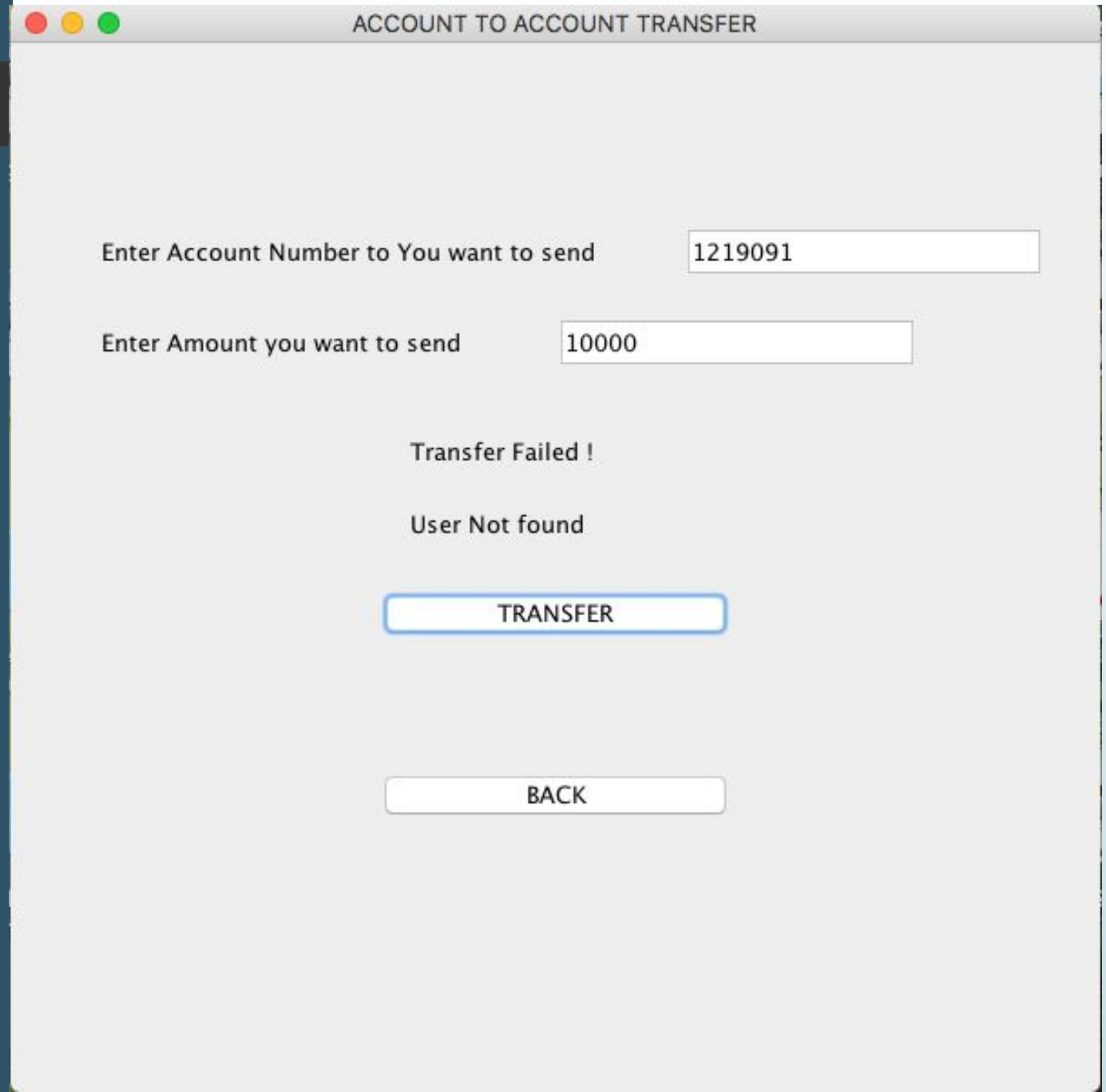




Its the case you entered the amount you want to transfer is greater than amount you have.

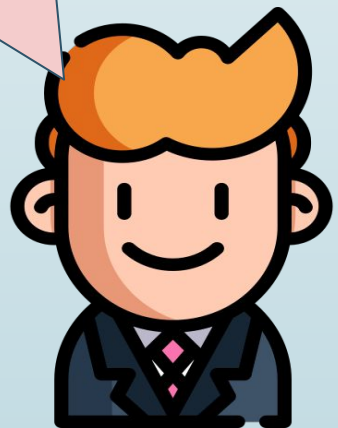
As you dont have enough money foto send it shows you dont have enough balance.



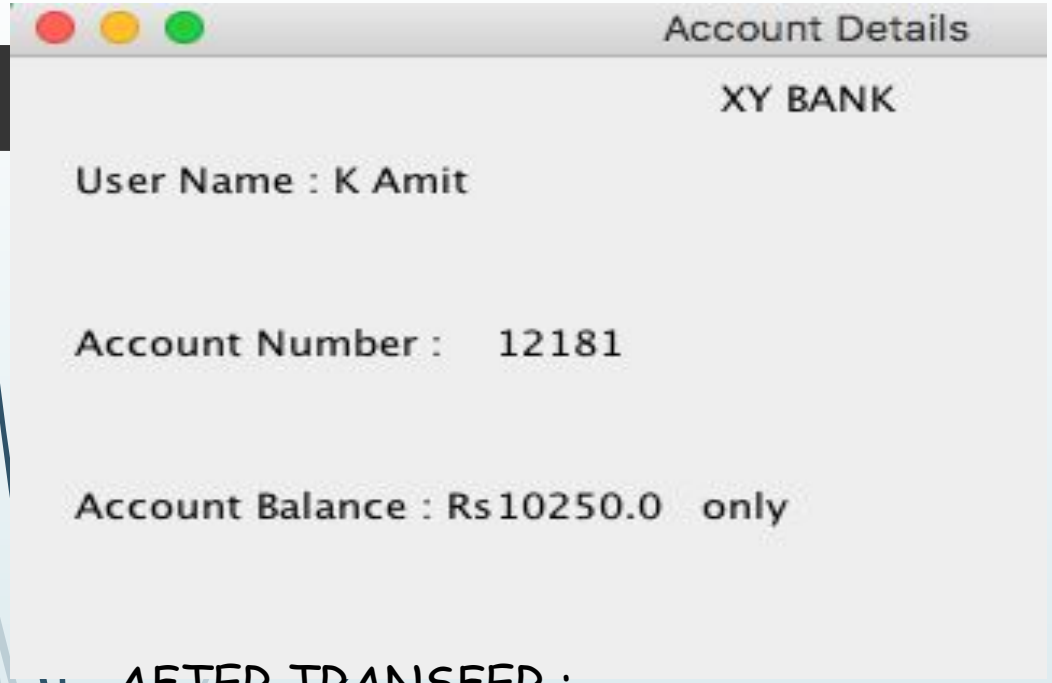


Its the case you entered both account number and amount wrong.

It first make you sure about account number then amount you want to send.

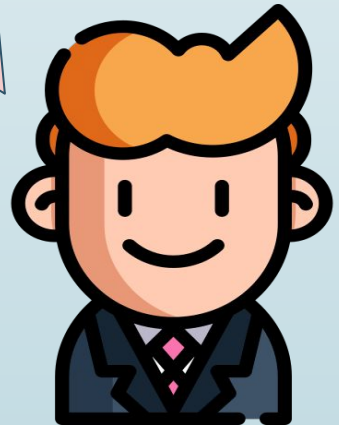


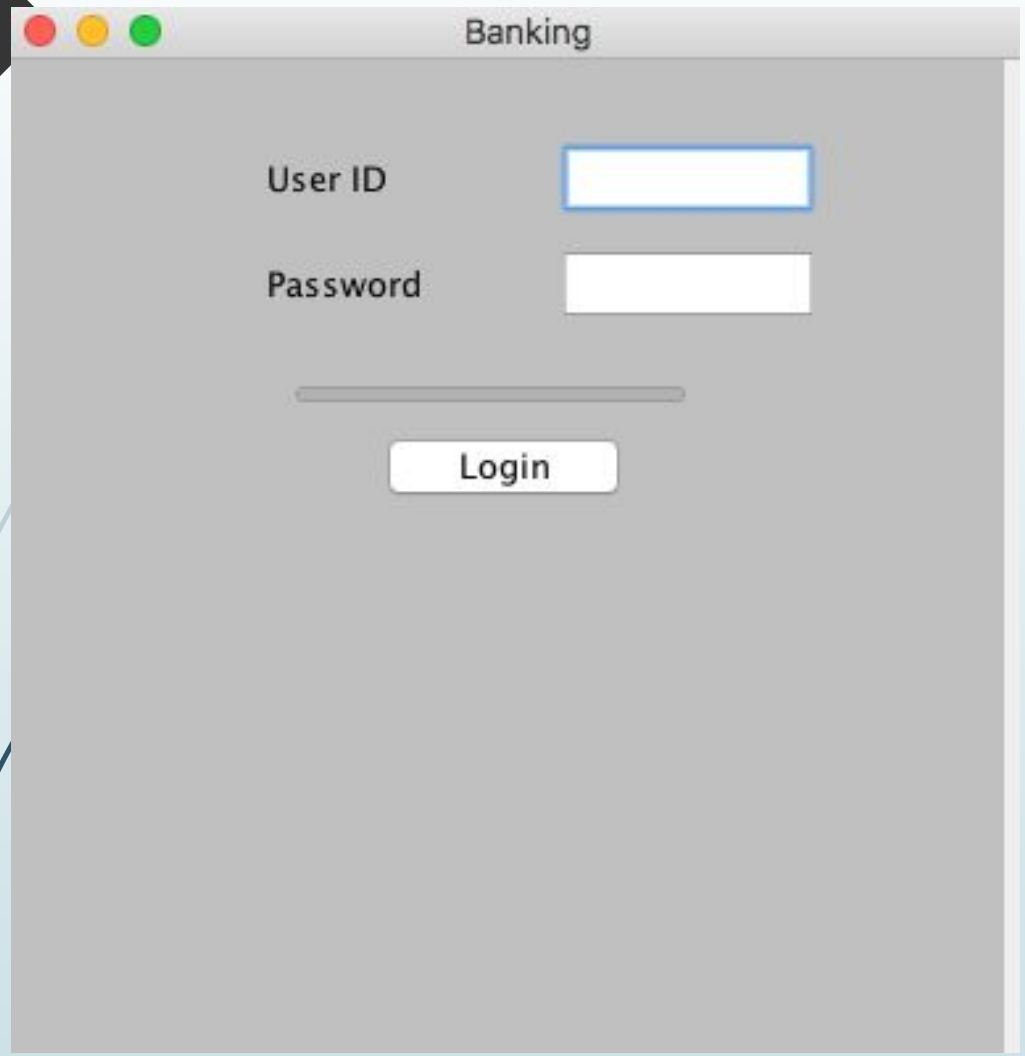
BEFORE TRANSFER :



AFTER TRANSFER :

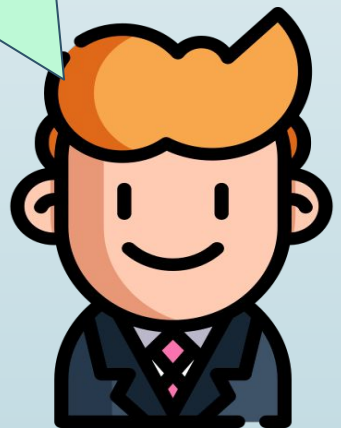
So you people can see that sumit sent Rs 500 to Amits account.
We can see here increase of money by Rs 500 in Amits account .
Hence it works
{“for checking amits balance you have logout and login as amit closing the program and reopening may bring you trouble.”}





Its our last button output that is Logout button .
where you have to re enter the credentials for doing task.

With this verification of result is over as we tried every possibility.



Result Analysis :

From the above screenshots we can see that each & every functionality of the program is working perfectly. eg :

- In Login page both the textfield takes integer data and compares them to fixed data if entered properly and clicked in login it will move you to selection page if it is incorrect it will show you error message.
- After login you will be entering to operation selection page where each button has a separate purpose

1) Display Details : shows all your account info.
2) Deposit : adds money to our account .
3) Withdraw: Removes Money from your Account .
4) Account to Account Transfer : Transfer money from one account to another
5) Log out : it removes current user from functioning so that new user can perform his required activity.

- In Deposit frame it double values. Amount of deposit has no limit here (Highest value which double can take is last).

- In Withdraw frame we can withdraw money less than our account balance if more than or equal amount present in account balance is taken out then it will be showing an error.

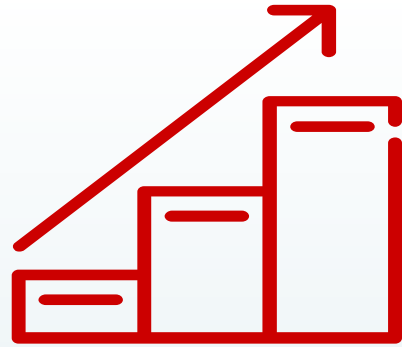
- In account to account transfer one has to enter proper user id(integer) to transfer money and if you try to transfer more than or equal amount money you posses in our account it will show error and transfer will be failed, else it work and one can check that by logout and login by the account to which money is transferred .

Identify limitations & Future Scalability

Limitations :

1) Due to Lack of Knowledge of Database Concept for data storage ,usage and manipulation , we have to use predefined user data as a result we cannot add new data / user or remove an old data /user.

2) We had to use static variable for user data atleast to retain till program closes. As result whatever changes you do wont be saved if you close the java execution and reexecute it again the values will set to default .



3) Due to lack of connectivity it cannot be used for Globalwide .

Scalability :

1) If we would be able add database to it we could make it more interactive and more relevant .

2) we can add connectivity can make it worldwide usable .


THANK
YOU