SETH M.R. JAIPURIA SCHOOL BANSAL CAMPUS

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Bank Management System

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Board Roll Number :
Class : 12 - A

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Certificate

This is to certify that the project titled
“Bank Management System”
is carried out by
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under the supervision of
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for partial fulfilment of All India Senior School Certificate Examination (AISSCE) Class XII practical exam 2024.

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Acknowledgement

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"I have tried my level best to make my project in an understanding way and language with the help of my teachers and friends and I hope that this work will be appreciated by one and all."

Yuvraj Gupta

Class XII

Introduction

About The Project:

1. This project strives to imitate the bank management system in a simplified format.
2. It uses Python and MySQL to process and store the data respectively.
3. The user can create a new account or login to an existing account in this system.
4. To create a new account, the user must provide a valid aadhar number, i.e . The number needs to be 12 digits long, then it undergoes a verification to check whether the aadhar number is associated with an account, if it isn’t the user is allotted a unique account number and asked for his name and a 4 digit PIN.
5. If a user already has an account created, he can check the remaining balance in the account, deposit or withdraw some money, see his transaction history or permanently terminate the account. All of these actions require the user to enter the correct PIN.

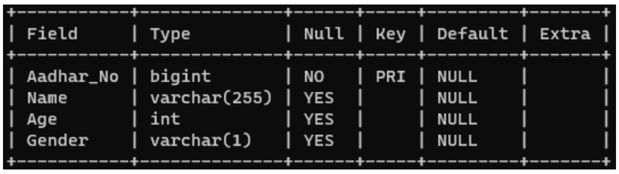
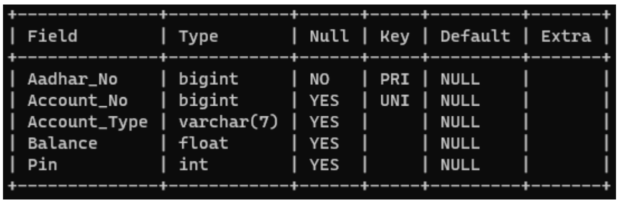
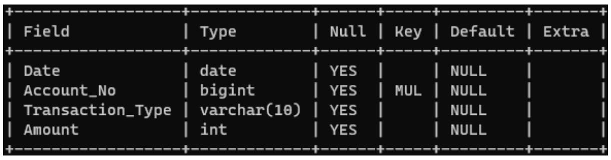
Project Summary

Front End Details

S.No	Python Function Name	Purpose
1	main()	Controls the overall working and order of events.
2	check(id)	It retrieves data from the database to check if the aadhar number(id) is already present in the database.
3	new()	Creates a new user by taking all relevant inputs and updating the database.
4	exist()	Logs in the user by taking inputs and verifying the credentials from the database.
5	logged(rec)	Controls the working after the user has successfully logged in. [rec is the list of details of the user]
6	delete(rec)	Permanently terminates the account of the user.
7	deposit(rec)	Deposits the given amount in the user's account.
8	withdraw(rec)	Withdraws the required amount from the user's account.
9	transaction(rec)	Retrieves and displays the transaction history of the user's account.
10	display(rec)	Displays all the details of the user along with the current account balance.
11	load(sec)	Adds a time delay of “sec” seconds and simple loading animation.

Modules used - mysql.connector, time

Back End Details

Database Table Names	Structure	Purpose
Personal		Stores the data about the user.
Accounts		Stores the data of the accounts associated with the user.
Transactions		Stores data of all transactions done by the user.

```
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| Aadhar_No | bigint       | NO   | PRI | NULL    |       |
| Name      | varchar(255) | YES  |     | NULL    |       |
| Age       | int          | YES  |     | NULL    |       |
| Gender    | varchar(1)   | YES  |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
```

```
+--------------+------------+------+-----+---------+-------+
| Field        | Type       | Null | Key | Default | Extra |
+--------------+------------+------+-----+---------+-------+
| Aadhar_No    | bigint     | NO   | PRI | NULL    |       |
| Account_No   | bigint     | YES  | UNI | NULL    |       |
| Account_Type | varchar(7) | YES  |     | NULL    |       |
| Balance      | float      | YES  |     | NULL    |       |
| Pin          | int        | YES  |     | NULL    |       |
+--------------+------------+------+-----+---------+-------+
```

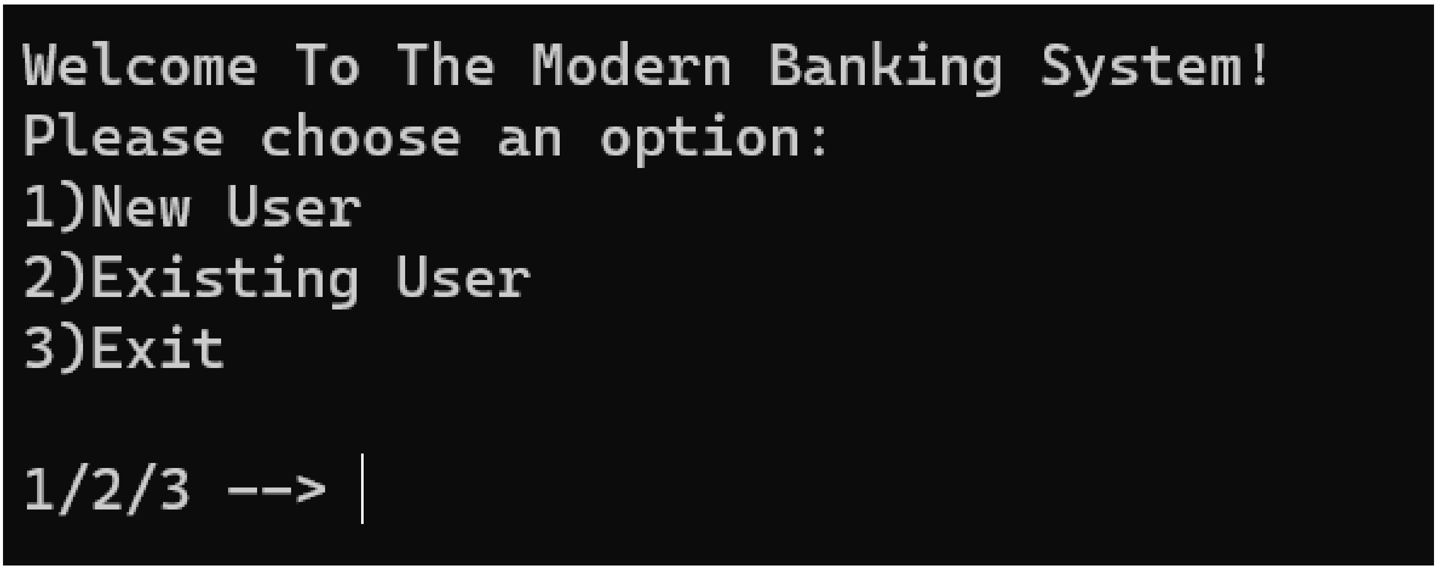
```
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| Date             | date        | YES  |     | NULL    |       |
| Account_No       | bigint      | YES  | MUL | NULL    |       |
| Transaction_Type | varchar(10) | YES  |     | NULL    |       |
| Amount           | int         | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
```

Relational Database Management System Used - MySQL

Database Name - Bank

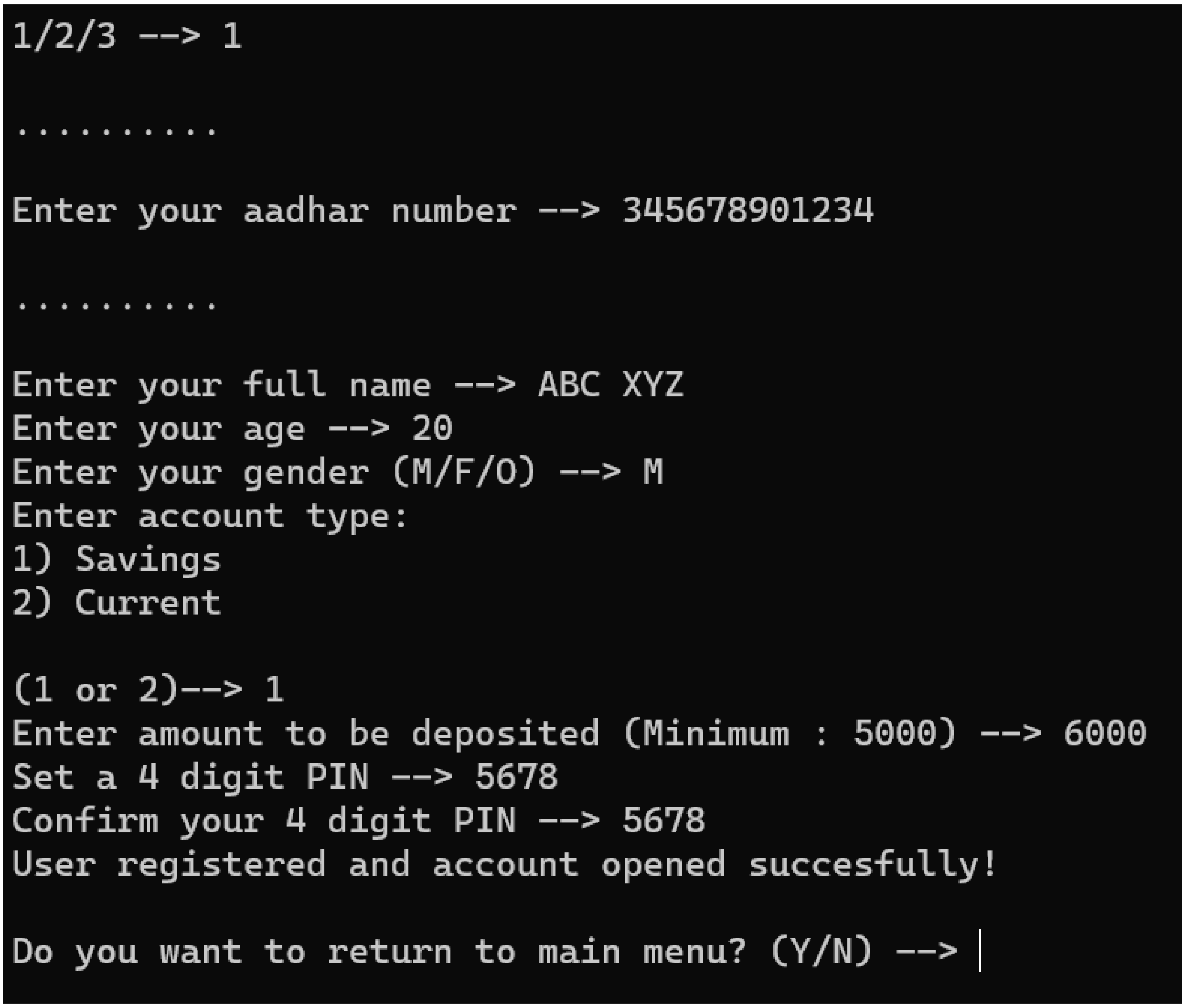
Output Screenshots

Main Menu



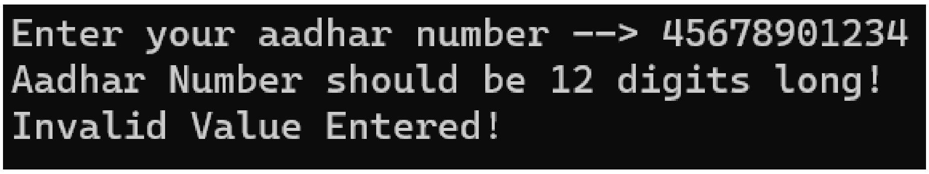
```
Welcome To The Modern Banking System!
Please choose an option:
1)New User
2)Existing User
3)Exit

1/2/3 -->
```

New User Registration

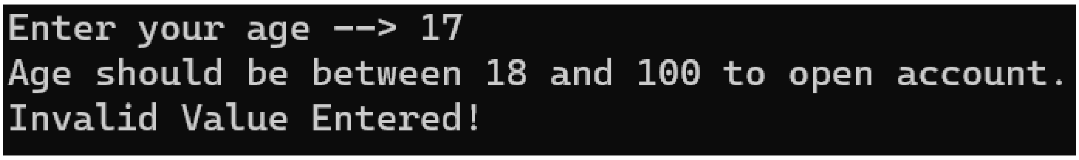


```
1/2/3 --> 1

..........

Enter your aadhar number --> 345678901234

..........

Enter your full name --> ABC XYZ
Enter your age --> 20
Enter your gender (M/F/O) --> M
Enter account type:
1) Savings
2) Current

(1 or 2)--> 1
Enter amount to be deposited (Minimum : 5000) --> 6000
Set a 4 digit PIN --> 5678
Confirm your 4 digit PIN --> 5678
User registered and account opened succesfully!

Do you want to return to main menu? (Y/N) -->
```

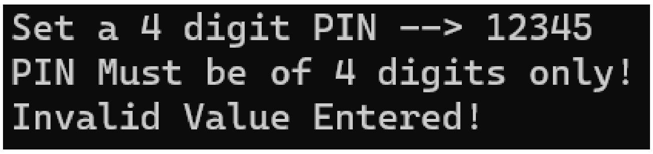
Some Exceptions:



```
Enter your aadhar number --> 45678901234
Aadhar Number should be 12 digits long!
Invalid Value Entered!
```

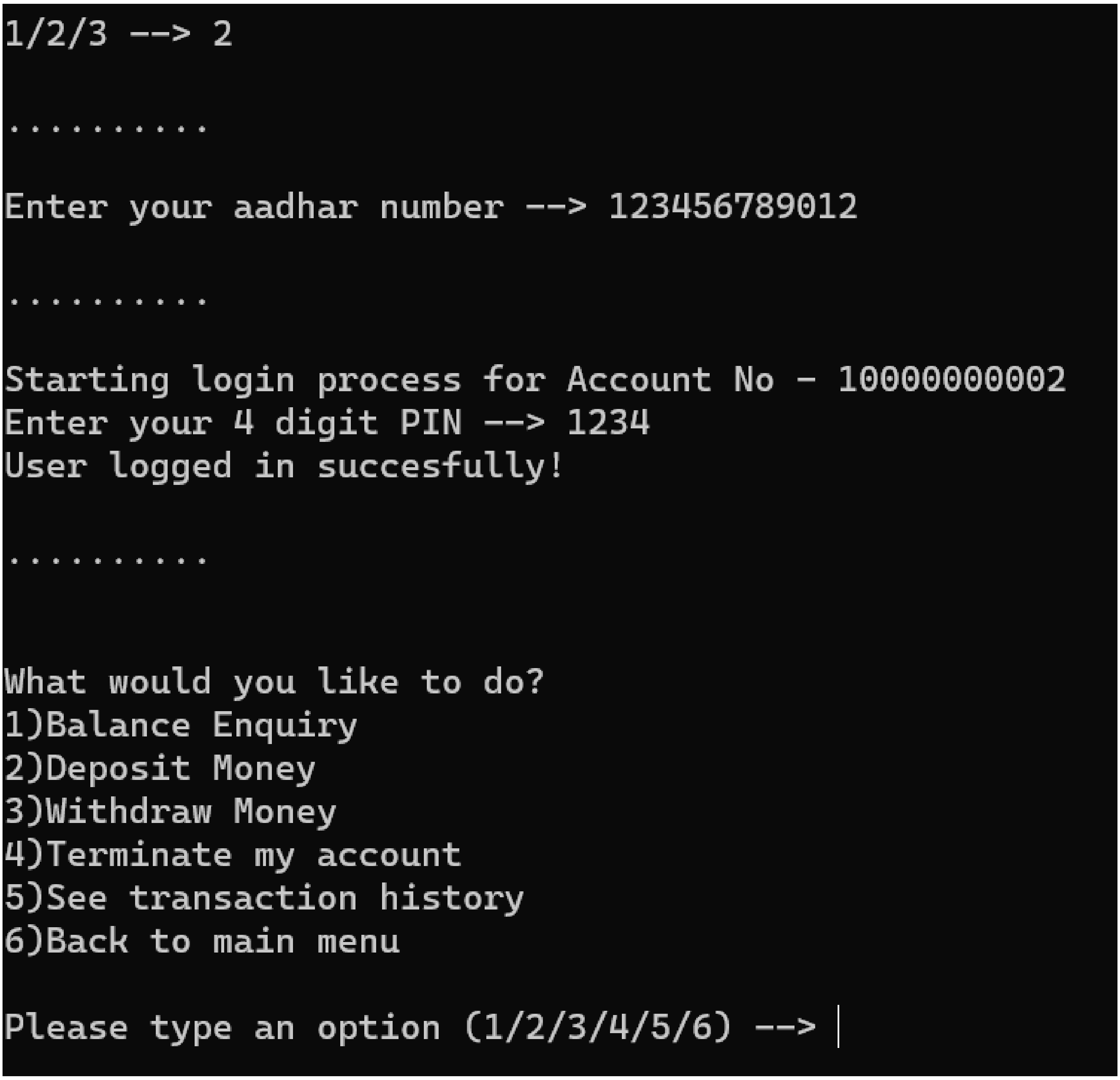


```
Enter your age --> 17
Age should be between 18 and 100 to open account.
Invalid Value Entered!
```



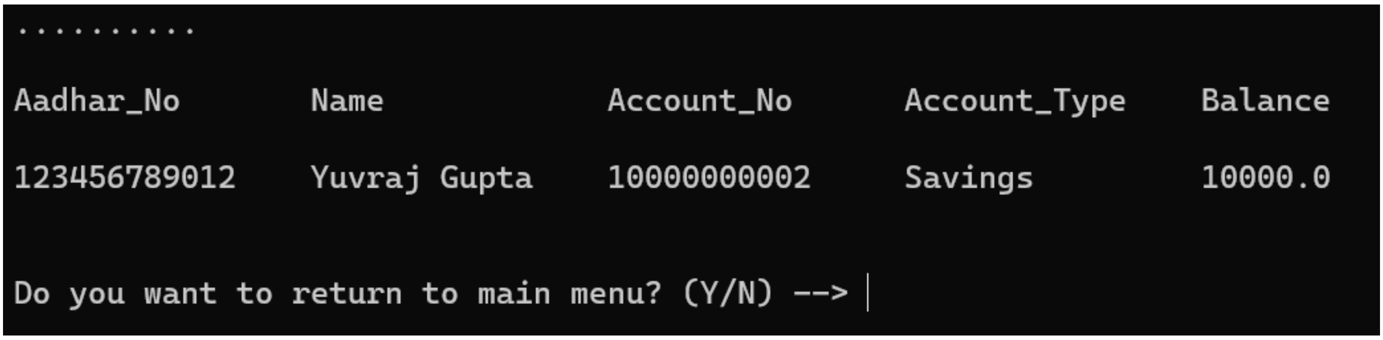
```
Set a 4 digit PIN --> 12345
PIN Must be of 4 digits only!
Invalid Value Entered!
```

Login (Existing User)



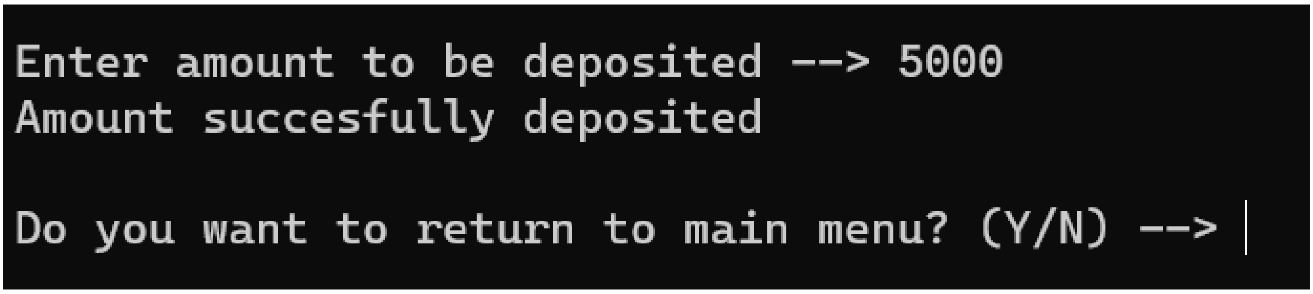
```
1/2/3 --> 2

..........

Enter your aadhar number --> 123456789012

..........

Starting login process for Account No - 10000000002
Enter your 4 digit PIN --> 1234
User logged in succesfully!

..........


What would you like to do?
1)Balance Enquiry
2)Deposit Money
3)Withdraw Money
4)Terminate my account
5)See transaction history
6)Back to main menu

Please type an option (1/2/3/4/5/6) -->
```

Balance Enquiry



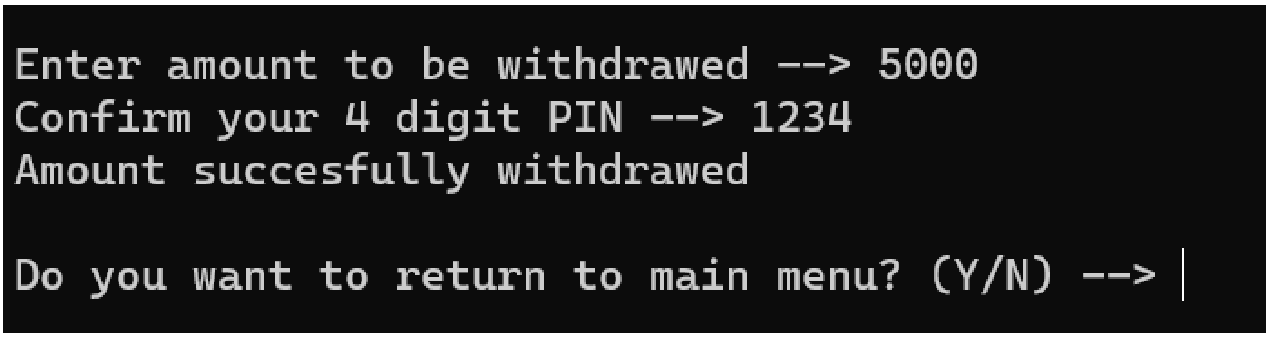
```
..........

Aadhar_No       Name            Account_No      Account_Type    Balance

123456789012    Yuvraj Gupta    10000000002     Savings         10000.0


Do you want to return to main menu? (Y/N) -->
```

Deposit Money



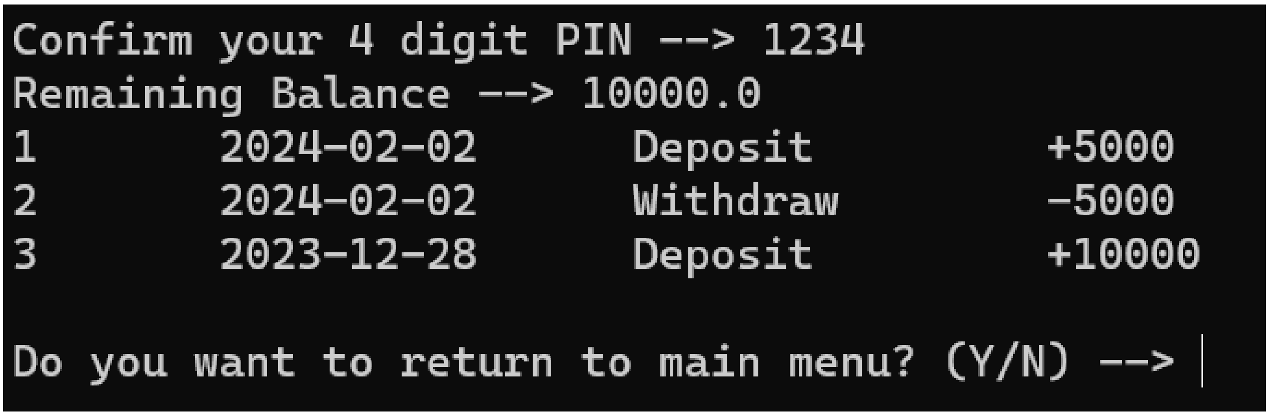
```
Enter amount to be deposited --> 5000
Amount succesfully deposited

Do you want to return to main menu? (Y/N) -->
```

Withdraw Money



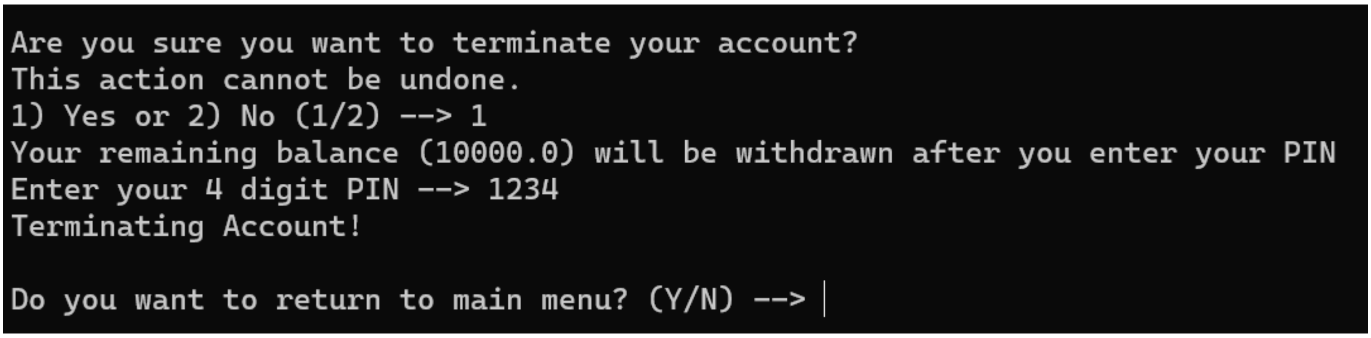
```
Enter amount to be withdrawed --> 5000
Confirm your 4 digit PIN --> 1234
Amount succesfully withdrawed

Do you want to return to main menu? (Y/N) -->
```

Transaction History



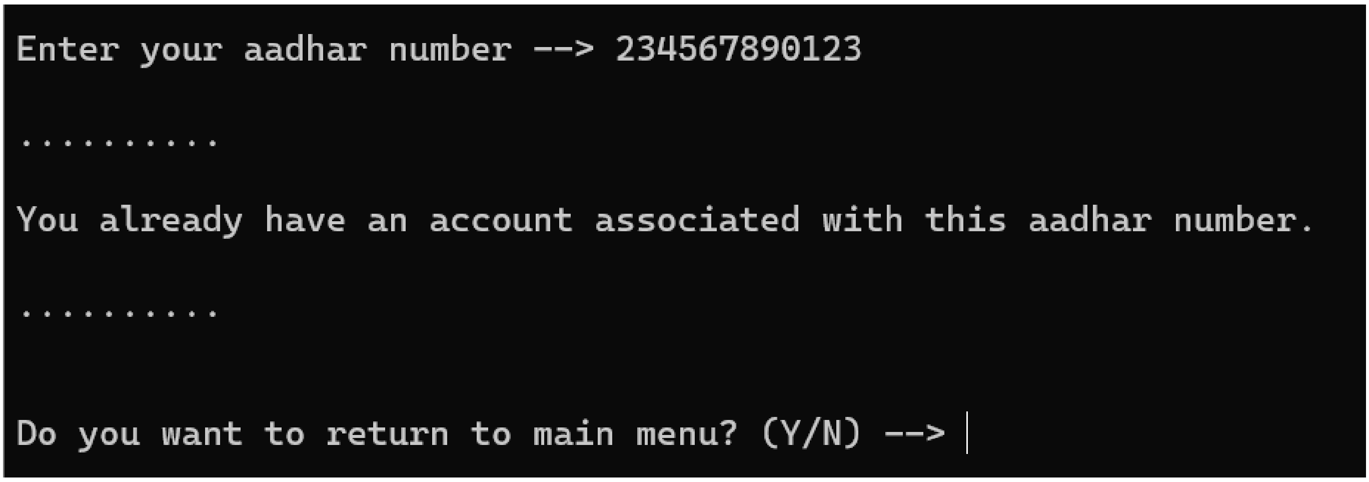
```
Confirm your 4 digit PIN --> 1234
Remaining Balance --> 10000.0
1       2024-02-02      Deposit         +5000
2       2024-02-02      Withdraw        -5000
3       2023-12-28      Deposit         +10000

Do you want to return to main menu? (Y/N) -->
```

Terminate Account

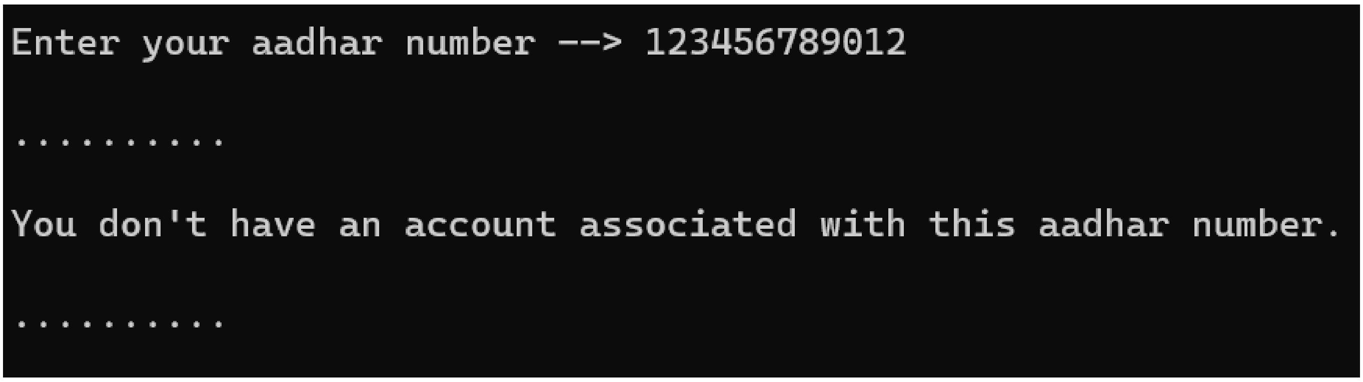


```
Are you sure you want to terminate your account?
This action cannot be undone.
1) Yes or 2) No (1/2) --> 1
Your remaining balance (10000.0) will be withdrawn after you enter your PIN
Enter your 4 digit PIN --> 1234
Terminating Account!

Do you want to return to main menu? (Y/N) -->
```

Some More Exceptions



```
Enter your aadhar number --> 234567890123

..........

You already have an account associated with this aadhar number.

..........


Do you want to return to main menu? (Y/N) -->
```



```
Enter your aadhar number --> 123456789012

..........

You don't have an account associated with this aadhar number.

..........
```

Source Code

```
import mysql.connector as a
import time

def main():

    user = "root"
    host = "localhost"
    password = "12341234"
    database = "bank"

    print()
    def load(sec):
        print()
        for a in range(10):
            print(".",end="",flush=True)
            time.sleep(sec/10)
        print()
        print()


    cnx = a.connect(user = user, host = host, password = password, database =database)


    print("Welcome To The Modern Banking System!")
    print("Please choose an option:\n1)New User\n2)Existing User\n3)Exit")
    print()
    entry = input("1/2/3 --> ")

    def check(id):
        load(1)
        crsr = cnx.cursor()
        query = "SELECT * FROM personal WHERE Aadhar_No = %s"
        crsr.execute(query,(id,))
        a = crsr.fetchall()
        # print(a)
    if a != []:
      return True
    else:
      return False

  def new():
    load(1)
    crsr = cnx.cursor()
    try:
      id = input("Enter your aadhar number --> ")

      if len(id) != 12: #Raising error if aadhar number is not 12 digits long
        print("Aadhar Number should be 12 digits long!")
        raise ValueError

      if check(int(id)): #Checking If User exists, using int() so that user doesn't enter
alphanumeric value
        print("You already have an account associated with this aadhar number.")
        load(1)
      else:   #Registering New User

        #Taking inputs
        name = input("Enter your full name --> ")
        age = int(input("Enter your age --> "))
        if age < 18 or age >= 100:
          print("Age should be between 18 and 100 to open account.")
          raise ValueError
        gender = input("Enter your gender (M/F/O) --> ")
        if len(gender) > 1 :
          print("Please choose one of the valid options for gender.")
          raise ValueError
        query = "INSERT INTO personal VALUES(%s,%s,%s,%s)"



        # Creating account and adding account details

        acc = 10000000001
        crsr.execute("SELECT * FROM accounts ORDER BY Account_No")
        a = crsr.fetchall()
        if a != []:
          acc = a[-1][1] + 1
```

```
type = int(input("Enter account type:\n1) Savings\n2) Current\n\n(1 or 2)--> "))

if type == 1:
  type = "Savings"
elif type == 2:
  type = "Current"
else:
  print("You didn't choose one of the given options!")
  raise ValueError

balance = int(input("Enter amount to be deposited (Minimum : 5000) --> "))
if balance < 5000 :
  print("Starting balance should be more than 5000!")
  raise ValueError

pin = int(input("Set a 4 digit PIN --> "))


if pin < 1000 or pin > 9999 :
  print("PIN Must be of 4 digits only!")
  raise ValueError

conf = int(input("Confirm your 4 digit PIN --> "))
if conf != pin :
  print("Both PINs didn't match!")
  raise ValueError

q = "INSERT INTO accounts VALUES(%s,%s,%s,%s,%s)"

crsr.execute(query,(id,name,age,gender)) # Personal Details Added
crsr.execute(q,(id,acc,type,balance,pin)) # Account created

a = time.localtime()
date = time.strftime("%Y-%m-%d" , a )

qu = "INSERT INTO transactions VALUES(%s,%s,%s,%s)"
crsr.execute(qu,(date,acc,"Deposit",balance))

cnx.commit()
print("User registered and account opened succesfully!")
```

```
        except ValueError:
            print("Invalid Value Entered!")
            main()

        finally:

            cnx.close()

            print()

            que = input("Do you want to return to the main menu? (Y/N) --> ")
            if que.upper() == "Y":
                load(1)
                main()
            elif que.upper() == "N":
                print("\nThank You")
                time.sleep(1)
                print("\nExiting....")
                time.sleep(5)
            else:
                print("\nThank You")
                time.sleep(1)
                print("\nExiting....")
                time.sleep(5)




    def logged(rec):
        load(1)
        print()
        print("What would you like to do?")
        print("1)Balance Enquiry\n2)Deposit Money\n3)Withdraw Money\n4)Terminate my
account\n5)See transaction history\n6)Back to main menu")
        print()
        opt = int(input("Please type an option (1/2/3/4/5/6) --> "))
        print()

        def delete(rec):
            load(1)
            crsr = cnx.cursor()
            print("Are you sure you want to terminate your account?")
            print("This action cannot be undone.")
            a = int(input("1) Yes or 2) No (1/2) --> "))

            if a == 1:
                print(f"Your remaining balance ({rec[0][3]}) will be withdrawn after you enter your
PIN")
                pin = int(input("Enter your 4 digit PIN --> "))
                if rec[0][4] == pin:
                    print("Terminating Account!")
                    crsr.execute("DELETE FROM personal WHERE Aadhar_No = %s",(rec[0][0],))
                    crsr.execute("DELETE FROM accounts WHERE Aadhar_No = %s",(rec[0][0],))
                    crsr.execute("DELETE FROM transactions WHERE Account_No =
%s",(rec[0][1],))


                else:
                    print("Invalid PIN entered.")
                    print("Returning to previous menu.")
                    logged()



            elif a == 2:
                print("Returning to previous menu.")
                logged()
            else:
                raise ValueError

        def deposit(rec):
            load(1)
            crsr = cnx.cursor()
            amount = int(input("Enter amount to be deposited --> "))
            a = time.localtime()
            date = time.strftime("%Y-%m-%d" , a )


            crsr.execute("UPDATE accounts SET Balance = Balance + %s WHERE Account_No =
%s",(amount,rec[0][1]))
            q = "INSERT INTO transactions VALUES(%s,%s,%s,%s)"
            crsr.execute(q,(date,rec[0][1],"Deposit",amount))
            print("Amount succesfully deposited")
```

```
    def withdraw(rec):
      load(1)
      crsr = cnx.cursor()
      amount = int(input("Enter amount to be withdrawed --> "))

      pin = int(input("Confirm your 4 digit PIN --> "))
      if rec[0][4] == pin:
        if amount > rec[0][3]:
          print("Insufficient Balance")
          print("Returning to previous menu")
          logged(rec)

        a = time.localtime()
        date = time.strftime("%Y-%m-%d" , a )


        crsr.execute("UPDATE accounts SET Balance = Balance - %s WHERE Account_No =
%s",(amount,rec[0][1]))
        q = "INSERT INTO transactions VALUES(%s,%s,%s,%s)"
        crsr.execute(q,(date,rec[0][1],"Withdraw",amount))
        print("Amount succesfully withdrawed")

      else:
        print("Incorrect PIN entered.")
        print("Returning to main menu")
        main()

    def transaction(rec):
      load(1)
      crsr = cnx.cursor()
      pin = int(input("Confirm your 4 digit PIN --> "))
      if rec[0][4] == pin:
        query = "SELECT * FROM transactions WHERE Account_No = %s ORDER BY Date
DESC"
        crsr.execute(query,(rec[0][1],))
        row = crsr.fetchone()
        if row is None:
          print(f"No transactions done. Remaining Balance --> {rec[0][3]}")
        else:
          print(f"Remaining Balance --> {rec[0][3]}")
```

```
                    while row is not None:
                        if row[2] == "Withdraw":
                            print(f"{crsr.rowcount}\t{row[0]}\t{row[2]}\t-{row[3]}\t")
                        else:
                            print(f"{crsr.rowcount}\t{row[0]}\t{row[2]} \t+{row[3]}\t")
                        row = crsr.fetchone()
            else:
                print("Incorrect PIN entered.")
                print("Returning to main menu")
                main()

        def display(rec):
            load(1)
            crsr = cnx.cursor()
            query = "SELECT P.Aadhar_No, Name, Account_No, Account_Type, Balance FROM personal P, accounts A WHERE P.Aadhar_No = A.Aadhar_No AND P.Aadhar_No = %s"
            crsr.execute(query,(rec[0][0],))
            r = crsr.fetchone()
            print("Aadhar_No\tName\t\tAccount_No\tAccount_Type\tBalance")
            print()
            print(f"{r[0]}\t{r[1]}\t{r[2]}\t{r[3]} \t{r[4]}")
            print()

        if opt == 1:
            # print(f"Account Number - {rec[0][1]}\nRemaining Balance - {rec[0][3]}")
            display(rec)
        elif opt == 2:
            deposit(rec)
        elif opt == 3:
            withdraw(rec)
        elif opt == 4:
            delete(rec)
        elif opt == 5:
            transaction(rec)
        elif opt == 6:
            main()

    def exist():
        load(1)
        crsr = cnx.cursor()
        try:
            id = input("Enter your aadhar number --> ")
            if len(id) != 12: #Raising error if aadhar number is not 12 digits long
                print("Aadhar Number should be 12 digits long!")
                raise ValueError

            if not check(int(id)): #Checking If User exists, using int() so that user doesn't enter
    alphanumeric value
                print("You don't have an account associated with this aadhar number.")
                load(1)

            else:   #Logging in
                query = "SELECT * FROM accounts WHERE Aadhar_No = %s"
                crsr.execute(query,(id,))
                rec = crsr.fetchall()
                print(f"Starting login process for Account No - {rec[0][1]}")

                pin = int(input("Enter your 4 digit PIN --> "))
                if rec[0][4] == pin:
                    print("User logged in successfully!")
                    logged(rec)
                else:
                    print("Incorrect PIN entered.")
                    return


        except ValueError:
            print("Invalid Value Entered!")
            main()
        finally:
            cnx.commit()
            cnx.close()


            print()

            que = input("Do you want to return to main menu? (Y/N) --> ")
            if que.upper() == "Y":
                load(1)
                main()
            elif que.upper() == "N":
                print("\nThank You")
                time.sleep(1)
```

```
                print("\nExiting....")
                time.sleep(5)
            else:
                print("\nThank You")
                time.sleep(1)
                print("\nExiting....")
                time.sleep(5)

    if entry == "1" :
        new()
    elif entry == "2" :
        exist()
    elif entry == "3":
        print("\nThank you for visiting!")
        time.sleep(1)
        print("\nExiting....")
        time.sleep(2)
        quit()
    else:
        print("Invalid Value Entered!")

        main()

main()  #Calling Main Function
```

Bibliography

□Computer Science With Python Textbook For Class XII

□www.python.org

□www.ncert.nic.in

□www.dev.mysql.com