NEIL GOGTE INSTITUTE OF TECHNOLOGY

(A Unit of Keshav Memorial Technical Education (KMTES)

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A

PROJECT REPORT

*on*

# BANK TRANSACTION SYSTEM
(Summer Internship)

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

Submitted by

Team: Spartans

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Under the Guidance of

Mrs. Vijaya Madhavi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Neil Gogte Institute of Technology

Kachawanisingaram Village, Hyderabad, Telangana 500058.

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**NEIL GOGTE INSTITUTE OF TECHNOLOGY**

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# CERTIFICATE

This is to certify that the project report titled "**Bank Transaction System"** is being submitted by **N Vamshee Teja (2453-18-733-164)**, **P Jashwanth (2453-18-733-167), B Anupama (2453-18-733-128)** of 4th year B.E. VII Semester **Computer Science and Engineering** is a record of bonafide work carried out by them. The results embodied in this report have not been submitted to any other University for the award of any degree.

**Internal Guide** **HOD**

**External Examiner**

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# DECLARATION

We hereby declare that the Mini Project Report entitled, "**Bank Transaction System"** submitted for the B.E degree is entirely our work and all ideas and references have been duly acknowledged. It does not contain any work for the award of any other degree.

**Date:**

**Team:** Spartans

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## Abstract

The proposed Python project is an engineering approach to enhance current banking activities. The software works as a controller of the ATM machine during transactions. The implementation of project is beneficial to both the banks and the costumers. The **Bank Transaction System** is the project by which the clients can create bank accounts and perform general cash transactions like Deposits, Withdrawals etc. The Bank System has 3 modes: 1) Register mode, 2) ATM mode and 3) Exit mode. In Sign-up mode the user has to enter all the personal information like mobile no, Aadhar card number, PAN card number and related details and has to deposit a minimum amount of Rs. 1000 to create a Bank Account (Savings). After all the details of the client identity is verified, his/her account will be created and will be given a pin number which is useful for making future credit and debit transactions through atm. The second mode is the ATM mode in which functions equivalent to a normal ATM like withdrawals, deposits and bank balance status. The ATM will service one customer at a time. A customer will be required to enter personal identification number (PIN) – which will be sent to the database for validation as part of each transaction. The customer will then be able to perform one or more transactions. The ATM will communicate each transaction to the database and obtain verification that it was allowed by the database. In the case of a cash withdrawal, a second message will be sent after the transaction has been physically completed (cash dispensed or envelope accepted). If the database determines that the customer's PIN is invalid, the customer will be required to re-enter the PIN before a transaction can proceed.

# 1. INTRODUCTION

An ATM is a Specialized Computer that allows bank account holders to: check their account balances, withdraw or deposit money, transfer money from one account to another, print a statement of bank transactions and etc.

## ATM Evolution

1960: Luther George Simjian (America) invented the Bankograph (a machine that allowed customers to deposit cash and cheques into it). 1967 (Worlds First ATM was set up): First ATM was set up in June 1967 on a street in Enfield, London. John Shepherd Barron (British) is credited with its invention. By 1984 ATMs installed worldwide were 1,000,000 (1 million). As of 2018 ATMs installed worldwide were more than 3 million.

## 1.1 Problem Statement

ATMs are convenient, allowing customers to perform quick self-service transactions such as deposits, cash withdrawals, bill payments, and transfers between accounts. Fees are commonly charged when cash withdrawal is done from bank by the operator of the ATM, or by both. Some or all of these fees can be avoided by using an ATM directly by the bank that holds the account. We can specify ATM transaction as a machine that allows customers to complete basic transactions without the aid of a branch representative, but due to no assistance from anyone our data can be stolen by Cyber Criminals which is vastly a disadvantage. It is very important for cardholders to protect their cards from being misused.

## 1.2 Solution

There are so many incidents which reveal that the Cash has been drawn out without prior knowledge of the Cash holder. So, to minimize the risk of cheating we as a group came up with an OTP alert for every transaction made by the customer, i,e. a OTP will be sent to a customer before performing a transaction through atm. Details of every transaction made by the Client is recorded at any basis.

## 1.3 Objective

Our main objective is to speed up the transaction done by customers in a very safe, secure and convenient way. The second objective is to save the time which is very important now-a-days. It will include other objectives such as: To render accurate services to customer, the reduction of fraudulent activities, and to achieve speedy processing of customer data.

# 2. LITERATURE SURVEY

## 2.1 Survey

The growth of Indian economic system in the past decade is found to grow at a rapid rate. Banking industries in the financial sectors are introducing a new concept on a regular basis to attract the customers. The first ATM in India was presented by HSBC bank in 1987 at Mumbai branch for withdrawal. The ATM was introduced with an objective to serve the customers during emergency situations where cash deposits and withdrawals after regular banking hours are required. The next development in the ATM field is the introduction of an enquiry system to know the account balance and statement so that the customers do not waste time waiting inside the bank premises. Many significant changes like account transfer from one-person account to another account holders, requisition claims like chequebook need, message alert etc. were noted after 2000. After 2010, technological developments increased in ATM non-banking services. Such services include bill payments, ticket bookings, mobile recharges, etc. Even though many developments have been introduced in the sector, much more should be brought in to increase the quality of ATM services in India.

## 2.2 Existing System

Most people of a certain age know how to use an ATM without a problem. But few people have a great understanding of the process that happens behind the scenes that make bank transactions via an ATM possible. Fortunately, transaction processing is not as complicated as you might think and not all that hard to understand. First, the user will swipe his or her ATM card and enter the pin number associated with that card. This confirms the cardholder’s identity and allows him or her to request a bank transaction, usually a withdrawal of money. The machine then contacts a host server with the cardholder’s information and transaction request. Years ago, this would be done through a telephone line. That is still the case for some machines, although more modern ATMs connect with host servers via the internet nowadays. The host server acts as an intermediary for contacting the bank or financial institution that issued theATM user his or her card. Once the user's bank is contacted, the host server is able to facilitate an electronic transfer of the funds being requested by the cardholder, assuming the user's home bank approves the transaction. The host server will then send the ATM an approval code that enables the machine to dispense the funds the cardholder requested. If requested, the ATM will also be able to share with the cardholder the balance in his or her account. Finally, the host processor uses an automated clearing house (ACH) to transfer funds from the cardholder's account into the account of whatever entity owns the ATM, whether it be another bank or a business. This will typically happen the next business day and ensures that the party responsible for filling the ATM machine is reimbursed for the funds the cardholder just took out of the machine. Essentially, when you request money from an ATM, the money moves electronically from your account to the host server and then to the party that owns or operates the ATM. All of this happens within a matter of seconds, with important information like your pin and account number encrypted during the process for security reasons.

## 2.3 Disadvantages of Existing System

Present ATM Transaction process is not that safe for customers for their transaction because it has some loop holes like: if a person knows your ATM pin, he can have access for making a transaction and he may steal money from your account. And in a cut short the c problem is: If an **ATM** card is lost, it can be misused.

## 2.4 Proposed System

So, to resolve this problem we are adding an additional feature like OTP based transaction. Here, customer when making his transaction in the ATM an additional OTP is sent to his registered Mobile number. Here even if hackers have your Card-details they can't make a transaction because while making a transaction OTP is sent to your registered number. So, if the OTP verification fails, then the system doesn’t allow to make a transaction. This feature made the present ATM Transaction quite more secure.

## 2.5 Advantages of Proposed System

Sending a OTP to verified/registered mobile number in order to make a transaction makes it more secured. Even if your atm card and its information is lost, the hackers may fail in achieving their task.

## 2.6 Conclusion

So, by collaborating we could conclude that there is more to add for securing the ATM transactions Virtually to be hidden from the Hackers and people who are doing frauds stealing the personal information for illegal purposes etc.

# 3. ANALYSIS

## 3.1 Software and Hardware Requirements

### Hardware Requirements

Processor: Intel Pentium IV 2.0 GHz and above

RAM: 512 MB and above

Hard disk :80GB and above

Monitor: CRT or LED monitor

### Software Requirements

Language: Python

Backend: Python Programming Language

Frontend: Tkinter module (Python)

Database: Sqlite3

OTP: Twilio API

## 3.2 Content Diagrams

### a) Flow Diagram

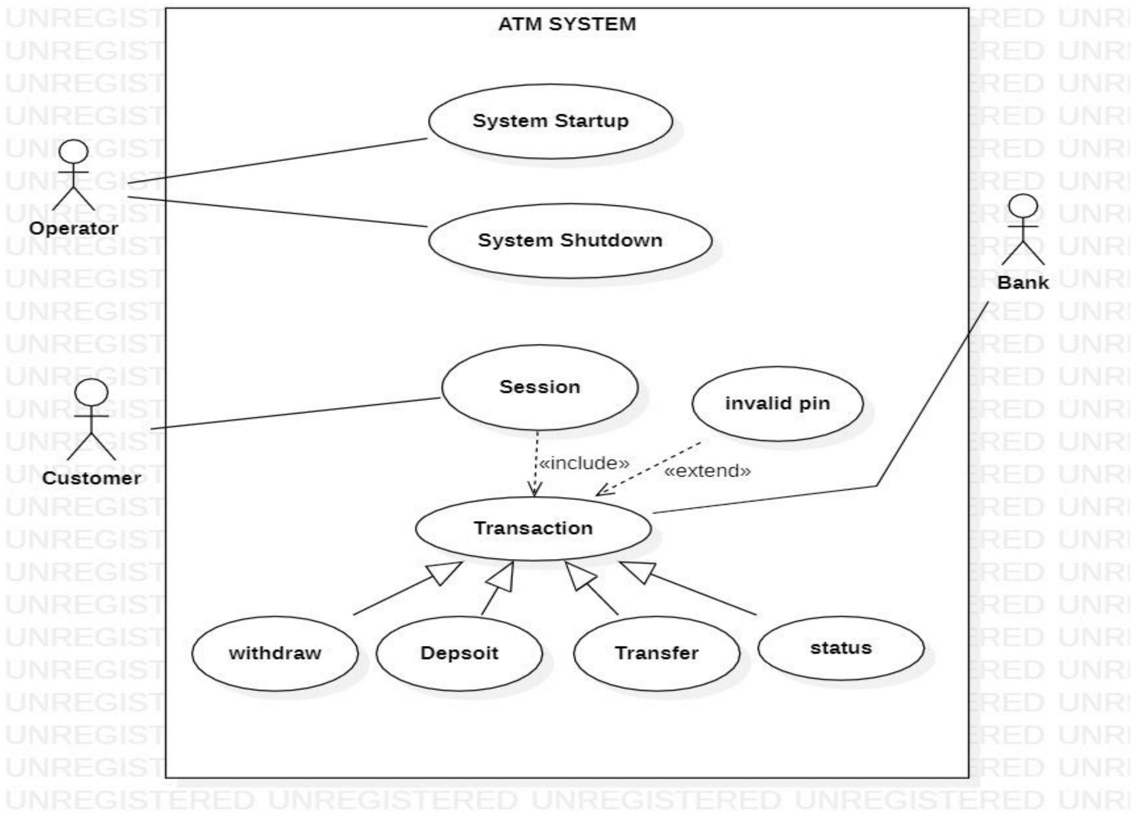


fig 3.2.1

# 4. DESIGN

## 4.1 Class Diagram

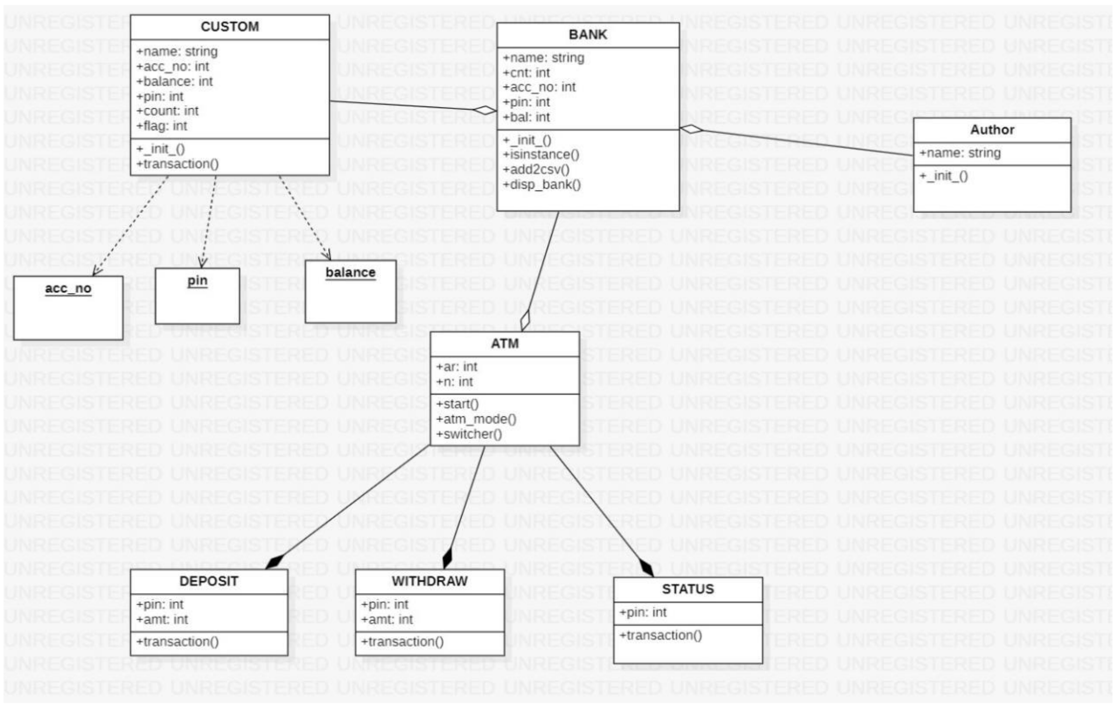


fig 4.1.1

## 4.2 Use Case Diagram

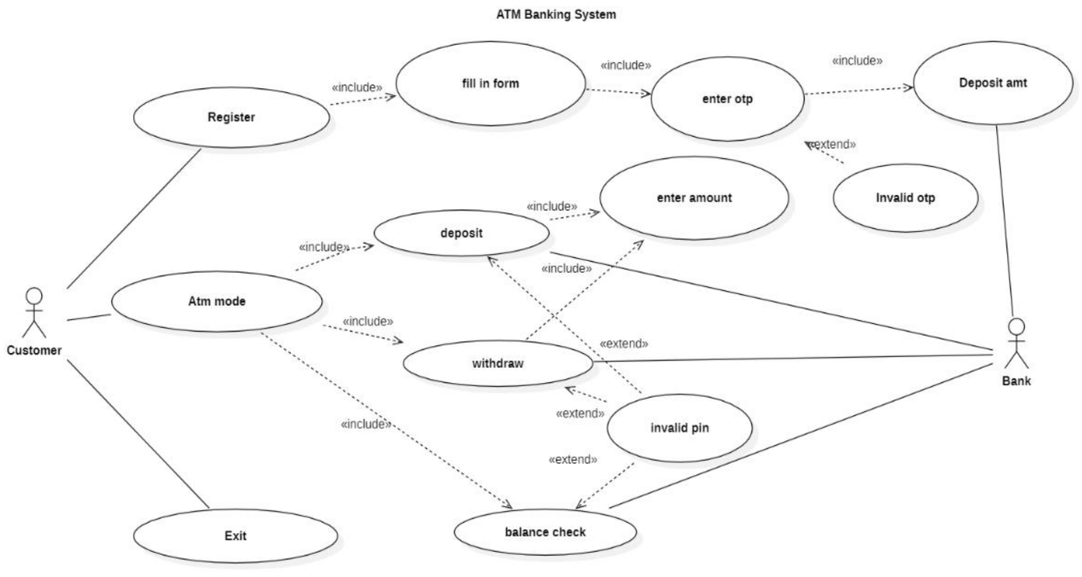


fig 4.1.2

## 4.3 Use Case Diagram

For particular withdraw method activity diagram

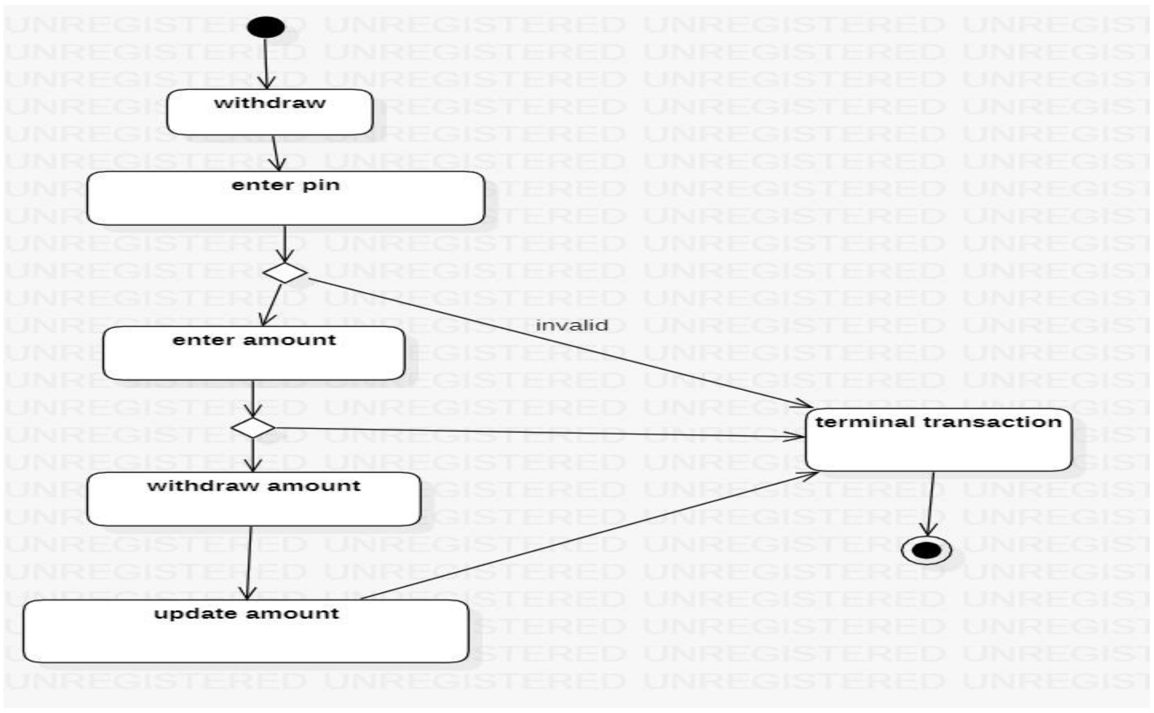


fig 4.1.3

## 4.4 ER Diagram

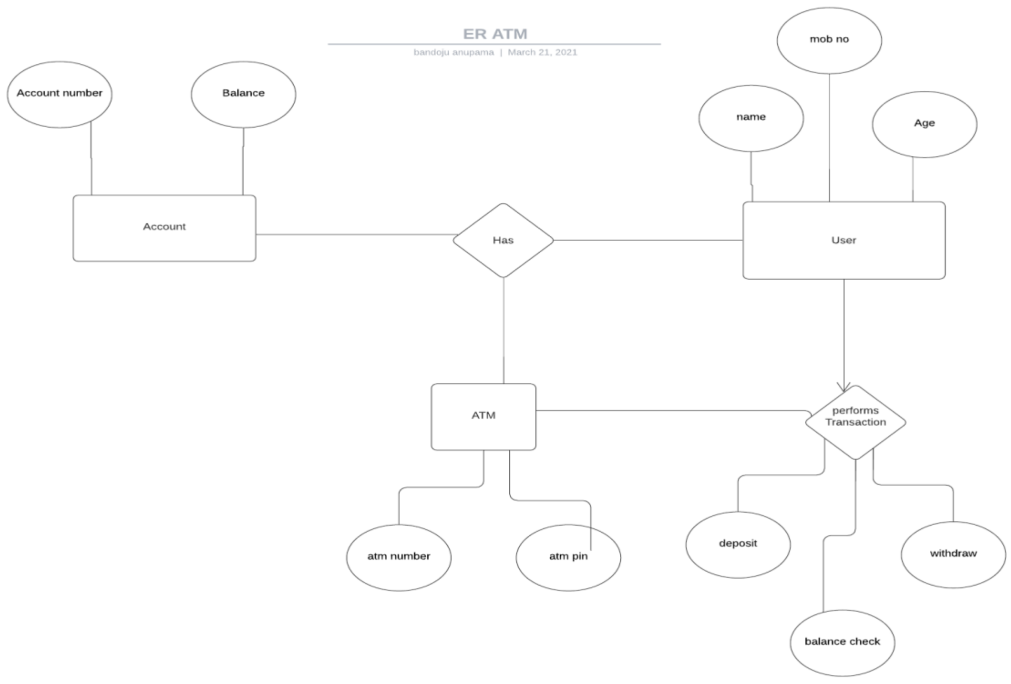


fig 4.1.4

# 5. IMPLEMENTATION

## 5.1 Source Code

```
''' Note: all ui & backend is present in this single file.
Apologies for the clumbsy code. '''
# this project is completely based on Python OOP concepts
and some knowledge of tkinter for GUI in python

# UI imports
from tkinter import *
from tkinter import ttk
from turtle import left
from PIL import ImageTk, Image



# Back-end imports
import sys
import random
import sqlite3
from sqlite3 import Error

# extra imports
from twilio.rest import Client
# from playsound import playsound
from threading import Thread
from pygame import mixer
import time



# "Voice notes"
muteVoice = False
```

```
def muteMode():
    global muteVoice
    muteVoice = True

def UnmuteMode():
    global muteVoice
    muteVoice= False

# def voiceMsg2():
#     if True:
#         mixer.init()
#         mixer.music.load('Pyb_Female/3select.mp3')
#         mixer.music.play()

# voice_msg1
def pAudio():
    if True:
        # playsound(audio)
        # playsound(audio1)
        mixer.init()
        mixer.music.load('Pyb_Female/1welcome_msg_f.mp3')
        mixer.music.play()
        mixer.music.queue('Pyb_Female/3select.mp3')
        mixer.music.play()
        mixer.stop()

# # voice_ms2
def aboutPybank():
    # playsound('Pyb_Female/2about_pyb.mp3')
    mixer.init()
    mixer.music.load('Pyb_Female/2about_pyb.mp3')
    mixer.music.play()
```

```
# #voice_msg5
def thankYouVoice():
    # playsound('Pyb_Female/5thankyoumsg.mp3')
    mixer.init()

    # sound = mixer.Sound("Pyb_Female/5thankyoumsg.mp3")
    # sound.play()

    mixer.music.load('Pyb_Female/5thankyoumsg.mp3')
    mixer.music.play()

    time.sleep(2)



class Bank():

    # the sqlite database
    @staticmethod
    def create_connection(db_file):
        """ creates a db connection and returns connection
object """
        conn = None
        try:
            conn = sqlite3.connect(db_file)
            return conn
        except Error as e:
            print(e)

        return conn

    # creates the table
    @staticmethod
    def create_table(conn, create_table_sql):
        """ utility function for creating a table """
        try:
            c = conn.cursor()
            c.execute(create_table_sql)

        except Error as e:
            print(e)
        finally:
            c.close()



    @staticmethod
    def main():
        database = r"pybankRecords.db3"
        sql_create_bank_accounts = """
                                CREATE TABLE IF NOT EXISTS
bank_accounts (
                                    account_no INTEGER,
                                    pin INTEGER,
                                    name TEXT,
                                    age INTEGER,
                                    phone_no INTEGER,
                                    balance REAL
                                );
                            """  #  Schema  :  acc_no,  pin,
name, age, phone_no, balance
        conn = Bank.create_connection(database)

        if conn is not None:
            Bank.create_table(conn,
sql_create_bank_accounts)
```

```
        else:
            print("Error!  cannot  create  the  database
connection.")

    @staticmethod
    def otp_opr(v_fl, phone_number=0, otp=0):
        """ this is the otp generator code """

        # twilio api webservices authents
        account_sid = 'AC979102757cfbe11a2724d91d3348bc87'
        auth_token = '448bc767d695ed87a66b38dd6474d257'
        client = Client(account_sid, auth_token)
        verify                                          =
client.verify.services('VAb4329cd9592b157108db040fb9601cf
9')

        if v_fl == "send_otp":
            # print("sent otp")
            verify.verifications.create(to=phone_number,
channel='sms')
            return
        elif v_fl == "match_otp":
            # print("matching otp")
            result                                      =
verify.verification_checks.create(to=phone_number,
code=otp)
            return result.status

    def  __init__(self,  acc_no=None,  pin=None,  name=None,
age=None, phone_no=None, balance=None):

        if(isinstance(self,  Custom)):  #  creates  a  object
```

```
for each new entry

            self.acc = acc_no
            self.pin = pin
            self.name = name
            self.age = age
            self.phone = phone_no
            self.bal = balance

            self.add2database(self.acc,         self.pin,
self.name, self.age, self.phone, self.bal)

    def  add2database(self,  acc,  pin,  name,  age,  phone,
bal):
        """ this method inserts the data into the sqlite
db """
        # print("in add2database...")

        # connecting to sqlite db
        conn = Bank.create_connection("pybankRecords.db3")

        #  creating  a  cursor  object  using  the  cursor()
method
        cursor = conn.cursor()

        # query /insertion
        cursor.execute("INSERT      INTO      bank_accounts
(account_no, pin, name, age, phone_no, balance) VALUES (?,
?, ?, ?, ?, ?)", (self.acc, self.pin, self.name, self.age,
self.phone, self.bal))
        conn.commit()
        conn.close()
```

```
# whenever this application is started this get clicked and
as you can see it call the main method (in the bank class)
and creates the sql table.
if __name__ == '__main__':
    Bank.main() # as you can see that the main() function
is defined inside the class 'Bank'. we have declared it as
a @staticmethod decorator, so that we can call it outside
the class without creating an object.
    Thread(target = pAudio).start()

class Custom(Bank):
    # counter = 0
    # print("in Custom class")
    def __init__(self, acc_no, epin, name, age, phone_no,
balance):
        # print("in Custom constructor")
        super().__init__(acc_no,    epin,    name,    age,
phone_no, balance)

    # transactions method.
    @staticmethod
    def transaction(fl, pin, amt=0):

        def checkPin(pin):
            conn                                             =
Bank.create_connection("pybankRecords.db3")
            cursor = conn.cursor()
            cursor.execute("SELECT  *  FROM  bank_accounts
WHERE pin=?", (pin,))
            rows = cursor.fetchall()
            conn.close()
            if len(rows) == 0:
                return False
            return True

        if fl == "pin_chk":
            return checkPin(pin)

        def fetch(fl, pin):
            # connecting to sqlite db
            conn                                              =
Bank.create_connection("pybankRecords.db3")

            # creating a cursor object using the cursor()
method
            cursor = conn.cursor()

            #  fetching  the  data  (i,e.  row)  from  the
database
            cursor.execute("SELECT  *  FROM  bank_accounts
WHERE pin=?", (pin,))

            rows = cursor.fetchall()
            conn.close()

            # returns the ac_number, ac_holder, ac_balance
            return rows[0][0], rows[0][2], rows[0][5]

        def updateBalance(pin, uamt):
            """ used for deposits and withdrawals """
            conn                                              =
Bank.create_connection("pybankRecords.db3")
            cursor = conn.cursor()
            cursor.execute("UPDATE    bank_accounts    SET
BALANCE = ? WHERE pin = ?", (uamt, pin))
            conn.commit()
            conn.close()

        # all else : msg is printed if pin not found in db

        # deposit opr
        if fl=='d':

            if(checkPin(pin)):
                # deposit message
                dep_msg_screen = Toplevel(master)

                ac_no, ac_name, curr_amt = fetch(fl, pin)
                upd_amt = int(curr_amt) + int(amt)
                updateBalance(pin, upd_amt)

                msg    =    "Transaction    Successful"    +
"\nDeposited Rs." + str(amt) + " to Account Number: "+
str(ac_no) +", Account Holder: " + str(ac_name) + " New
Balance: " + str(upd_amt)
                Label(dep_msg_screen,            text=msg,
font=('Calibri', 14)).grid(row=1, sticky=N, pady=10)

        # withdraw opr
        elif fl=='w':

            if(checkPin(pin)):
                # witd screen
                witd_msg_screen = Toplevel(master)

                ac_no, ac_name, curr_amt = fetch(fl, pin)

                if ((int(curr_amt) - int(amt)) <= 500):
                    msg  =  "Sorry  you  can't  make  that
```

```
transaction! your current balance is: " + str(curr_amt) +
" minimum balance in bank shouldn't be less than 500"
                    Label(witd_msg_screen,      text=msg,
font=('Calibri', 14)).grid(row=1, sticky=N, pady=10)
                    return

                upd_amt = int(curr_amt) - int(amt)
                updateBalance(pin, upd_amt)

                # withdraw message
                msg = "Transaction Successful" + "\nRs." +
str(amt) + " withdrawn from Account Number: "+ str(ac_no)
+", Account Holder: " + str(ac_name) + " New Balance: " +
str(upd_amt)
                Label(witd_msg_screen,          text=msg,
font=('Calibri', 14)).grid(row=1, sticky=N, pady=10)

        # status opr
        elif fl == 's':

            if(checkPin(pin)):
                # balance-check screen
                bal_chk_msg_screen = Toplevel(master)

                ac_no, ac_name, curr_amt = fetch(fl, pin)
                # bal check msg
                msg = "Account Number: " + str(ac_no) +
"\nAccount Holder: " + str(ac_name) + "\nNew Balance: " +
str(curr_amt)
                Label(bal_chk_msg_screen,       text=msg,
font=('Calibri', 14)).grid(row=1, sticky=N, pady=10)

# main screen
```

```
master = Tk()
master.title("Banking App")


# functions
def dep_go():

    pin = temp_spin.get()
    amt = temp_samt.get()

    global notif2_
    notif2 = Label(deposit_screen, font=('Calibri', 12))
    notif2_ = Label(deposit_screen, font=('Calibri', 12))
    notif2.grid(row=6, sticky=N, pady=10)
    notif2_.grid(row=7, sticky=N, pady=10)

    if pin == "" or amt == "":
        notif2.config(fg="red",      text="All      fields
required*")

    elif Custom.transaction("pin_chk", pin) == False:
        notif2_.config(fg="red", text="Invalid PIN*")

    else:
        deposit_screen.destroy()
        Custom.transaction('d', pin, amt)



# deposit
def dep():
    global temp_spin
    global temp_samt
    temp_spin = StringVar()
    temp_samt = StringVar()

    # deposit_screen
    global deposit_screen
    deposit_screen = Toplevel(master)
    deposit_screen.title("deposit amount")

    Label(deposit_screen, text="Please enter your pin and
deposit    amount",    font=('Calibri',    14)).grid(row=0,
sticky=N, pady=10)
    Label(deposit_screen,   text="Pin",   font=('Calibri',
14)).grid(row=2, sticky=W)
    Label(deposit_screen, text="Amount", font=('Calibri',
14)).grid(row=3, sticky=W)

    # common voice note
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/common_msg.mp3')
        mixer.music.play()

    # entries
    Entry(deposit_screen,          textvariable=temp_spin,
font=('Century    18'),width=25,     show="•").grid(row=2,
column=1)
    Entry(deposit_screen,          textvariable=temp_samt,
font=('Century 18'),width=25).grid(row=3, column=1)

    # buttons
    Button(deposit_screen,   text="Submit",   command   =
lambda:[dep_go()],    font=("Calibri",    12)).grid(row=5,
sticky=N, pady=10)
```

```
# withdraw
def witd_go():
    pin = temp_spin.get()
    amt = temp_samt.get()

    global notif3_
    notif3 = Label(withdraw_screen, font=('Calibri', 12))
    notif3_ = Label(withdraw_screen, font=('Calibri', 12))

    notif3.grid(row=6, sticky=N, pady=10)
    notif3_.grid(row=7, sticky=N, pady=10)

    if pin == "" or amt == "":
        notif3.config(fg="red",      text="All      fields
required*")

    elif Custom.transaction("pin_chk", pin) == False:
        notif3_.config(fg="red", text="Invalid PIN*")

    else:
        withdraw_screen.destroy()
        Custom.transaction('w', pin, amt)

def witd():
    global temp_spin
    global temp_samt
    temp_spin = StringVar()
    temp_samt = StringVar()

    # withdraw_screen
    global withdraw_screen
    withdraw_screen = Toplevel(master)
    withdraw_screen.title("withdraw amount")
    Label(withdraw_screen, text="Please enter your pin and
amount to be withdrawn", font=('Calibri', 14)).grid(row=0,
sticky=N, pady=10)
    Label(withdraw_screen, text="Pin", font=('Calibri',
14)).grid(row=2, sticky=W)
    Label(withdraw_screen, text="Amount", font=('Calibri',
14)).grid(row=3, sticky=W)

    # common voice note
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/common_msg.mp3')
        mixer.music.play()

    # entries
    Entry(withdraw_screen, textvariable=temp_spin,
font=('Century 18'),width=25 , show="•").grid(row=2,
column=1)
    Entry(withdraw_screen, textvariable=temp_samt,
font=('Century 18'),width=25).grid(row=3, column=1)

    # buttons
    Button(withdraw_screen, text="Submit", command =
lambda:[witd_go()], font=("Calibri", 12)).grid(row=5,
sticky=N, pady=10)

# status/ Balance-check
def stat_go():
    pin = temp_spin.get()

    global notif4_
    notif4 = Label(stat_screen, font=('Calibri', 12))
    notif4_ = Label(stat_screen, font=('Calibri', 12))

    notif4.grid(row=6, sticky=N, pady=10)
    notif4_.grid(row=7, sticky=N, pady=10)

    if pin == "":
        notif4.config(fg="red", text="field required*")

    elif Custom.transaction("pin_chk", pin) == False:
        notif4_.config(fg="red", text="Invalid PIN*")

    else:
        stat_screen.destroy()
        Custom.transaction('s', pin)

def stat():
    global temp_spin
    temp_spin = StringVar()

    # bal_check_screen
    global stat_screen
    stat_screen = Toplevel(master)
    stat_screen.title("Balance Check")

    Label(stat_screen, text="Please enter your pin",
font=('Calibri', 14)).grid(row=0, sticky=N, pady=10)
    Label(stat_screen, text="Pin", font=('Calibri',
14)).grid(row=2, sticky=W)

    # common voice note
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/common_msg.mp3')
        mixer.music.play()

    # entries
    Entry(stat_screen,            textvariable=temp_spin,
font=('Century    18'),width=25    ,show="•").grid(row=2,
column=1)

    # buttons
    Button(stat_screen,    text="Submit",    command    =
lambda:[stat_go()],   font=("Calibri",   12)).grid(row=4,
sticky=N, pady=10)



# finish register
def finish_reg():

    name = temp_name.get().upper()
    age = temp_age.get()
    phone = temp_phone.get()
    damt = temp_damt.get()

    if damt == "" or int(damt) < 500:
        fv_notif.config(fg="red",    text="enter    amount
greater than 500")
        return
    finish_verify_screen.destroy()
    # finish_register_screen
    finish_reg_screen = Toplevel(master)
    finish_reg_screen.title("Success")

    ac_gen = "43518733" +  str(random.randrange(10 ** 3,
(10 ** 4)-1))
    acc_no = int(ac_gen)
    pin = int(random.randint((10 ** 3), (10 ** 4)-1))
    Custom(acc_no, pin, name, age, phone, damt)

    if int(damt) >= 500:
        # voice note #4_3
        if not muteVoice:
            mixer.init()

mixer.music.load('Pyb_Female/4_3register_success.mp3')
            mixer.music.play()

    Label(finish_reg_screen, text="your account has been
created. Thanks for using PyBank!", font=('Calibri',
14)).grid(row=0, sticky=N, pady=10)
    message = "Your Account Number: "+ str(acc_no)
+"\nAccount Holder: " + name + "\nPhone: "+ phone +"\nPin:
" + str(pin)
    Label(finish_reg_screen,                 text=message,
font=('Calibri', 14)).grid(row=1, sticky=N, pady=10)
    notif1 = Label(finish_reg_screen, font=('Calibri',
12))
    notif1.grid(row=6, sticky=N, pady=10)
    notif1.config(fg="red", text="WARNING! PLEASE DON'T
SHARE YOUR PIN WITH ANYONE.")



# finish verification
def finish_verify():

    global temp_damt
    temp_damt = StringVar()
    phone = temp_phone.get()
    in_otp = temp_otp.get()
    if in_otp == "":
        vnotif.config(fg="red", text="required*")
        return
    ap = "+91"+phone

    result =  Bank.otp_opr("match_otp", phone_number = ap,
otp = in_otp)

    if result != "approved":
        vnotif.config(fg="red", text="invalid*")
        return

    verify_screen.destroy()
    global finish_verify_screen
    # finish_verify_screen
    # Label(register_screen, text="Deposit amt (>= 1000)",
font=('Calibri', 12)).grid(row=4, sticky=W)
    finish_verify_screen = Toplevel(master)
    finish_verify_screen.title("Verified Successfully")

    # labels
    Label(finish_verify_screen,     text="phone     number
verified  successfully",  font=('Calibri',  8)).grid(row=0,
sticky=W)
    Label(finish_verify_screen, text="please enter amount
to   be   deposited",   font=('Calibri',   12)).grid(row=1,
sticky=W)
    Label(finish_verify_screen,   text="Deposit   amt   (>=
500)", font=('Calibri', 12)).grid(row=2, sticky=W)

    # voice note #4_1_2
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/4_1_2suc.mp3')
        mixer.music.play()

    # voice note #4_2
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/4_2register.mp3')
        mixer.music.play()

    # fv_notif
    global fv_notif
    fv_notif         =         Label(finish_verify_screen,
font=('Calibri', 14))
    fv_notif.grid(row=4, sticky=N, pady=10)

    # entries
    Entry(finish_verify_screen,    textvariable=temp_damt,
font=('Century 18'),width=25).grid(row=2, column=1)

    # buttons
    Button(finish_verify_screen, text="Deposit", command =
lambda:[finish_reg()],  font=("Calibri",  12)).grid(row=6,
sticky=N, pady=10)

# verify screen
def verify():

    global temp_otp
    temp_otp = StringVar()

    name = temp_name.get().upper()
    age = temp_age.get()
    phone = temp_phone.get()

    if name=="" or age=="" or phone=="":
        notif.config(fg="red",      text="All      fields
required*")
        return
    if len(phone) != 10:
        notif.config(fg="red",  text="Enter  a  valid  10-
digit phone number.*")
        return

    # appending india code "+91"
    ap = "+91"+phone
    try:
        Bank.otp_opr("send_otp", phone_number = ap)
    except :
        print("in except")
        emsg = "entered phone number is invalid */ if it
is a valid, there might be a api problem. please try after
some time. Sorry for the inconvenience"
        notif.config(fg="red", text=emsg)
        return

    register_screen.destroy()
    global verify_screen
    # phone_verify screen
    verify_screen = Toplevel(master)

    # voice note 4_1
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/4_1_otp.mp3')
        mixer.music.play()
    # labels
    v_msg = "Please enter the 6-digit OTP sent to " + str(phone) + " to verify your Identity"
    Label(verify_screen, text=v_msg, font=('Calibri', 12)).grid(row=1, sticky=W)

    Label(verify_screen, text="OTP", font=('Calibri', 12)).grid(row=3, sticky=W)

    global vnotif
    vnotif = Label(verify_screen, font=('Calibri', 14))
    vnotif.grid(row=3, sticky=N, pady=10)

    # entries
    Entry(verify_screen, textvariable=temp_otp, font=('Century 18'),width=25).grid(row=3, column=1)

    # button
    Button(verify_screen, text="Register", command = lambda:[finish_verify(), ], font=("Calibri", 12)).grid(row=5, sticky=N, pady=10)


# register mode function
def register():

    # voice note 4
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/4register.mp3')
        mixer.music.play()

    # vars
    global temp_name
    global temp_age
    global temp_phone

    global notif

    temp_name = StringVar()
    temp_age = StringVar()
    temp_phone = StringVar()



    # register screen
    global register_screen
    register_screen = Toplevel(master)
    register_screen.title("Register")

    # labels
    Label(register_screen, text="Please enter your details
below  to  register",  font=('Calibri',  12)).grid(row=0,
sticky=N, pady=10)

    Label(register_screen,  text="Name",  font=('Calibri',
14)).grid(row=1, sticky=W)
    Label(register_screen,  text="Age",  font=('Calibri',
14)).grid(row=2, sticky=W)
    Label(register_screen,      text="Phone      Number",
font=('Calibri', 14)).grid(row=3, sticky=W)

    notif = Label(register_screen, font=('Calibri', 12))
    notif.grid(row=6, sticky=N, pady=10)

    # entries
    Entry(register_screen,        textvariable=temp_name,
font=('Century 18'),width=25).grid(row=1, column=1)
    Entry(register_screen,          textvariable=temp_age,
font=('Century 18'),width=25).grid(row=2, column=1)
    Entry(register_screen,        textvariable=temp_phone,
font=('Century 18'),width=25).grid(row=3, column=1)
    #                               Entry(register_screen,
textvariable=temp_damt).grid(row=4, column=1)

    # button
    Button(register_screen,  text="Register",  command  =
lambda:[verify(),  ],  font=("Calibri",  12)).grid(row=8,
sticky=N, pady=10)



# atm_mode function
def atm():
    global atm_mode_screen
    # atm_mode screen
    atm_mode_screen = Toplevel(master)
    atm_mode_screen.title("Atm Mode")

    # voice note atmMode
    if not muteVoice:
        mixer.init()
        mixer.music.load('Pyb_Female/atmMode.mp3')
        mixer.music.play()



    # labels
    Label(atm_mode_screen,     text     =     "ATM-Mode",
font=('Calibri', 14)).grid(row=0, sticky=N, pady=10)
    Label(atm_mode_screen,  text  =  "select  the  option",
font=('Calibri', 12)).grid(row=0, sticky=N, pady=10)
```

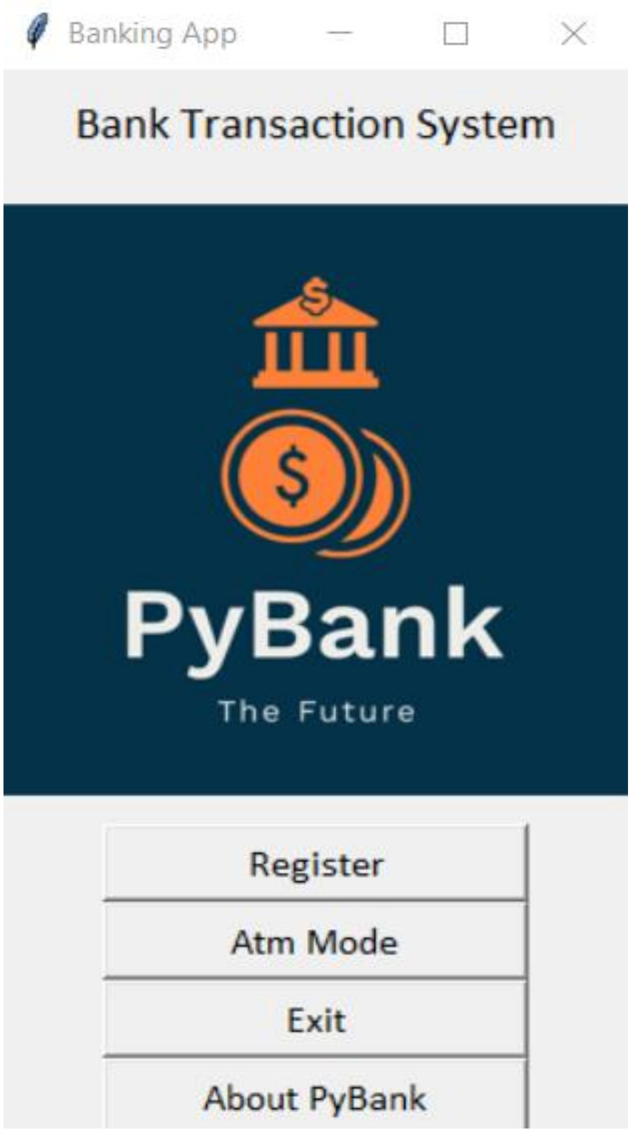
```
    # buttons
    Button(atm_mode_screen,   text="Deposit",   command   =
lambda:[dep(),                 atm_mode_screen.destroy()],
font=("Calibri", 12), width=20).grid(row=2)
    Button(atm_mode_screen,   text="Withdraw",   command   =
lambda:[witd(),                atm_mode_screen.destroy()],
font=("Calibri", 12), width=20).grid(row=3)
    Button(atm_mode_screen, text="Balance Check", command
=    lambda:[stat(),     atm_mode_screen.destroy()]     ,
font=("Calibri", 12), width=20).grid(row=4, sticky=N)

# exit mode
def exit():
    sys.exit()

# Main page #

# image
img = Image.open("pyBank_logo.png")
img = img.resize((250, 250))
img = ImageTk.PhotoImage(img)

# Labels
Label(master,   text   =   "Bank   Transaction   System",
font=('Calibri', 14)).grid(row=0, sticky=N, pady=8)
Label(master, image = img).grid(row=1, sticky=N, pady=10)

# Buttons
Button(master,  text="Register",  font=('Calibri',  14),
width=20, command=register).grid(row=3)
Button(master,  text="Atm  Mode",  font=('Calibri',  14),
width=20, command=atm).grid(row=4)
```

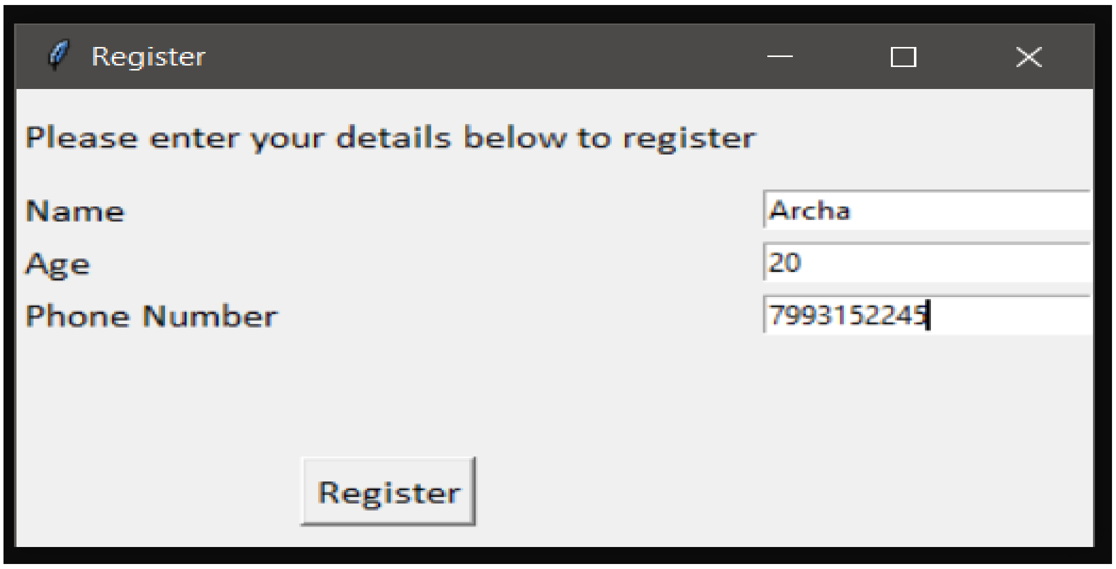
```
Button(master, text="Exit", font=('Calibri', 14), width=20, command=lambda:[thankYouVoice(), exit()]).grid(row=5)
Button(master, text="About PyBank", font=('Calibri', 14), width=20, command=aboutPybank).grid(row=6, sticky=N)
Button(master, text="Mute Mode", font=('Calibri', 14), width=20, command=muteMode).grid(row=7, sticky=N)
Button(master, text="UnMute Mode", font=('Calibri', 14), width=20, command=UnmuteMode).grid(row=8, sticky=N)

master.mainloop()
```

# 6. TESTING AND VALIDATION

During the software-testing phase each module of software is thoroughly tested for bugs and for accuracy of output. The system developed is very user-friendly and the detailed documentation is also given to the user as online help wherever necessary. The implementation phase normally ends with the formal test involving all the components.

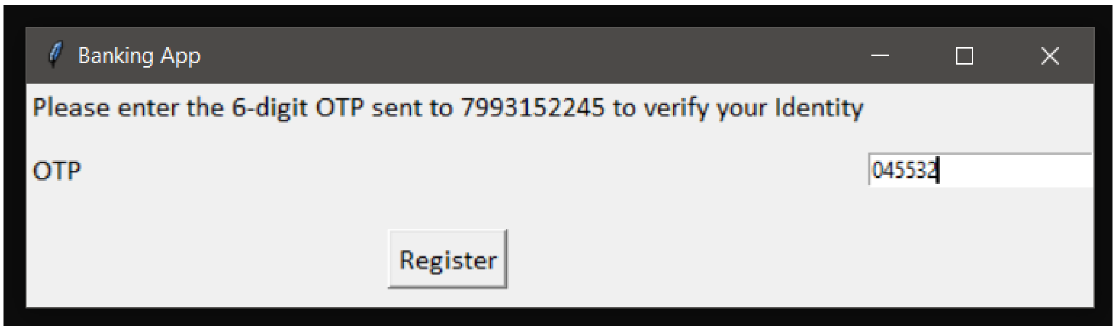
## 6.1 Project Screenshots




Register

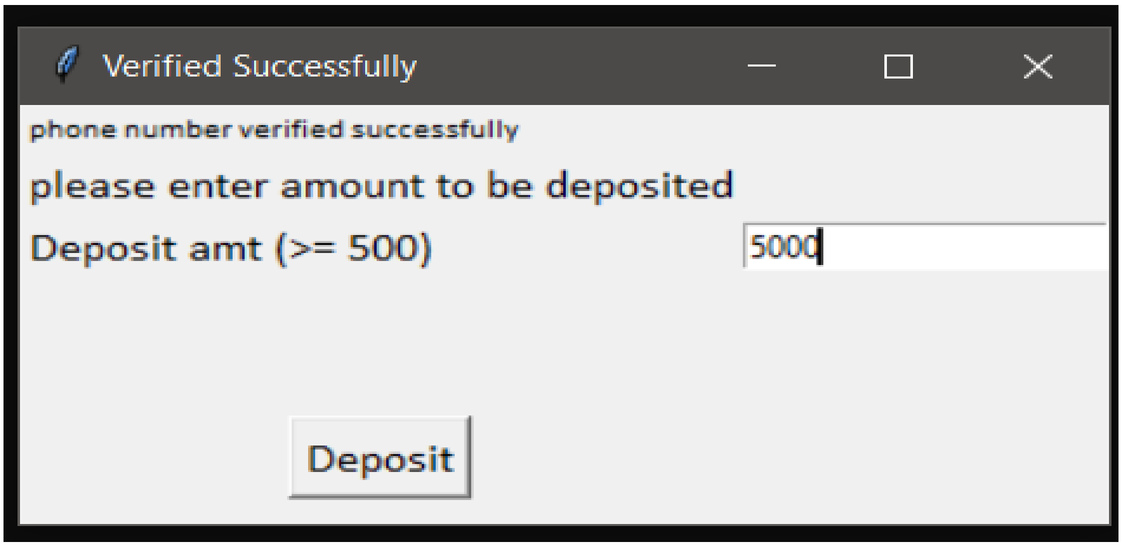
Please enter your details below to register

| | |
|---|---|
| Name | Archa |
| Age | 20 |
| Phone Number | 7993152245 |


Banking App

Please enter the 6-digit OTP sent to 7993152245 to verify your Identity

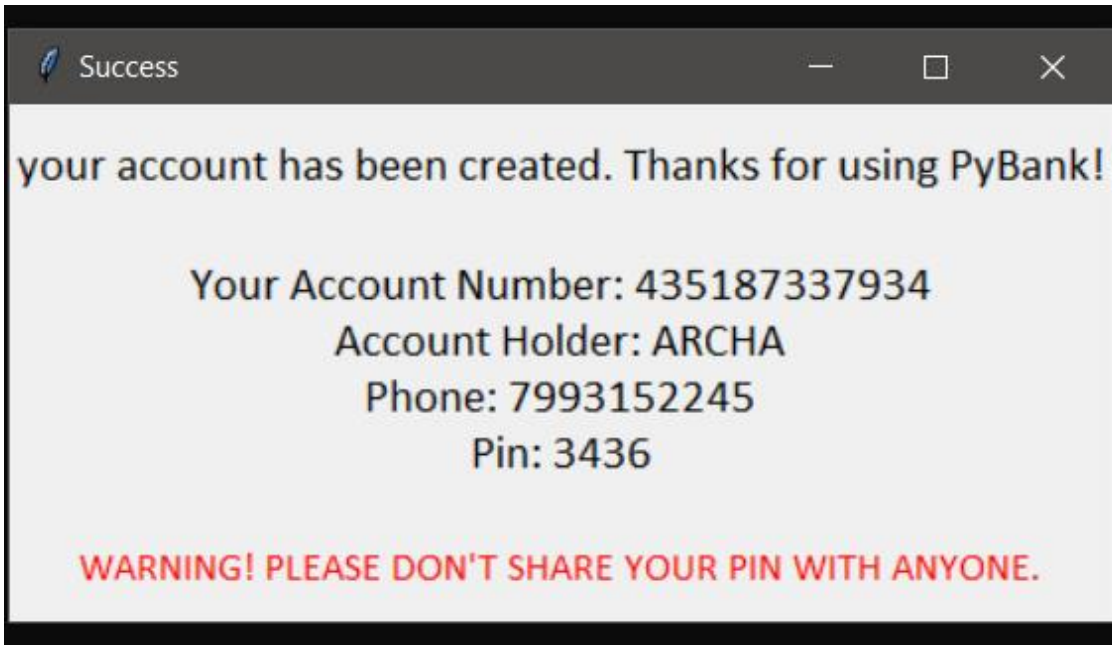
| | |
|---|---|
| OTP | 045532 |


Verified Successfully

phone number verified successfully

please enter amount to be deposited

| | |
|---|---|
| Deposit amt (>= 500) | 5000 |

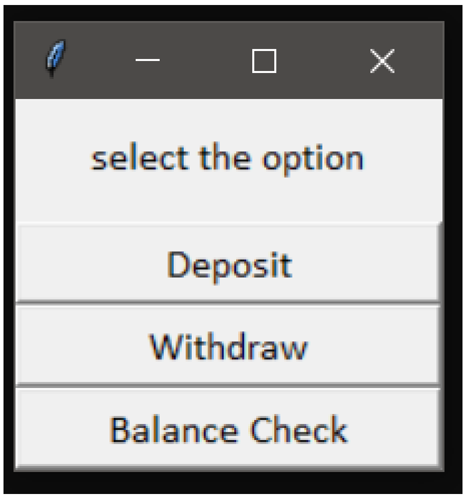


Success

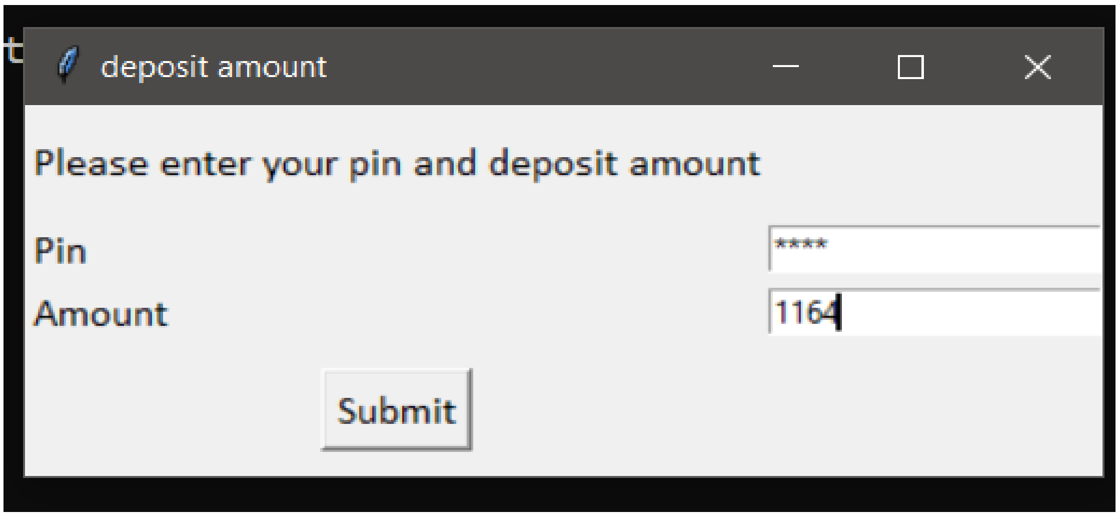
your account has been created. Thanks for using PyBank!

Your Account Number: 435187337934
Account Holder: ARCHA
Phone: 7993152245
Pin: 3436

WARNING! PLEASE DON'T SHARE YOUR PIN WITH ANYONE.



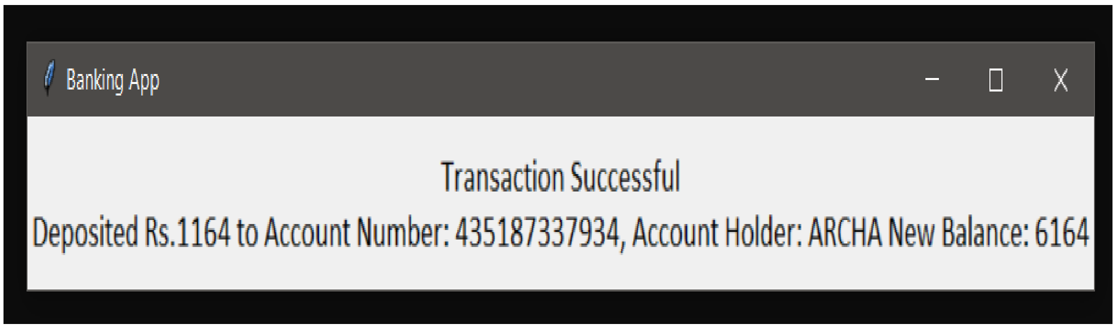
select the option



deposit amount

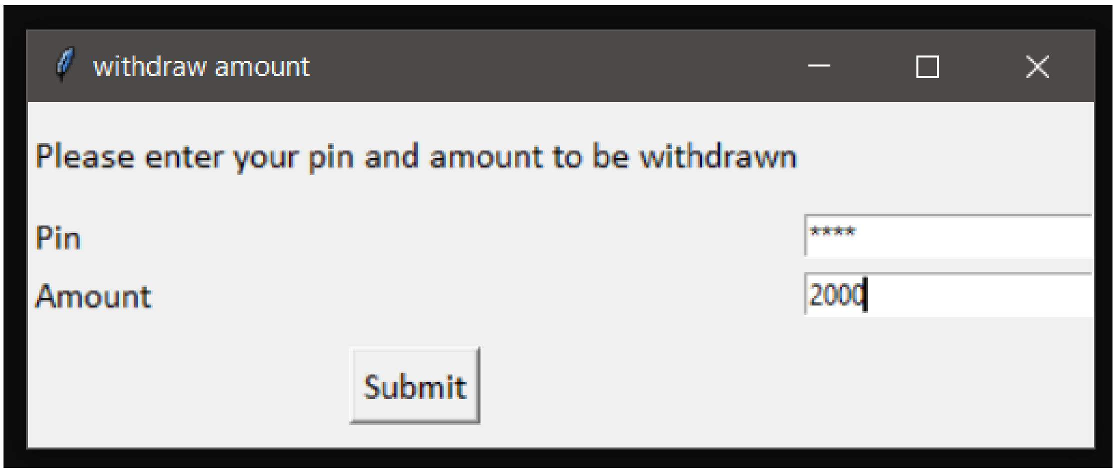
Please enter your pin and deposit amount

Pin ****
Amount 1164


Banking App

Transaction Successful

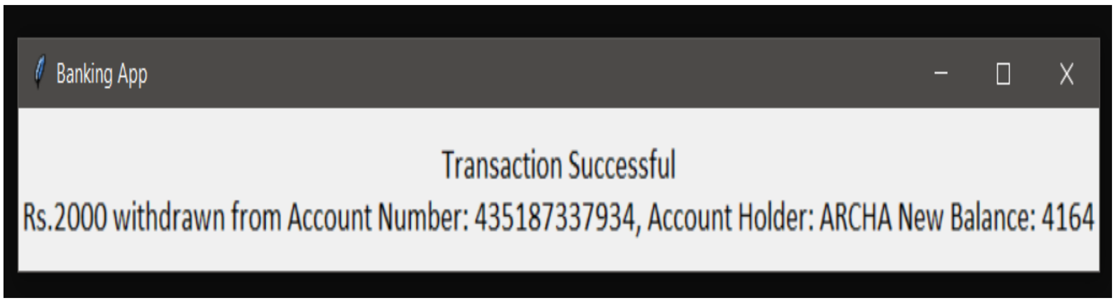
Deposited Rs.1164 to Account Number: 435187337934, Account Holder: ARCHA New Balance: 6164


withdraw amount

Please enter your pin and amount to be withdrawn

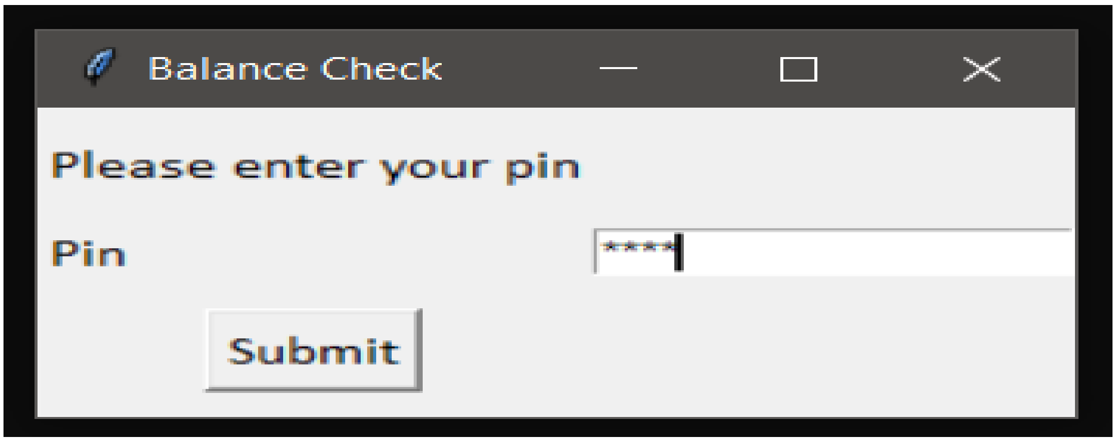
Pin ****

Amount 2000


Banking App

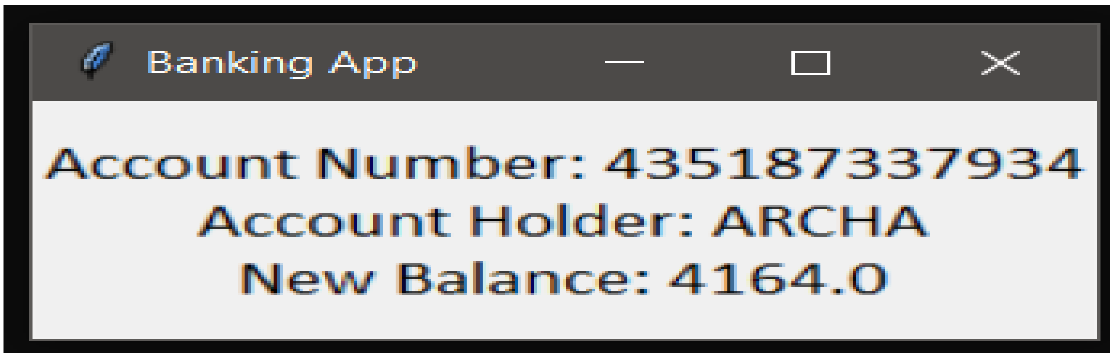
Transaction Successful

Rs.2000 withdrawn from Account Number: 435187337934, Account Holder: ARCHA New Balance: 4164


Balance Check

Please enter your pin

Pin ****



```
Account Number: 4351873379344
Account Holder: ARCHA
New Balance: 4164.0
```

## 7. CONCLUSION AND FUTURE ENHANCEMENTS

As the banking sector computerize day by day, and atm have become a part of modern banking system. The banks in developing country adopt ATMs to improve their own internal process and also for increase facilities and services of their customers. Now customers become aware about this machine. The growth of a ATM rapidly high at the world wide level also in India. This technology is simple, safe and secure. By this using OTP generating process we can easily secure ATM from frauds. System will automatically generate a one- time password (OTP) and send to the registered mobile number. It will ask user to enter the OTP. If it matches an authorized access will be granted.

# 8. REFERENCES

[1] Python: https://www.javatpoint.com/python-oops-concepts

[2] Tkinter: https://www.youtube.com/watch?v=71X58zIzrgA&t=1355s, https://www.tutorialspoint.com/python/python_gui_programming.htm

[3] twilio (for OTP): https://www.twilio.com/blog/phone-verification-with-twilio-for-python-developers

[4] Articles and related blogs: https://financialyard.com/advantages-and-disadvantages-of-atm-automated-teller-machines/, https://www.scribd.com/doc/133970440/Project-Report-on-ATM-System, https://www.researchgate.net/publication/322428014_Growth_and_Development_of_ATM_in_India