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THE BANKING PROJECT

A COMPUTER SCIENCE GROUP PROJECT



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Project Report

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Certificate



DELHI PUBLIC SCHOOL BANGALORE NORTH

This is to certify that we *Abhijeet Rajhans, Armaan Shaikh, and Zaid Khan Md.* - students of class 11A have completed the Computer Science project **The Banking Project** for the academic year 2020-21 as per the guidelines of the Central Board of Secondary Education

Teachers Signature

Acknowledgements



We would like to thank Abhijeet Rajhans, Armaan Shaikh, and Zaid Khan Md. for completing The Banking Project as the python project of class 11 of 2020-21 working together showing great teamwork and cooperation. We, together, as a team managed to accommodate and incorporate every member's thoughts and ideas into the program while helping one another detect and resolve flaws.

Abstract

The Banking Project aims to inculcate the feeling of managing a bank account by depositing, withdrawing, even creating a new bank account from scratch. It also offers other facilities like money transfer, blocking and unblocking bank accounts, take loans, and edit things their account details like changing email, PIN and also solutions to emergencies like account recovery, etc.

The entire project is a similar replica of how a bank actually works and what its functionalities are and we have given our best efforts to make it impactful.

Introduction to the project

Objective

This project was made to work and function as a bank would in real life with basic applications like depositions, withdrawals, and money transfers.

This program also allows advanced banking functions like blocking-unblocking of cards, loan applications, and creating and managing multiple bank accounts.

The code further provides moderate security to the account holder and verifies the user's authenticity by frequently providing and asking for Captcha verification codes.

Hardware and Software Specifications

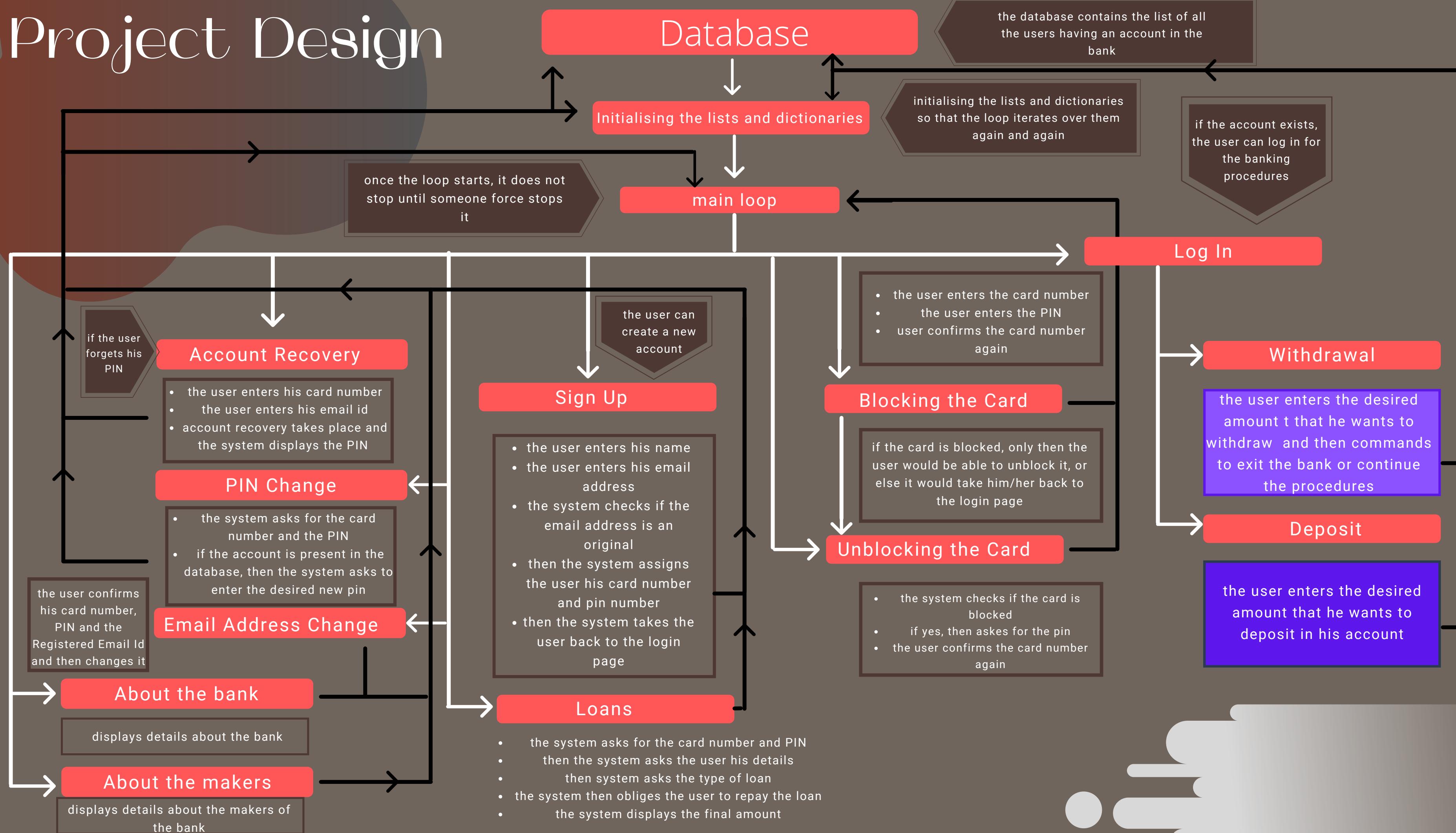
Operating system: Windows 7 or above

Coding Language: Python 3.9

Software:

- Jetbrains Pycharm
- Visual Studio Code
- Anaconda Spyder 4
- Integrated Development and Learning Environment (IDLE)

Project Design



Python Libraries and Concepts used

- **random module:** We used this module to create randomized PINs and account numbers.
- **time module:** To add dramatic anticipation towards the loading of the page or batch of details.
- **copy module:** To copy the dictionary for further functions
- Apart from these, we used the concepts of Lists, for and while loops, and Dictionaries.

Source code

```
time.sleep(3)

for i in sentence1:
    time.sleep(0.1)
    print(i + ' ', end='')
time.sleep(1)

data_base = {
    'Aditya Shekhar': {
        'Name': 'Aditya Shekhar',
        'Username': 'aditya123@email.com',
        'Card_Number': '123-4567-890',
        'PIN_number': 2544,
        'Balance': 2200000
    },
    'Mohan Reddy': {
        'Name': 'Mohan Reddy',
        'Username': 'mohanreddy@email.com',
        'Card_Number': '443-4507-560',
        'PIN_number': 6678,
        'Balance': 2400000
    },
    'Ramesh Ramanujan': {
        'Name': 'Ramesh Ramanujan',
        'Username': 'ramesh.ram3@email.com',
        'Card_Number': '166-0747-110',
        'PIN_number': 7890,
        'Balance': 2100000
    },
    'Anne Sudeep': {
        'Name': 'Anne Sudeep',
        'Username': 'annes.1983@email.com',
        'Card_Number': '996-9341-254',
        'PIN_number': 8822,
        'Balance': 3000000
    },
    'David Dobrik': {
        'Name': 'David Dobrik',
        'Username': 'david.dobrik_12@gmail.com',
        'Card_Number': '145-0892-445',
        'PIN_number': 1234
    }
}
```

```
print('\n')
print('predefined names are: '.capitalize())
time.sleep(2)

print('analysing data, please wait'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end=' ')
print()
time.sleep(2)
print('')

'''')
main_data_base = copy.deepcopy(data_base)

print(data_base)
print(''

''')
time.sleep(0.25)
print('{0:6}{1:40}{2:40}{3:21}{4:12}{5:11}'.format('S.No.', 'NAME', 'EMAIL', 'CARD', 'PIN', 'BALANCE'))

c = 0
for key in main_data_base:
    c = c + 1
    print('{0:6}{1:40}{2:40}{3:15}{4:10}{5:15}'.format(str(c) + ' ', data_base[key]['Name'], data_base[key]['Username'],
                                                       data_base[key]['Card_Number'], data_base[key]['PIN_number'],
                                                       data_base[key]['Balance']))

print(
    '=====')
print(
    '=====')
print(''

''')

print(''')
    welcome to citizens\' financial inc.'''.title())
print(''
```

```
blocked_cards = []
pending_loans = []

while True:
    print('')

    data_base = data_base
    blocked_cards = blocked_cards
    print(blocked_cards)
    pending_loans = pending_loans
    print(pending_loans)

    print(data_base)
    time.sleep(2)

    print()
    print('this is only for user reference'.capitalize())
    print('{0:6}{1:40}{2:40}{3:21}{4:12}{5:11}'.format('S.No.', 'NAME', 'EMAIL', 'CARD', 'PIN', 'BALANCE'))

    c = 0
    for key in data_base:
        c = c + 1
        print('{0:6}{1:40}{2:40}{3:15}{4:10}{5:15}'.format(str(c) + ' ', data_base[key]['Name'],
                                                       data_base[key]['Username'], data_base[key]['Card_Number'],
                                                       data_base[key]['PIN_number'], data_base[key]['Balance']))
    print('')

    time.sleep(2)
    choice = input(
        "Do you want to Log in or Sign Up?\nType Log in or Sign up below\n\n OR PRESS \n\n 1. Log In \n 2. Sign Up\n\n"
        " ADDITIONAL OPTIONS \n\n 3. Account Recovery\n 4. PIN Change\n 5. Email Change \n 6. Blocking a Card "
        "\n 7. Unblocking a Card\n\n" " OTHER BANKING OPTIONS \n\n 8. Money Transfer \n 9. Loan\n\n'EXTRAS \n\n 10. About the Bank'
        '\n 11. About the Makers \n').lstrip().rstrip()

    # we need to work on these: pin number change, email id change, displaying the makers of this program, blocking the card
    print()

    if choice.upper().lstrip().rstrip() == 'LOG IN' or choice.lstrip().rstrip() == '1':
        print()
        print('log in'.upper())
        print()
```

```
print()

while True:
    card = input('enter your card number : '.capitalize()).lstrip().rstrip()
    card_spl = list(card)
    if card_spl[3] == '-' and card_spl[8] == '-':
        card = ''.join(card_spl)
        break
    elif '-' not in card_spl:
        card_spl.insert(3, '-')
        card_spl.insert(8, '-')
        card = ''.join(card_spl)
        break
    else:
        print('please enter the card number in the correct format'.capitalize())

card = card
if card in blocked_cards:
    print()
    time.sleep(2)
    print('this card is blocked'.upper())
    time.sleep(1)
    print()
else:
    pin = int(input('enter your pin : '))
    for __name__ in data_base:
        if data_base[__name__]['Card_Number'] == card and data_base[__name__]['PIN_number'] == pin:
            NAME = data_base[__name__]['Name']
            EMAIL = data_base[__name__]['Username']
            CARD_NUM = data_base[__name__]['Card_Number']
            PIN_NUM = data_base[__name__]['PIN_number']
            BALANCE = data_base[__name__]['Balance']
            .....
            ''')
    print('your code is: '.capitalize())
    print('
    ''')
    print('_____')
    print(reCaptcha)
    print('_____')
    print('
    ''')
```

```
'''')
chance = 3
while chance > 0:
    print('chance left: '.capitalize(), chance)
    print('please let us know that you are not a robot'.capitalize())
    reCaptcha_input = input('enter the code you see above: '.capitalize()).lstrip().rstrip()
    if reCaptcha_input == reCaptcha:
        print('task finished successfully!'.capitalize())
        break
    else:
        print('')

        '''
        print('entered code is not correct'.capitalize())
        print('retrying'.capitalize(), end='')
        for i in range(3):
            time.sleep(1)
            print('.', end='')

        print()
        chance = chance - 1
        print('')

        ''')
else:
    time.sleep(2)
    print('we have lost the connection to the server'.capitalize())
    time.sleep(1)
    print('reCaptcha verification failed!'.capitalize())
    time.sleep(2)
    print('redirecting you the login screen again'.capitalize(), end='')
    for i in range(3):
        time.sleep(1)
        print('.', end='')
    time.sleep(1)
    print('')

    ''')
break
print('')
```

```
'''')
print('hello'.capitalize(), __name__.title())
print()
print('your balance is ₹'.capitalize(), data_base[__name__]['Balance'])
print()
chance = 4
while chance > 0:
    print('chances left'.capitalize(), chance)
    print('''
          1. Withdraw
          2. Deposit
          3. Exit''')
    input_val = int(input('enter your choice number here: '.capitalize()))
    if input_val == 1:
        pin_repeat = int(input("Enter PIN for confirmation :\n"))
        if pin_repeat == pin:
            print('your balance is: ₹ '.capitalize(), data_base[__name__]['Balance'])
    print('''Withdrawal for :
          ₹ 20
          ₹ 50
          ₹ 100
          ₹ 200
          ₹ 500
          ₹ 2000
          ''')
    withdrawal = int(
        input('enter the denomination of note to withdraw your cash: '.capitalize()))
    if withdrawal in (20, 50, 100, 200, 500, 2000):
        user_balance = int(data_base[__name__]['Balance'])

        user_balance = user_balance - withdrawal
        user_balance = user_balance

        data_base[__name__] = {
            'Name': NAME,
            'Username': EMAIL,
            'Card_Number': CARD_NUM,
            'PIN_number': PIN_NUM,
            'Balance': user_balance
        }
    print(''''')
```

```
print('₹', data_base['__name__']['Balance'], 'left')
print('')
''')

print('₹', withdrawal, 'has been withdrawn from your account from your account')
print('')

''')
print('_____')
print('your remaining balance is: ₹ '.capitalize(), user_balance)
print('_____')
print('')

''')
print('do you want to continue with other banking procedures?'.capitalize())
print()
print('enter 1 for yes or 2 for no', '\nor'.upper(), '\nenter a', ' yes '.upper(),
      'or a ', 'no: \n'.upper())
input_val_2 = input().lstrip().rstrip()
if input_val_2 in ('y', 'yes', 'Yes', 'YES', 'Y') or input_val_2 == '1':
    continue
else:
    print('')
    '''
    '''
    print('''thank you for visiting citizens\ financial inc.'''.upper()''''.upper())
    print()
    time.sleep(1)
    print('have a pleasant day!'.capitalize())
    time.sleep(1)
    print()
    print('')

elif input_val == 2:
    pin_repeat = int(input("Enter PIN for confirmation :\n"))
    if pin_repeat == pin:
        print('your balance is: ₹ '.capitalize(), data_base['__name__']['Balance'])
        print('''Deposit for :
            ₹ 100
            ₹ 200
            ₹ 500
            ₹ 2000
```

```
₹ 5000
₹ 10000
₹ 20000
₹ 50000
₹ 100000
₹ 200000
₹ 500000
''')

deposit = int(input('enter the amount you want to deposit: '.capitalize()))
if deposit in (100, 200, 500, 2000, 5000, 10000, 20000, 50000, 100000, 200000, 500000):
    user_balance = int(data_base['__name__']['Balance'])
    user_balance = user_balance + deposit
    user_balance = user_balance

    data_base['__name__'] = {
        'Name': NAME,
        'Username': EMAIL,
        'Card_Number': CARD_NUM,
        'PIN_number': PIN_NUM,
        'Balance': user_balance
    }
    print('''
    ''')

    print('₹', data_base['__name__']['Balance'], 'left')
    print('''
    ''')
    print('₹', deposit, 'has been deposited to your account.')
    print('''
    ''')
    print('____')
    print('your new balance is: ₹ '.capitalize(), user_balance)
    print('____')
    print('''
    ''')

    print('do you want to continue with other banking procedures?'.capitalize())
    print()
    print('enter 1 for yes or 2 for no', '\nor'.upper(), '\nenter a', ' yes '.upper(),
          'or a ', 'no: \n'.upper())
    input_val_2 = input('Enter your choice: ')
    if input_val_2 == '1' or input_val_2 == 'yes' or input_val_2 == 'y' or input_val_2 == 'Yes' or input_val_2 == 'Y':
```

```
else:
    print('Incorrect PIN entered .\nExiting', end=' ')
    for i in range(3):
        time.sleep(1)
        print('.', end=' ')
    time.sleep(1)
    print('')

    '')
    break
elif input_val == 3:
    print(''
    '')
    print('''thank you for visiting citizens\' financial inc.'''.upper())
    print()
    time.sleep(1)
    print('have a pleasant day!'.capitalize())
    time.sleep(1)
    print()
    print(''
          ':')
    '')
    print(''

    ')
    time.sleep(2)
    print('redirecting to the login screen '.capitalize(), end=' ')
    for i in range(3):
        time.sleep(1)
        print('.', end=' ')
    time.sleep(1)
    break
else:
    print('data not found!'.capitalize())

elif choice.upper().lstrip().rstrip() == 'SIGN UP' or choice.lstrip().rstrip() == '2':
    print()
    print('sign up'.upper())
    print()
    name = input('enter your name: '.capitalize()).lstrip().rstrip()
```

```
chance = 3
while chance >= 0:
    turns = 3
    while turns > 0:
        print('chance left :'.capitalize(), turns)
        email_id = input('enter your email id: '.capitalize()).lstrip().rstrip()
        if '@' in email_id:
            if 'gmail' in email_id or 'yahoo' in email_id or 'outlook' in email_id or 'hotmail' in email_id or 'email' in email_id:
                for user in data_base:
                    if data_base[user]['Username'] == email_id:
                        print()
                        print('this email id already exists'.capitalize())
                        print()
                        break
                else:
                    email_id = email_id
                    break
        turns = turns - 1
    else:
        print()
        time.sleep(2)

email_id = email_id
print()
print('your email id: ', email_id)
print('')

')
email = input('confirm your email id: '.capitalize()).lstrip().rstrip()
if email == email_id:
    if '@' in email:
        if 'gmail' in email or 'yahoo' in email or 'outlook' in email or 'hotmail' in email or 'email' in email:

            reCaptcha_numerals = r.randrange(0, 9999)
            alpha_1 = r.choice('qwertyuiopasdfghjklzxcvbnm')
            alpha_2 = r.choice('qwertyuiopasdfghjklzxcvbnm')
            alpha_3 = r.choice('qwertyuiopasdfghjklzxcvbnm')
            reCaptcha = str(reCaptcha_numerals) + alpha_1.upper() + alpha_2.upper() + alpha_3.upper()
            print('')
```

```
n1 = r.choice('1234567890')
n2 = r.choice('1234567890')
n3 = r.choice('1234567890')
n4 = r.choice('1234567890')
n5 = r.choice('1234567890')
n6 = r.choice('1234567890')
n7 = r.choice('1234567890')
n8 = r.choice('1234567890')
n9 = r.choice('1234567890')
n10 = r.choice('1234567890')
card_num = n1 + n2 + n3 + '-' + n4 + n5 + n6 + n7 + '-' + n8 + n9 + n10
pin_num = r.randrange(1000, 9999)
balance = 0
data_base[name.title()] = {'Name': name.title(),
                           'Username': email,
                           'Card_Number': card_num,
                           'PIN_number': pin_num,
                           'Balance': balance
                           }
print('')

print('Your name :', name.title())
print('Email ID :', email)
print('')

print('_____')
print('Assigned Card Number :', card_num)
print('Assigned PIN Number :', pin_num)
print('_____')
print('')

print('you have been logged out!'.upper())
print()

elif choice.upper().lstrip().rstrip() == 'ACCOUNT RECOVERY' or choice.lstrip().rstrip() == '3':
    print()
    print('account recovery'.upper())
    print()

    print('')
```

```
print('account recovery initialising'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end=' ')
time.sleep(1)
print('')

rev_email = input('enter your email id: '.capitalize()).lstrip().rstrip()
print(''
'')

while True:
    card = input('enter your card number: '.capitalize()).lstrip().rstrip()
    print()
    card_spl = list(card)
    if card_spl[3] == '-' and card_spl[8] == '-':
        card = ''.join(card_spl)
        break
    elif '-' not in card_spl:
        card_spl.insert(3, '-')
        card = ''.join(card_spl)

    print('your name:'.capitalize(), data_base[_name_]['Name'])
    print('your email id: '.capitalize(), data_base[_name_]['Username'])
    print('your card number: '.capitalize(), data_base[_name_]['Card_Number'])
    print('your pin number: '.capitalize(), data_base[_name_]['PIN_number'])
    print(''

'')
    print('Mr./ Mrs.'.upper(), data_base[_name_]['Name'].upper(),
          'please keep your card details extremely confidential'.upper())

    print(''

'')

    print('account recovery successful!'.upper())
    print()
```

```
time.sleep(2)
print('redirecting you to the login screen again'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end=' ')
time.sleep(1)
print('')

''')

break
else:
    print('data not found!'.capitalize())
    print('redirecting you to the login screen again'.capitalize(), end=' ')
    break

elif choice.upper().lstrip().rstrip() == 'PIN CHANGE' or choice.lstrip().rstrip() == '4':
    print()
    print('pin change'.upper())
    print()
    time.sleep(1)

while True:
    card_num = input('enter your card number: '.capitalize()).lstrip().rstrip()
    card_spl = list(card_num)
    if card_spl[3] == '-' and card_spl[8] == '-':
        card = ''.join(card_spl)
        break
    elif '-' not in card_spl:
        card_spl.insert(3, '-')
        card_spl.insert(8, '-')
        card = ''.join(card_spl)
        break
    else:
        print('please enter the card number in the correct format'.capitalize())
card = card
time.sleep(1)
pin_num = int(input('enter your pin number: '.capitalize()))
print('')

for __name__ in data_base:
    if data_base[__name__]['Card Number'] == card and data_base[__name__]['PIN number'] == pin_num:
```

```
    ''')

print('changing password.'.capitalize())
print('please wait'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end='')
print(''

    ''')
data_base[__name__] = {
    'Name': NAME,
    'Username': EMAIL,
    'Card_Number': CARD_NUM,
    'PIN_number': new_pin_confirm,
    'Balance': BALANCE

}
print()
print('pin changed!'.upper())
print(''

    ''')

print('redirecting you to the login screen again'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end='')
time.sleep(1)
print(''

    ''')
```

```
'Username': EMAIL,
'Card_Number': CARD_NUM,
'PIN_number': new_pin_confirm,
'Balance': BALANCE

}
print()
print('pin changed!'.upper())
print('

')

print('redirecting you to the login screen again'.capitalize(), end=' ')
for i in range(3):
    time.sleep(1)
    print('.', end='')
time.sleep(1)
print('

')

')
else:
    print('please enter the card number in the correct format'.capitalize())
```

```
card = card
time.sleep(1)
pin_num = int(input('enter your pin number: '.capitalize()))
print('')
''')

user_email = input('enter your registered email id: '.capitalize()).lstrip().rstrip()

for __name__ in data_base:
    if data_base[__name__]['Card_Number'] == card and data_base[__name__]['PIN_number'] == pin_num and \
        data_base[__name__]['Username'] == user_email:

user_email = input('enter your registered email id: '.capitalize()).lstrip().rstrip()

for __name__ in data_base:
    if data_base[__name__]['Card_Number'] == card and data_base[__name__]['PIN_number'] == pin_num and \
        data_base[__name__]['Username'] == user_email:
        NAME = data_base[__name__]['Name']
        EMAIL = data_base[__name__]['Username']
        CARD_NUM = data_base[__name__]['Card_Number']
        PIN_NUM = data_base[__name__]['PIN_number']
        BALANCE = data_base[__name__]['Balance']
        print('''
        ''')
        print('hello'.capitalize(), NAME)
        print()

        time.sleep(1)

turns = 3
while turns > 0:
    print('chance left :'.capitalize(), turns)
    new_email = input('enter your new email address: '.capitalize()).lstrip().rstrip()
    print()

    if '@' in new_email:
        if 'gmail' in new_email or 'yahoo' in new_email or 'outlook' in new_email or 'hotmail' in new_email or 'email' in new_email:
            for user in data_base:
                if data_base[user]['Username'] == new_email:
                    print()
                    print('this email id already exists'.capitalize())
                    turns -= 1
```

Output Snapshot

Do you want to Log in or Sign Up?
Type Log in or Sign up below

OR PRESS

1. Log In
2. Sign Up

ADDITIONAL OPTIONS

3. Account Recovery
4. PIN Change
5. Email Change
6. Blocking a Card
7. Unblocking a Card

OTHER BANKING OPTIONS

8. Money Transfer
9. Loan

EXTRAS

10. About the Bank
11. About the Makers
Log In

LOG IN

Enter your card number : 6444234456
enter your pin : 6764

Hello Jack Mamba

Your balance is ₹ 3700000

Chances left 4

Enter your choice number here: 2
Enter PIN for confirmation :
6764
Your balance is: ₹ 3700000
Deposit for :
₹ 100
₹ 200
₹ 500
₹ 2000
₹ 5000
₹ 10000
₹ 20000
₹ 50000
₹ 100000
₹ 200000
₹ 500000

Enter the amount you want to deposit: 5000

SIGN UP

Enter your name: Armaan Shaikh
Chance left : 3
Enter your email id: armaan@email.org
your email id: armaan@email.org

Confirm your email id: armaan@email.org

Your code is:

1281GXT

Chance left: 3
Please let us know that you are not a robot
Enter the code you see above: 1281GXT
Task finished successfully!

Your name : Armaan Shaikh
Email ID : armaan@email.org

Assigned Card Number : 737-1866-877
Assigned PIN Number : 2586

Log in Screen

Log In and Deposit Screen

Sign Up Screen

WELCOME TO CITIZENS' FINANCIAL INC MONEY TRANSFER

Enter your card number: 7371866877
Enter your pin number: 2586

Hello Armaan Shaikh

Your current balance is: 0

Enter the receiver's card number: 6444234456

You are transferring money to JACK MAMBA

Enter the amount you want to transfer: 10

Confirm your pin again: 2586

Money Transfer Screen

Founders

Abhijeet Rajhans	:	11A
Armaan Shaikh	:	11A
Zaid Khan Md.	:	11A

Do you want to Log in or Sign Up?
Type Log in or Sign up below

OR PRESS

1. Log In
2. Sign Up

ADDITIONAL OPTIONS

3. Account Recovery
4. PIN Change
5. Email Change
6. Blocking a Card
7. Unblocking a Card

OTHER BANKING OPTIONS

8. Money Transfer
9. Loan

EXTRAS

10. About the Bank

Enter your card number: 7371866877
Enter your pin number: 2586

Hello Armaan Shaikh

Enter your new pin: 2544

Confirm your new pin: 2544

Your code is:

911YXN

Chance left: 3
Please let us know that you are not a robot
Enter the code you see above: 911YXN
Task finished successfully!

Changing password.
Please wait...

PIN CHANGED!

First Choice screen

About the Founders Screen

PIN Change Screen

Conclusion

The Banking Project is a project where we tried to mimic a normal bank to the best of our ability. The program continues to present the user with options to inculcate the feeling of using actual banking sites.

Through the project, we learned the mechanics of the various banks that we and our family use. We learned many ways to use the concepts we learned to create a more coherent program.



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