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**Subject : Python Programming**

**Lab Practical 3**

Q.) Create a module to add and get users + develop a smart scan function that adds entries of user by decoding values from a QR code

**Key Functions in UserModule.py:**

* *create\_user\_dict\_lambda:* A lambda function to create a user dictionary from input values.
* *add\_user\_to\_list\_lambda:* A lambda function to add a user dictionary to a list.
* *get\_user\_input():* Prompts the user to input personal details and returns them as a dictionary.
* *encode\_dict\_to\_qr(data\_dict, filename='qr\_code.png'):* Encodes a dictionary into a QR code and saves it as a PNG file.
* *decode\_qr\_code(filename):* Decodes the QR code from a PNG file and returns the data as a dictionary.
* *add\_user\_to\_list(user\_dict, user\_list):* Appends a user dictionary to the user list.
* *show\_users(user\_list):* Prints out all users in the user list.
* *add\_users\_manually(user\_list):* Adds a user manually by input.
* *smartScan(username, user\_list):* Decodes user data from a QR code and adds it to the user list.

**Summary of the Workflow in implimentation:**

1. **Start the Program:** Displays the menu options.
2. **Create and Encode User Data:** Generate and save QR code for user details.
3. **Decode and Add User from QR Code:** Read and add user data from the QR code.
4. **Display User List:** Show all users added so far.
5. **Add Users Manually:** Input user details directly to the list.
6. **Exit Program:** End the session.

**UserModule.py**

import pyqrcode

import png

from pyzbar.pyzbar import decode

from PIL import Image

import re

def get\_user\_input():

data\_dict = {

"name": input("Enter name: "),

"gender": input("Enter gender: "),

"username": input("Enter username: "),

"password": input("Enter password: "),

"email": input("Enter email: "),

"phone": input("Enter phone: ")

}

return data\_dict

def encode\_dict\_to\_qr(data\_dict, filename='qr\_code.png'):

# Convert the dictionary to a string

dict\_str = ', '.join(f'{key}: {value}' for key, value in data\_dict.items())

# Generate the QR code

qr\_code = pyqrcode.create(dict\_str)

# Save the QR code as a PNG file

qr\_code.png(filename, scale=6)

# Print the QR code to the terminal (optional)

print(qr\_code.terminal())

def decode\_qr\_code(filename):

# Open the image file

img = Image.open(filename)

# Decode the QR code

decoded\_objects = decode(img)

# Extract and return the data

for obj in decoded\_objects:

data\_str = obj.data.decode("utf-8")

# Convert the string back to a dictionary

data\_dict = dict(item.split(": ") for item in data\_str.split(", "))

return data\_dict

return None

create\_user\_dict\_lambda = lambda name, gender, username, password, email, phone: {

"name": name,

"gender": gender,

"username": username,

"password": password,

"email": email,

"phone": phone

}

add\_user\_to\_list\_lambda = lambda user\_dict, user\_list: user\_list + [user\_dict]

def add\_user\_to\_list(user\_dict, user\_list):

user\_list.append(user\_dict)

return user\_list

def show\_users(user\_list):

for i in user\_list:

for k,v in i.items():

print(k,v)

print("\* "\*20)

def add\_users\_maunually(user\_list):

dict1 = get\_user\_input()

add\_user\_to\_list(dict1, user\_list)

def smartScan(username, user\_list):

data\_dict = decode\_qr\_code(username)

add\_user\_to\_list(data\_dict,user\_list)

show\_users(user\_list)

def validation(data\_dict):

    pattern = re.compile(r'[^a-zA-Z\s]')

    pattern2 = re.compile(r'r^\d{10}$')

    pattern3 = re.compile(r'[\s]')

    pattern4 = re.compile(r'^[a-zA-Z0-9.]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$')

    if (pattern.search(data\_dict["name"])):

        return 1

    elif (pattern.search(data\_dict["role"])):

        return 2

    elif (pattern2.search(data\_dict["phone"])):

        return 3

    elif (pattern3.search(data\_dict["username"])):

        return 4

    elif (pattern4.search(data\_dict["email"])):

        return 5

    else:

        return 0

**Implementation.py**

import pyqrcode

import png

import UserModule

users = [{"name" : "vaibhav", "gender" : "M", "username" : "vaibhavtomar", "password" : "vaibhav@tomar", "email" : "vaibhavt1612003@gmail.com", "phone" : 8800700088}]

while(True):

menu = '''

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

'''

print(menu)

option = int(input("enter your choice : "))

print("\* "\*20)

if(option == 1):

data\_dict=UserModule.get\_user\_input()

        check = UserModule.validation(data\_dict)

        if(check!=0):

            if(check==1):

                print("name")

            if(check==2):

                print("role")

            if(check==3):

                print("phone")

            if(check==4):

                print("username")

            if(check==5):

                print("email")

            continue

UserModule.encode\_dict\_to\_qr(data\_dict,data\_dict["username"]+".png")

print("QR for user ",data\_dict["username"]," is generated")

elif(option == 2):

try:

username = input("enter the username of the user : ")

UserModule.smartScan(username+".png", users)

except:

print("qr is not present")

elif(option == 3):

UserModule.show\_users(users)

elif(option == 4):

name = input("Enter name: ")

gender = input("Enter gender: ")

username = input("Enter username: ")

password = input("Enter password: ")

email = input("Enter email: ")

phone = input("Enter phone: ")

data\_dict = UserModule.create\_user\_dict\_lambda(name, gender, username, password, email, phone)

        check = UserModule.validation(data\_dict)

        if(check!=0):

            if(check==1):

                print("name")

            if(check==2):

                print("role")

            if(check==3):

                print("phone")

            if(check==4):

                print("username")

            if(check==5):

                print("email")

            continue

UserModule.add\_user\_to\_list\_lambda(data\_dict,users)

elif(option == 5):

break

**Output**

= RESTART: D:\code\pythonChrist\python-christ-university\lab3.2\implimentation.py

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 3

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

name vaibhav

gender M

username vaibhavtomar

password vaibhav@tomar

email vaibhavt1612003@gmail.com

phone 8800700088

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 1

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

Enter name: Ritam Maity

Enter gender: Male

Enter username: ritam@maity123

Enter password: r!t@mM@!ty

Enter email: ritam.maity@mca.christuniversity.in

Enter phone: 56567678433

QR for user ritam@maity123 is generated

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 3

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

name vaibhav

gender M

username vaibhavtomar

password vaibhav@tomar

email vaibhavt1612003@gmail.com

phone 8800700088

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 2

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

enter the username of the user : ritam@maity123

name vaibhav

gender M

username vaibhavtomar

password vaibhav@tomar

email vaibhavt1612003@gmail.com

phone 8800700088

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

name Ritam Maity

gender Male

username ritam@maity123

password r!t@mM@!ty

email ritam.maity@mca.christuniversity.in

phone 56567678433

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 4

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

Enter name: Sujay Sharma

Enter gender: Male

Enter username: sujay@sharma123

Enter password: suj@y

Enter email: sujay.sharma@mca.christuniversity.in

Enter phone: 3436477889

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 1

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

Enter name: poonam2

Enter gender: female

Enter username: poonam.tomar

Enter password: poon@m

Enter email: poonam@gmail.com

Enter phone: 8800700088

invalid name

to create new user(not add them to database) press 1

to add a user using SmartScan press 2

to fetch all users press 3

to add users manually (without qr) press 4

to exit code press 5

enter your choice : 5

\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*