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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.
- *validation(data_dict):* Checks if the data entered is valid

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

* * * * * * * * * * * * * * * * * * * *