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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_manually(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'^\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 vaibhavl1612003@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

\*\*\*\*\*