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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

```python
import png
from pyzbar.pyzbar import decode
from PIL import Image


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)
```

```python
    # 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():
```

```python
            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)
```

**Implementation.py**

```python
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()
```

```python
        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)

        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 : 5

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