A112 – Lab 6
Modularization and Functions

DUE Friday, April 19, 2024, by 3:00:00 pm (SHARP)
Submit Python script file A112_LAB6_YOUR_NAME.py to
"LAB 6" Assignment in your Canvas "Lab Assignments" group

Goal: The aim of Lab 6 is to enhance your programming skills by focusing on functions in Python. This lab will help you understand how to break down your code into manageable parts using functions which perform specific tasks like user registration and login. This exercise is designed to strengthen your ability to structure code in a way that efficiently handles different scenarios, enhancing your overall programming capabilities.

Implementing User Authentication

1. Open IDLE and click on File > New File to create a new Python script file ('.py').

2. Click on File > Save as.. to save the file to your preferred method of choice. Save it as A112_LAB6_YOUR_NAME.py.

3. Type in the following code below your file header:.

```python
def login(valid_usernames, valid_passwords):
    """Handle the login process allowing three attempts."""
    for attempt in range(0, 3, 1):
        username = input("Enter your username: ")
        password = input("Enter your password: ")
        if username in valid_usernames and password == valid_passwords[valid_usernames.index(username)]:
            print("Login successful!")
            return True
        else:
            print("Incorrect username or password. Please try again.")
    print("You have exceeded the maximum number of attempts.")
    return False

def register(valid_usernames, valid_passwords):
    """Allow new users to register."""
    #
    #
        #
        #
    #
    #
    #
    #
    #

def main():
    valid_usernames = ['user1', 'user2', 'user3', 'user123']
    valid_passwords = ['pass1', 'pass2', 'pass3', 'pass456']

    while True:
        print("Choose an option:")
        print("1. Login")
        print("2. Register")
        print("3. Quit")
        action = input("Enter 1, 2, or 3: ")
        match action:
            case '1':
                if login(valid_usernames, valid_passwords):
                    break
```

```
        case '2':
            register(valid_usernames, valid_passwords)
        case '3':
            print("Exiting the program.")
            break
        case _:
            print("Invalid option. Please enter 1, 2, or 3.")


    if __name__ == "__main__":
        main()
```

4. Look over this code, understand it, and write in-line comments explaining what is happening. Also include a function header for main().

5. Your main task is to implement the register function to allow user registration. Successfully registered users should subsequently be able to log in. To receive full credit, your function must adhere to the following criteria:

    a. Prompt the user to enter their desired username.

    b. Only request the user's preferred password if it is confirmed that the username is not already in the valid_usernames list. You may utilize a membership test or a loop for this validation.

    c. If the username already exists, the function should return False.

    d. If the username is available, and a password is provided by the user, add both the username and the password to the valid_usernames and valid_passwords lists respectively.

    e. Once the lists have been updated, display the message "Registration success. You may now log in." and ensure the function returns True.

    Expected output:

    >>>
    Choose an option:
    1. Login
    2. Register
    3. Quit
    Enter 1, 2, or 3: 2
    Choose a username: user1
    Username already exists. Please choose a different username.
    Choose an option:
    1. Login
    2. Register
    3. Quit
    Enter 1, 2, or 3: 2
    Choose a username: user5
    Choose a password: pass5
    Registration successful. You can now login.
    Choose an option:
    1. Login
    2. Register
    3. Quit
    Enter 1, 2, or 3: 1
    Enter your username: user5
    Enter your password: pass5
    Login successful!

6. Ensure that your code is appropriately commented.

7. Run, test, and debug your code and make sure it works.

8. Submit the single A112_LAB6_YOUR_NAME.py file to your Canvas "LAB 6" assignment **by 3:00 PM today as indicated above.**

Scoring:

Successfully submitted to Canvas: **2 points**
File "compiles" and runs: **2 points**
Appropriate heading & comments: **2 points**
Authentication system accuracy and completeness : **4 points**

Handing in your Assignment

It should be clear that failure to successfully submit your Python script (.py) file to your Canvas "LAB 6" assignment in the "Lab Assignments" section or failing to meet the deadline will result in a score of zero (0). Partial credit will only be possible if your Python script doesn't compile successfully without errors, but you are successful in submitting the file and most or all of what you submit is correct. If you have questions about this, ask them ASAP.