Structured Programming 1

Continuous Assessment 2, Thursday, November 23rd, 2023

Time: 4:00pm – 5:10pm

No mobile phones. No Internet Browsing. Clean Desktop required.

Your task is to design, develop and test a Python code to solve the problem detailed below. Create an empty Python file named in the form *FirstnameLastname*.py on the Desktop or in the documents folder on C: drive.

You should use the IDLE IDE for coding. When you have finished, please open an internet browser and submit your code using **Canvas Assignment Submission – CA2**.

Ensure that your lecturer has checked your code is correctly submitted before you leave.

Please also familiarise yourself with the Institute Statement on Student Rights and Responsibilities ([Student Rights and Responsibilities - Munster Technological University - Kerry Campus (ittralee.ie)](ittralee.ie)

Marks will be awarded for **variable naming**, **appropriate data types**, use of (a) **constant(s)** where appropriate and (b) **code conventions** as discussed in class. You should also include **comments** in your code, to include your name and t-number.

Problem Description:

A financial institution requires an application to carry out various functions and you have been asked to help develop this application using Python…

To start the program, a user should enter a username and password:

- The username is "secure" (it is case-insensitive i.e., "SeCure", "SECURE" or "SECure" for example are valid usernames).
- The password is **Tralee** and is case-sensitive.

If a user enters an invalid username/password combination, the program should exit and display an appropriate message to indicate the problem (stating whether password, username or both are incorrect).

If the username and password are valid, the program will proceed and display a menu of options as follows:

1. *Reset password*
2. *Make a withdrawal*
3. *Convert euro to dollars.*

The user should be prompted for their choice and the program should take the appropriate course of action as follows:

1. *Reset password:*
   When this option is selected, the user should be prompted for his/her new password, which should then be assessed according to the following requirements:
   At least 10 characters long, starting with an uppercase letter and consists only of letters and numbers.

   If the password adheres to the above requirements, the application should state that the password is ok, and reset it. Otherwise, the password change is rejected. You should also include functionality to remove any leading spaces which may be entered by the user when choosing the new password.

2. **Make a withdrawal:** When this option is selected, the user should be prompted for the current balance and an amount to withdraw. Note that these could be floating point values. If there are sufficient funds for the withdrawal, the balance should be updated and a message, 'withdrawal granted' displayed. An error message should be produced if the balance is insufficient for the withdrawal.

3. *Convert Euro to US Dollar:* When this option is selected, the user is prompted to enter a value in Euro. Your program should then convert this to US dollars using the exchange rate (€1.00 = $1.10). The output should be formatted and displayed as shown below.
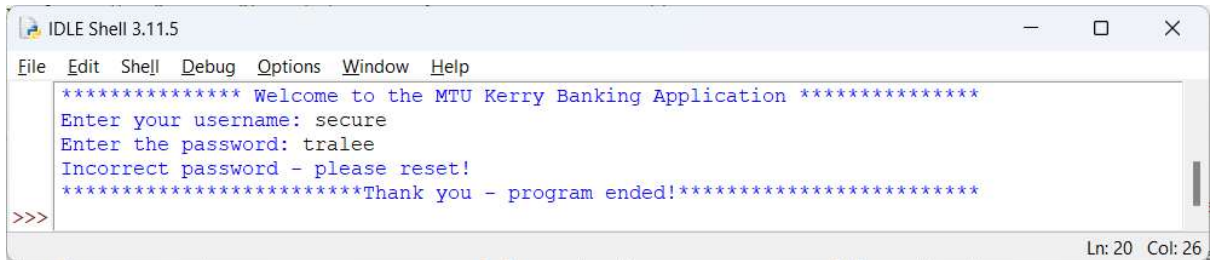
You should also account for the case where the user enters an invalid menu option.

All floating point values output from the program should be correct to two decimal places where relevant. A series of outputs are shown below. Your program should produce output of the same form (headings/prompt/formatting etc.) when it runs.

Include in your comments any assumptions you make and any suggestions to improve the application.

Please also refer to supplied Python documentation related to string functions and methods.
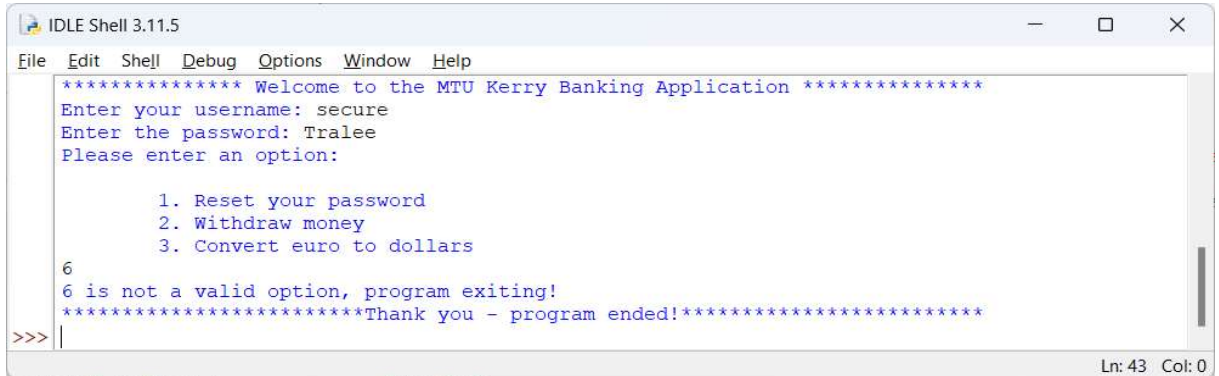
Sample output Screenshots

```
IDLE Shell 3.11.5                                                    —    □    ×
File   Edit   Shell   Debug   Options   Window   Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: tralee
Incorrect password - please reset!
************************Thank you - program ended!************************
>>>
                                                                    Ln: 20  Col: 26
```

```
IDLE Shell 3.11.5                                                    —    □    ×
File   Edit   Shell   Debug   Options   Window   Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: john
Enter the password: Tralee
Incorrect username - please try again!
************************Thank you - program ended!************************
>>>
                                                                    Ln: 30  Col: 0
```

```
IDLE Shell 3.11.5                                                    —    □    ×
File   Edit   Shell   Debug   Options   Window   Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:

        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
6
6 is not a valid option, program exiting!
************************Thank you - program ended!************************
>>>
                                                                    Ln: 43  Col: 0
```
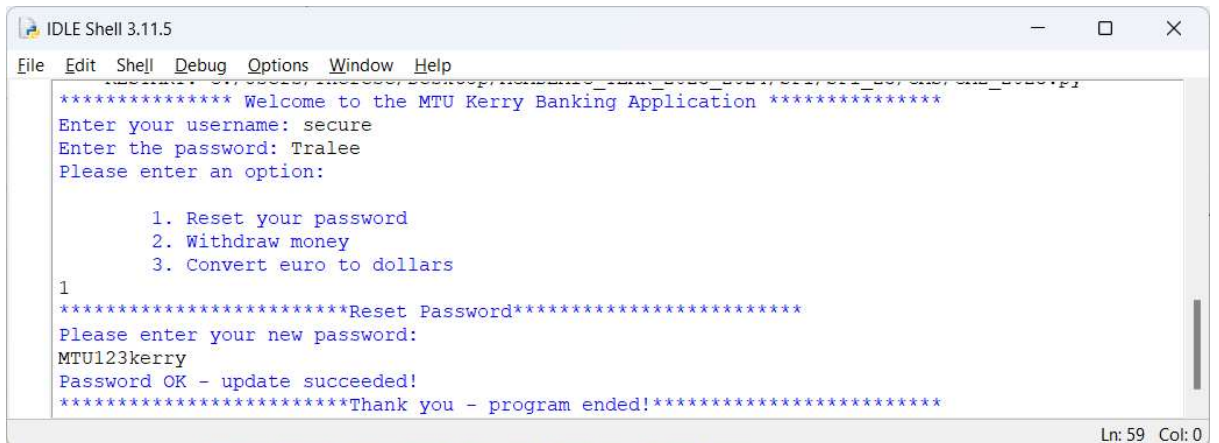
```
IDLE Shell 3.11.5                                                    —    □    ×
File   Edit   Shell   Debug   Options   Window   Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:

        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
1
************************Reset Password************************
Please enter your new password:
MTU123kerry
Password OK - update succeeded!
************************Thank you - program ended!************************
                                                                    Ln: 59  Col: 0
```

```
IDLE Shell 3.11.5                                                    —  □  ✕

File  Edit  Shell  Debug  Options  Window  Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:


        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
1
*************************Reset Password*************************
Please enter your new password:
mtu1234kerry
Password change rejected - program will exit
*************************Thank you - program ended!*************************
                                                            Ln: 75  Col: 0
```

```
IDLE Shell 3.11.5                                                    —  □  ✕

File  Edit  Shell  Debug  Options  Window  Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:


        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
2
------------------------Withdraw some money------------------------
Enter your current balance (in euro): 56.78
How much do you wish to withdraw?:56
 Withdrawal of €56.00 granted.
 Remaining balance is €0.78
*************************Thank you - program ended!*************************
>>>
                                                            Ln: 92  Col: 0
```

```
IDLE Shell 3.11.5                                                    —  □  ✕

File  Edit  Shell  Debug  Options  Window  Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:


        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
2
------------------------Withdraw some money------------------------
Enter your current balance (in euro): 56.78
How much do you wish to withdraw?:60
Sorry - insufficient funds for this withdrawal!
*************************Thank you - program ended!*************************
>>>
                                                            Ln: 108  Col: 0
```

```
IDLE Shell 3.11.5                                                    —  □  ✕

File  Edit  Shell  Debug  Options  Window  Help
*************** Welcome to the MTU Kerry Banking Application ***************
Enter your username: secure
Enter the password: Tralee
Please enter an option:


        1. Reset your password
        2. Withdraw money
        3. Convert euro to dollars
3
**********Convert euro to dollars**********
Enter the amount in euro: 67.89
For €67.89, you will receive $74.68
*************************Thank you - program ended!*************************
>>>
                                                            Ln: 123  Col: 0
```