INFS 1101 – Lab 13

Instructions

The lab consists of two parts:

* Part I consists of fundamental exercises: you need to complete, understand, and submit these exercises by midnight.
* Part II consists of additional exercises that you need to finish in the next **2 Days** and submit it.

For this lab, you will need to develop the flowchart and the code for each exercise. The flowchart should be developed with drawio, and the code should be developed in IDLE.

Make sure to include comments in each of your Python files indicating your name, student ID, course and section #, and name of the program.

Once you are done, put all your Python (.py) files and flowcharts in two zipped folders (**Lab14-part1.zip)** and (**Lab14-part2.zip)** , submit both parts in the same D2L dropbox.

Part I

## Exercise 1

Develop an algorithm named **NumberGuesser** that does the following:

* Ask the user for their name.
* The program should have 33 a static number to be guessed.
* Challenge the user to guess the number.
* Give feedback to the user after each guess: "Too high!", "Too low!", or "Correct!".
* Count and display the number of tries it takes for the user to guess correctly.
* If they guessed it in 1-3 tries, compliment them on their amazing guessing skills.
* If they guessed it in 4-6 tries, acknowledge their persistence.
* If they took more than 6 tries, encourage them to play again and do better.
* **Hint**: the variables of your algorithm are highlighted in purple in the sample run.

#### Sample run 1:

**What is your name? Sarah  
Hello, Sarah! I've chosen a number between 1 and 100. Try to guess it!  
Enter your guess: 25  
Too low!  
Enter your guess: 50  
Too high!  
Enter your guess: 40  
Too high!  
Enter your guess: 33  
Correct!   
Sarah, it took you 4 tries to guess the right number.  
Nice persistence, Sarah! You've got it after a few tries. Would you like to play again?**

#### Sample run 2:

**What is your name? David  
Hello, David! I've chosen a number between 1 and 100. Try to guess it!  
Enter your guess: 10  
Too low!  
Enter your guess: 60  
Too high!  
Enter your guess: 50  
Too high!  
Enter your guess: 40  
Too high!  
Enter your guess: 35  
Too high!  
Enter your guess: 30  
Too low!  
Enter your guess: 33  
Correct!   
David, it took you 7 tries to guess the right number.  
You can do better, David! Try playing again.**

A screenshot of a computer

Description automatically generated

## Exercise 2

We will enhance the previous algorithm, with the following updated:

* The static number is 140.
* You do not give the range of numbers to the user until after 2 failed attempts.
* After 4 failed attempts, you tell the user that the number is divisible by 20.
* After 6 failed attempts, you can inform the user that the number is between 125 and 155.
* **Hint**: the variables of your algorithm are highlighted in purple in the sample run.

#### Sample run 1:

**What is your name? Emma  
Hello, Emma! I've randomly chosen a number. Try to guess it!  
Enter your guess: 75  
Too low!  
Enter your guess: 360  
Too high!  
Hint: The number is between 100 and 200.  
Enter your guess: 115  
Too low!  
Enter your guess: 189  
Too high!  
Hint: The number I'm thinking of is divisible by 20.  
Enter your guess: 100  
Too low!  
Enter your guess: 160  
Too high!  
Hint: The number is between 125 and 155.  
Enter your guess: 130  
Too low!  
Enter your guess: 140  
Correct!  
Emma, it took you 8 tries to guess the right number.  
You can do better, David! Try playing again.**

A screenshot of a computer program

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Part II

## Exercise 3

We will develop an algorithm that will simulate an ATM, with the following into considerations:

* The ATM starts with a default balance for the user (fixed 1000).
* Users can only withdraw up to a certain amount per day (e.g., $500).
* The user is required to enter a PIN to access their account (fixed ‘1234’). You will keep asking the user to enter the PIN code as long as he/she has it wrong.
* Once logged in, the user is presented with a menu of options:
  1. Check balance (If they choose to check balance, display the current balance.)
  2. Deposit money (If they choose to deposit money, ask for the deposit amount, and update the balance.)
  3. Withdraw money (If they choose to withdraw money, check if they haven't exceeded the daily limit and have enough balance. Then, deduct the amount from their balance and update the daily withdrawal total.)
  4. Exit (If they choose to exit, end the session.)
* Users can only withdraw up to a certain amount per day (e.g., $500).
* **Hint**: the variables of your algorithm are highlighted in purple in the sample run.

#### Sample run 1:

**Welcome to INFS1101 ATM!  
Please enter your 4-digit PIN: 5678  
Incorrect PIN. Try again.  
Please enter your 4-digit PIN: 4587  
Incorrect PIN. Try again.  
Please enter your 4-digit PIN: 1789  
Incorrect PIN. Try again.  
Please enter your 4-digit PIN: 1234  
Access granted!**

**Main Menu:  
1. Check Balance  
2. Deposit Money  
3. Withdraw Money  
4. Exit  
Select an option: 1  
Your current balance is: QAR1000**

**Main Menu:  
1. Check Balance  
2. Deposit Money  
3. Withdraw Money  
4. Exit  
Select an option: 2  
Enter deposit amount: 200  
Successfully deposited QAR200. New balance: QAR1200**

**Main Menu:  
1. Check Balance  
2. Deposit Money  
3. Withdraw Money  
4. Exit  
Select an option: 3  
Enter withdrawal amount: 300  
Successfully withdrew QAR300. New balance: QAR1000  
1200 – 300 = 900**

**Main Menu:  
1. Check Balance  
2. Deposit Money  
3. Withdraw Money  
4. Exit  
Select an option: 3  
Enter withdrawal amount: 400  
Sorry! You can only withdraw up to QAR500 per day.**

**Main Menu:  
1. Check Balance  
2. Deposit Money  
3. Withdraw Money  
4. Exit  
Select an option: 4  
Thank you for using INFS1101 ATM! Goodbye!**

