Assignment 2 – Vending Machine

Goals

- Write a program that calculates the amount of change to be returned from a vending machine using Harry Potter currency.
- Work with numeric calculations.
- Work with basic conditional statements (**`if/elif/else`**).

Requirements

- Create a new Python file for this assignment.
- Your new file must begin with comments in the following format (replace the name and email with your actual information and write text for the description):

```
# Name, USC email
# ITP 115, Spring 2020
# Assignment 2
# Description:
# This program creates a harry potter vending machine.
# It determines change and gives a discount.
```

Harry Potter Vending Machine

In the wizarding world of Harry Potter, the currency system is not based off dollars and cents, but instead 3 different coins: knuts, sickles, and galleons. You will be writing a program that simulates the amount of change that is dispensed from a vending machine using this currency system based on the following requirements:

- The conversion values for these coins in knuts are as follows:
  - **1 knut = 1 knut**
  - **1 sickle = 29 knuts**
  - **1 galleon = 493 knuts**
- This vending machine dispenses 4 different items. The items in the vending machine and their costs are as follows:
  a) **Butterbeer: 58 knuts**
  b) **Quill: 10 knuts**
  c) **The Daily Prophet: 7 knuts**
  d) **Book of Spells: 400 knuts**
- You must display these options to the user and allow them to select one of these 4 choices.

- After selecting an item, ask the user if they are willing to share their purchase on Instagram. If so, they will receive a 5 knut discount, and then use that number to determine the discounted price of the selected item.
- Since items in the vending machine cost less than 493 knuts, only 1 galleon (worth 493 knuts) will be accepted to pay for the item. You must determine the change that will be dispensed in sickles and knuts.
    - Use division and modulus operators to figure out the change.
- You must dispense change in the largest possible units. Include the amount of change being calculated in your output. For example, if an item costs 423 knuts, you have to find change for 70 knuts. You may not simply return 70 knuts; it should be 2 sickles, and 12 knuts.
- Do not hard code in the values for the change for each item. You must use arithmetic operations to determine the correct change.
- **Important:** You code must handle the follow user input errors:
    - CapitALizaTioN: The program must allow the user to enter either upper or lower case strings (e.g. either **Y** or **y**)
    - Invalid menu choice: If the user enters a choice other the options provided (e.g. **a, b, c,** or **d**), your program should tell them they have entered incorrectly. Since we have not covered how to repeat code yet, it is acceptable to tell the user they have been assigned a default choice (i.e. just pick an option for them)
- Be sure to comment your code. This means that there should be comments throughout your code. Generally, a comment for every section of code explaining what it does. Points will be deducted for not having comments.
- Follow coding con

Optional (Extra Credit, maximum 3 points)

- Revise the vending machine so that it can accept more than one galleon
    - The user would be able to enter any amount of each of the coins, and the proper change should still be returned.
    - You may adjust the prices of the items in the vending machine, or add more items.

Sample Output 1

```
Please select an item from the vending machine:
      a) Butterbeer: 58 knuts
      b) Quill: 10 knuts
      c) The Daily Prophet: 7 knuts
      d) Book of Spells: 400 knuts
> b
Will you share this on Instagram? (y/n): y
Thanks! You get 5 knuts off your purchase

You bought a Quill for 10 knuts (with coupon of 5 knuts) and paid with one
galleon.
Here is your change (488 knuts):
Sickles: 16
Knuts: 24
```

Sample Output 2

```
Please select an item from the vending machine:
      a) Butterbeer: 58 knuts
      b) Quill: 10 knuts
      c) The Daily Prophet: 7 knuts
      d) Book of Spells: 400 knuts
> d
Will you share this on Instagram? (y/n): N

You bought a Book of Spells for 400 knuts (with coupon of 0 knuts) and paid
with one galleon.
Here is your change (93 knuts):
Sickles: 3
Knuts: 6
```

Sample Output 3

```
Please select an item from the vending machine:
      a) Butterbeer: 58 knuts
      b) Quill: 10 knuts
      c) The Daily Prophet: 7 knuts
      d) Book of Spells: 400 knuts
```

```
> x
You have entered an invalid option. You will be given a Butterbeer for 58
knuts.
Will you share this on Instagram? (y/n): Maybe
You have entered an invalid option. No coupon will be used

You bought a Butterbeer for 58 knuts (with coupon of 0 knuts) and paid with
one galleon.
Here is your change (435 knuts):
Sickles: 15
Knuts: 0
```

Deliverables and Submission Instructions

- Create a folder on your computer called **`ITP115_A2_`*`LastName_FirstName`*** (replace *LastName* with your last/family name and FirstName with your first name).
- Inside the folder, put your python source code.
- Compress the folder (make a zip file). This cannot be done within PyCharm. Find the folder on your computer and compress it.
  a. Windows*:*
     1. Using File Explorer, select your lab file
     2. Right click
     3. Send to ->
     4. Compressed (zipped) folder
  b. Mac OSX:
     1. Using Finder, select your lab file
     2. Right click
     3. Compress "*FileName*"
- Upload the zip file to your Blackboard section:
  1. On Blackboard, click on the Assignments item in the course menu on the left.
  2. Click on the specific item for this assignment (starts with A and a number).
  3. Click on the Browse My Computer button and select your zip file.
  4. Click the Submit button.

Grading

Item	Points
Menu	4
Error checking	5
User input	5
Math operations	5
Comments, proper submission	1
Total*	**20**

** Points will be deducted for poor code style, lack of error checking, improper submission.*