CFG-FULL STACK-1
JUNE 17, 2022
HOMEWORK WEEK 3
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TASK 1 (Conditional flow)

Question 1

Create a program that tells you whether or not you need an umbrella when you leave the house.

The program should:

1. Ask you if it is raining using input()

2. If the input is 'y', it should output 'Take an umbrella'

3. If the input is 'n', it should output 'You don't need an umbrella'

ANSWER:

```
while True:
    try:
        user_input = input("Is it raining? Please type Y for Yes, N for No or X for Exit (Y/N/X): ")
        user_input = user_input.upper()
        if user_input == 'Y':
            print("Take an umbrella")
        elif user_input == 'N':
            print("You don't need an umbrella")
        else:
            raise valueError
        break
    except valueError:
        print("Please only Enter Y, N or X; Which represents Yes, No, and Exit in respective order")
```

Question 2

I'm on holiday and want to hire a boat. The boat hire costs £20 + a refundable £5 deposit. I've written a program to check that I can afford the cost, but something doesn't seem right.

Have a look at my program and work out what I've done wrong

```
my_money = input('How much money do you have? ') boatcost=20+5

if my_money < boat_cost:

        print('You can afford the boat hire')

else :

        print('You cannot afford the board hire'
```

ANSWER:

```
while True:
    try:
        my_money = input("How much money do you have? (Enter numerical value or X to exit): ")
        if my_money == 'X' or my_money == 'x' :
            print("Exiting program!")
            break
        else:
            my_money = float(my_money)
        refundable_cost = 5
        boat_cost = 20 + refundable_cost

        if my_money > boat_cost:
            print("You can afford the boat hire")
        else:
            print("You cannot afford the boat hire")
        break
    except ValueError:
        print("Please only enter numerical values!")
        continue
```

Question 3

Your friend works for an antique book shop that sells books between **1800** and **1950** and wants to quickly categorise books by the century and decade that they were written. Write a program that takes a year (e.g. 1872) and outputs the century and decade (e.g. "Eighteenth Century, Seventies")

ANSWER:

```
while True:
    try:
        book_year = input("What year was the book written? (Enter the value from 1800 to 1950, or X to exit the program):")
        if book_year == 'X' or book_year == 'x':
            print("Exiting the program!")
            break
        else:
            book_year = int(book_year)

        if 1800 < book_year < 1950:
            century = "Eighteenth Cantury"
        elif 1900 < book_year < 1950:
            century = "Nineteenth Century"
        else:
            print("Please only enter a value within 1800 to 1950!")
            continue
        tenths = book_year % 1800
        if tenths > 100:
            tenths -= 100
        if 90 < tenths < 100:
            decade = "Nineties"
        elif 80 < tenths < 90:
            decade = "Eighties"
        elif 70 < tenths < 80:
            decade = "Seventies"
        elif 60 < tenths < 70:
            decade = "Sixties"
        elif 50 < tenths < 60:
            decade = "Fifties"
        elif 40 < tenths < 50:
            decade = "Forties"
        elif 30 < tenths < 40:
            decade = "Thirties"
        elif 20 < tenths < 30:
            decade = "Twenties"
        elif 10 < tenths < 20:
            decade = "Second Decade"
        elif 0 < tenths < 10:
            decade = "First Decade"
        print(f"The book was written in the {decade} of the {century} Century. ")
        break
    except ValueError:
        print("Please only enter numerical values between 1800 to 1950!")
        continue
```

TASK 2 (Lists and Dictionaries)

Question 1

I have a list of things I need to buy from my supermarket of choice.

```
shopping_list = [
                "oranges",
                "cat food",
                 "sponge cake",
                 "long-grain rice",
                 "cheese board",
                ]
                print(shopping_list[1])
```

I want to know what the first thing I need to buy is. However, when I run the program it shows me a different answer to what I was expecting? What is the mistake? How doI fix it.

ANSWER:

Just do : print(shopping_list[0]) to show the first item of the given shopping list or

```
shopping_list = [
      "oranges",
      "cat food",
      "sponge cake",
      "long-grain rice",
      "cheese board",
]
print("The shopping list : ", shopping_list)

first_item_of_shopping_list = shopping_list[::len(shopping_list)-1]
print ("The first and last things to buy on the shopping list are : " +  str(first_item_of_shopping_list))
```

Question 2

I'm setting up my own market stall to sell chocolates. I need a basic till to check the prices of different chocolates that I sell. I've started the program and included the chocolates and their prices. Finish the program by **asking the user to input an item and then output its price**.

chocolates = { 'white': 1.50, 'milk': 1.20, 'dark': 1.80, 'vegan': 2.00, }

ANSWER:

```
chocolates = {
'white': 1.50,
'milk': 1.20,
'dark': 1.80,
'vegan': 2.00,
}

item = input('Please input an item from this choices (white, milk, dark, vegan) :')

keys_list = list(chocolates)
if item in keys_list:
    print(chocolates[item])
else:
    print('Your choice is not available')
```

Question 3

Write a program that simulates a lottery. The program should have a list of seven numbers that represent a lottery ticket. It should then generate seven random numbers. After comparing the two sets of numbers, the program should output a prize based on the number of matches:

- £20 for three matching numbers
- £40 for four matching numbers
- £100 for five matching numbers
- £10000 for six matching numbers
- £1000000 for seven matching numbers

ANSWEr:

```
import random
my_number = [1,2,7,8,39,44, 45]
winning_number =[]
price = ['£20','£40','£100','£10,000','£1,000,000']

price_index =[3,4,5,6,7]
winning_number=random.sample(range(1, 45), 7)
winning_number.sort()
new_list = list(set(my_number).intersection(winning_number))

i = len(new_list)
    print('You got ',i,' number/s')

if i > 2:
    index1 =price_index.index(i)
    print('You won ',price[index1])
else:
    print('Your price is £0')
```

TASK 3 (Read and Write files)

Question 1

You're having coffee/tea/beverage of your choice with a friend that is learning to program in Python. They're curious about why they would use pip. Explain what pip is and one benefit of using pip.

ANSWER:

What is PIP?
But first let's define PACKAGE?

-A package contains all the files you need for a module.

Modules

-are Python code libraries you can include in your project.

PIP

-That means it's a tool that allows you to install and manage libraries and dependencies that aren't distributed as part of the standard library.

- Many Python projects use pip, which makes it an essential tool for every python user.

Question 2

This program should save my data to a file, but it doesn't work when I run it. What is the problem and how do I fix it?

poem = 'I like Python and I am not very good at poems' with open('poem.txt', 'r')

as poem_file: poem_file.write(poem)

```
poem = 'I like Python and I am not very good at poems'
with open('poem.txt', 'r') as poem_file:  => change r (read) to w (write)
    poem_file.write(poem)
```

FileNotFoundError: [Errno 2] No such file or directory: 'poem.txt'

ANSWER:

create a text file with filename poem.txt

```
poem = 'I like Python and I am not very good at poems'
with open('poem.txt', 'w')
    poem_file.write(poem)
```

Question 3

Here is a snippet of Elton John's song "I'm Still Standing"

You could never know what it's like

Your blood like winter freezes just like ice

And there's a cold lonely light that shines from you

You'll wind up like the wreck you hide behind that mask you use

And did you think this fool could never win?

Well look at me, I'm coming back again

I got a taste of love in a simple way

And if you need to know while I'm still standing, you just fade away

Don't you know I'm still standing better than I ever did Looking like a true survivor, feeling like a little kid

I'm still standing after all this time

Picking up the pieces of my life without you on my mind

I'm still standing (Yeah, yeah, yeah) I'm still standing (Yeah, yeah, yeah)

Tasks:

1. Write the lyrics to a new file called song.txt
2. Check that a file has been created successfully.
3. The read lines from this file and print out ONLY those lines that have a word ‘still’ in them.

ANSWER:

```
with open ('song.txt', 'w+') as myfile:
    myfile.write(song)
    myfile.close()

myLine = []                     # The list where we will store results.
linenum = 0
substr = "still".lower()          # Substring to search for.
with open ('song.txt', 'rt') as myfile:
    for line in myfile:
        linenum += 1
        if line.lower().find(substr) != -1:    # if case-insensitive match,
            myLine.append("Line " + str(linenum) + ": " + line.rstrip('\n'))
for still in myLine:
    print(still)
```

TASK 4 (API)

Question 1

In this session you used the Pokémon API to retrieve a single Pokémon.

I want a program that can retrieve multiple Pokémon and save their names and moves to a file.

Use a list to store about 6 Pokémon IDs. Then in a for loop call the API to retrieve the data for each Pokémon. Save their names and moves into a file called 'pokemon.txt'

ANSWER:

```
import random
import requests

def choose_pokemon():
    random_numbers = []
    for number in range(6):
        random_numbers.append(random.randint(1, 151))
    return random_numbers

pokemon_names = choose_pokemon()

def pokemons_to_choose():

    the_list_of_names = []
    for i in pokemon_names:
        url = 'https://pokeapi.co/api/v2/pokemon/{}/'.format(i)
        response = requests.get(url)
        pokemon = response.json()
        pokemons_charasteristics = {
            'id': pokemon['id'],
            'name': pokemon['name'],
            'height': pokemon['height'],
            'weight': pokemon['weight'],
            'base_experience': pokemon['base_experience']
        }
        the_list_of_names.append(pokemons_charasteristics)

    return the_list_of_names

print('You have drawn these six pokemons. You can see theirs ids and names: ')
for pokemon in pokemons_to_choose():
   print("name: {}, id: {}, weight: {}, base_experience {}, height: {}".format(pokemon['name'], pokemon['id'], pokemon['weight'],
pokemon['base_experience'], pokemon['height']))
```

OPEN FILE:

```
pokemonlist = open('pokemon.txt', 'w')
for x in range(len(list)):
    pokemonlist.write(list[x] + '\n')
pokemonlist.close()
```

Question 2 (optional)

Here is a link to a really cool API: https://opentdb.com/ Answer the following questions:

- What is the name of this API?

ANSWER:

-OPEN TRIVIA DATABASE

- What does it do?

ANSWER:

-FREE API, Question and Answer type of API that generates Q&A on multiple choice type on different fields like SCIENCE stuffs.

- Example URL to make a call to this API?
-https://opentdb.com/api.php?amount=10

- Example output?
- Different question and answers

ID	Category	Type	Difficulty	Question / Statement	Created By
6591	Entertainment: Comics	Multiple Choice	Easy	Which one of these superhero teams appears in the Invincible comics?	Athaswind
6590	Entertainment: Comics	Multiple Choice	Easy	What's the race of Invincible's father?	Athaswind
6589	Entertainment: Comics	Multiple Choice	Medium	In Black Hammer, what dimension does Colonel Weird travel through?	Athaswind
6588	Entertainment: Comics	Multiple Choice	Easy	In Black Hammer, what city did the heroes save from the Anti-God?	Athaswind
6587	Entertainment: Comics	Multiple Choice	Hard	Which pulp hero made appearances in Hellboy and BPRD comics before getting his own spin-off?	Athaswind