HOMEWORK WEEK 3

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Attachments: 20220318 HW WK3 Kristina Mituzaite.py

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'

Solution

Added while loop to avoid invalid answers

```
rain = input('Is it raining today? ').lower().strip()

while True:
    if rain == "y":
        print('Take an umbrella')
        break
    elif rain == "n":
        print("You dont need an umbrella")
        break
    else:
        print('Please answer only with "y" for yes or "n" for no')
        rain = input('Is it raining today? ').lower().strip()
```

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?') boat

cost = 20 + 5


if my_money < boat_cost:
        print('You can afford the boat hire')
else :
        print('You cannot afford the board hire'
```

Solution

```
my_money = input('How much money do you have? ')
boat_cost = 20 + 5
if int(my_money) > boat_cost:
    print('You can afford the boat hire')
else :
    print('You cannot afford the board hire')
```

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")

Solution

```
book_year = input("Enter the publishing year: ")
century = book_year[:2]
decade = int(book_year[2:])
res_cent = ''
res_dec =''

century_mapping = {
    1800: "nineteenth century",
    1900: "twentieth century"}

decade_mapping = {
    00: "first",
    10: "tens",
    20: "twenties",
    30: "thirdies",
    40: "fourties",
    50: "fifties",
    70: "seventies",
    80: "eighties",
    90: "nineties"}

if int(book_year) >= 1800 and int(book_year) <= 1950:
#    print('book year is between 1800 & 1950') #testing
    if century == "18":
        res_cent = century_mapping[1800]
    else: # century == "19": #because there are only two options
        res_cent = century_mapping[1900]

    for key in decade_mapping:
        if decade >= key:
            res_dec= decade_mapping[key]
    print (res_cent, ', ', res_dec)
else:
    print('book year must be between 1800 & 1950')
```

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 do I fix it.

Solution

```
shopping_list = ["oranges", "cat food", "sponge cake", "long-grain rice", "cheese
board",]
print(shopping_list[0]) #or
print(shopping_list[:1])
# since the index starts at 0, ist he first item at 0 or everything before 1
```

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,
}
```

Solution

```
available_types = list(chocolates.keys())

sold_choco = input("What type of chocolate are you buying? ").lower().strip()
if sold_choco in chocolates.keys():
    print(chocolates[sold_choco])

else:
    print("Please select one of our available chocolates
{}".format(available_types))
```

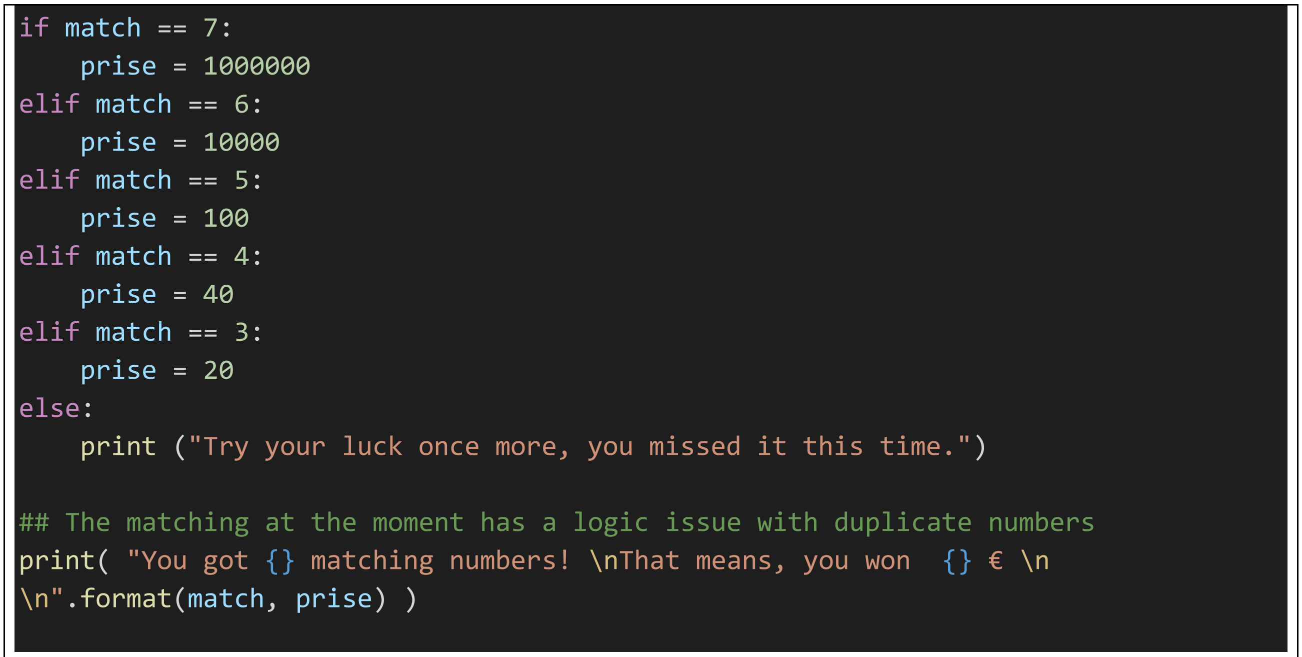
Question 3

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

Solution
*there is a logic issue in the matching because of duplicate values

```
import random as rd

user_numbers = []
count = 0 # max7
user_selection = int(input("Select 7 times a digit 1-9: "))
#print(type(user_numbers), type(count), type(user_selection))
print(user_selection)

while count < 7:
    user_numbers.append(int(user_selection))
    if int(user_selection) >0 and int(user_selection) < 10 :
        count += 1
        user_selection = input("Select 7 times a digit 1-9: ")
        #print("\n  You selected {} number(s), they are as follows{} and {}  \n
".format(count,user_numbers, user_selection))
    else:
        print("Sorry, you made an incorrect entry. Make sure your number is
between 1 and 9 and start again")
        quit()



print("\nYour 7 selected numbers are: {} \n".format(user_numbers))
## for testing
## user_numbers = [1, 5, 6, 7, 9, 8, 1]

winning_numbers =[ rd.randint(1,9) for i in range (0,7)] #list
print ('The winning numbers are {}! \n \n'.format(winning_numbers))
match =0
for number in user_numbers:
    if number in winning_numbers:
        match +=1

prise = 0
```



```
if match == 7:
    prise = 1000000
elif match == 6:
    prise = 10000
elif match == 5:
    prise = 100
elif match == 4:
    prise = 40
elif match == 3:
    prise = 20
else:
    print ("Try your luck once more, you missed it this time.")

## The matching at the moment has a logic issue with duplicate numbers
print( "You got {} matching numbers! \nThat means, you won  {} € \n
\n".format(match, prise) )
```

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

Pip manages the packages for Python. You can expand your python libraries with external modules that needs to be installed (or afterwards uninstalled). Pip is a tool to do that like a Google play store for python.

With "pip list" you can see what packages you have currently on your machine and could use in your code.

You can find all the available packaged modules on https://pypi.org/search/?q=&o= and search for topics, frameworks, license or similar

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)
```

Solution

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

Solution

```python
with open("song.txt", 'w') as songtext:
    songtext.write(lyrics)

###check if new file exists
import os.path

creation_test = os.path.exists("song.txt")
print(creation_test)

###read lines that have a word ‘still’
still_lines = []
with open('song.txt', 'r') as songtext2:
    lines =songtext2.readlines()
    for line in lines:
        if 'still' in line:
            still_lines.append(line)

    print(still_lines)
```

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'

Solution
*added emptylines and “name” & “moves” for readability

```
import requests
from pprint import pprint

pokemon_gang= [1,5 ,9,15,30,500]

with open('pokemon.txt', 'w') as pokedoc:

    for pokemon_number in pokemon_gang:
        url= 'https://pokeapi.co/api/v2/pokemon/{}/'.format(pokemon_number)
        response = requests.get(url)
        # print(response) #API call works
        pokemon =response.json()

        pokedoc.writelines( 'name: '+pokemon["name"] + '\nmoves: '   )

        moves=pokemon["moves"]
        for move in moves:
            pokedoc.writelines(move['move']['name'])

        pokedoc.write('\n\n')
```

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?
- What does it do?
- Example URL to make a call to this API?
- Example output?

Answer
The name is: open trivia database

It provides verified questions for tests
Example url:
https://opentdb.com/api.php?amount=10&category=10&difficulty=easy&type=multiple

Example output:# reduced to question & correct answer

```
import requests
from pprint import pprint as pp

url=
"https://opentdb.com/api.php?amount=10&category=10&difficulty=easy&type=multiple"
response = requests.get(url)
print(response)
book_test = (response.json())

print(type( book_test['results']))
question_pool=book_test['results']
for question in question_pool:
    print(question['question'])
    print(question['correct_answer']+ "\n")
```