InterActief Python Session

3 difficulty levels

level 1 , level 2 , level 3

Ex 1

`level 1`
Write a script that converts a given number into roman numerals. For example, if
user enters 7 he should get VII, for 9 he should get IX. (For your reference I-1,
V-5, X-10, L-50, C-100, D-500, M-1000). Take input from the user and print the
appropriate roman numeral on the screen.

In [ ]:
```
## code here
```

Ex 2

level 2

Write a program to implement the shift cipher. The user inputs a string and a shift value. The script should shift each letter by the shift value and print the coded text. For example if the user enters 'This is a string with a z', and a shift value of 3, it should return 'Wklv lv d vwulqj zlwk d c'. Assume user inputs only small letters without any numbers. Hints: ASCII numbers for small letters starts from 97 to 122.

In [ ]:
```
## code here
```

Ex 3

level 3

Go to this website https://www.nasa.gov/topics/earth/images/index.html (https://www.nasa.gov/topics/earth/images/index.html) and download all the wallpapers available on the page.
Libraries required: Beautiful Soup 4 (bs4)

pip install beautifulsoup4

In [ ]:
```
## code here
```

Ex 4

`level 2`

Write a program which accepts a sequence of comma separated 4 digit binary numbers as its input and then check whether they are divisible by 5 or not. The numbers that are divisible by 5 are to be printed in a comma separated sequence.

Example:
0100,0011,1010,1001
Then the output should be:
1010
Notes: Assume the data is input by console.

In [ ]:
```
## code here
```

Ex 5

`level 2`

Use a list comprehension to square each odd number in a list. The list is input by a sequence of comma-separated numbers.
Suppose the following input is supplied to the program:
1,2,3,4,5,6,7,8,9
Then, the output should be:
1,3,5,7,9

In [ ]:
```
## code here
```

Ex 6 Hangman Project

`level 3`
link - http://norvig.com/ngrams/sowpods.txt (http://norvig.com/ngrams/sowpods.txt)

When the game starts ask the user to press 'Y' to play the game or 'N' to quit the game.
If 'y' then pick a random word from the SOWPODS text file whose link is given above.
Now ask the user to guess the word. The user must be given maximum 6 attempts.

Bonus

Keep track of the letters guessed by the user. If the user guesses a letter they have already guessed don't penalize them.

In [ ]:
```
## code here
```

Ex 7 Password generator

`level 1`
Write a code that asks user to generate a new password and then checks if that password meets the requirements which are

1. Should have atleast 20 characters
2. Should have atleat 1 digit
3. Should have atleast 1 special character
4. Should not start with a special character or a number. Only a letter.
   Give user three tries. If unable to generate an appropriate password in 3 tries then print a failure message.

In [ ]:
```
## code here
```

Ex 8 Let's play Mahjong

`level 3`

First write a code to print a 6 x 6 grid as follows.

```
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
```

Now use the random.choice() to pick random letters to attach to each to the first 18 members of the grid.
Then use this sub-random pool to attach letters to randomly attach letters to the next 18 members.
Thus each letter at least appears twice in the grid.
Now start the game and ask the user to guess the first letter. User inputs guess as row no. followed by column no. with a komma in between
For eg. User choice 1 -> 0,3
Show him the choice by replacing the 'I' there with the letter 'behind' it. Then ask for second choice
User choice 2 -> 1, 4
Show him the choice again by replacing the 'I' there with the letter 'behind' it.
If both letters are same then user scores a point. Increment score variable.
Also keep both letters face-up.
If wrongly guessed, then replace both slots with 'I' again and continue.
Player can get infinite tries.

In [ ]:
```
## code here
```

Ex 9

`level 2`

Find the prime factors of any number entered by the user.
Display should be of the form: 36=223*3

In [ ]:
```
## code here
```

Ex 10 Horcruxes

`level 2`

Part 1 the objects

A total of 7 horcruxes were destroyed in the Harry Potter universe. They were destroyed in a specific order. Firstly find that order and then write a game code where the code picks a random horcrux from the list of 7 and the user must guess which hrocrux comes before AND after.
For example.
Random chosen horcrux: cup
user answers...
Horcrux destroyed before: locket
Horcrux destroyed after: diadem

You will have to come up with a way to deal with the before and the after of the first and last horcruxes. How you do that is upto you.

Part 2 the destroyers

Only proceed to stage 2 if user wins the round 1 or stage 1.
In stage 2, proceed to show ask the user who destroyed the chosen horcrux.
For example if the chosen horcrus above is locket then user input should be Ronald Weasely.

If user doesn't get this game right then tell use to develop better reading habits. LOL.

In [ ]:
```
## code here
```

Ex 11 Coffee machine code

`level 3`
Write a code that allows the user to choose from
Sugar - Low , Medium, High | (0.2, 0.4, 0.6)
Milk - None, Medium, High | (0.2, 0.4, 0.6)
Quality - low , high | (if chosen +0.45 if not then 0)
Strength - Low, Medium, High | (0.1, 0.3, 0.4)
Coffee - Black, with milk, with sugar, with milk and sugar | (0.1, 0.3, 0.3, 0.6)
Drink - Cappuchino, Melange, Latte | (no different costs. cost would be sum of required elements)

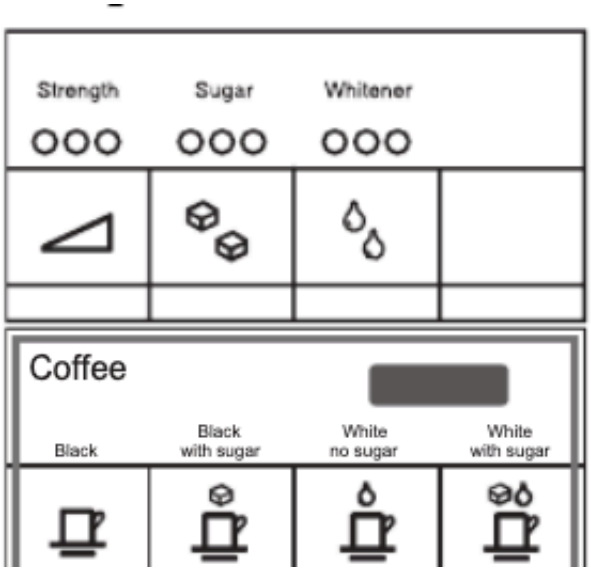
Remember: The machine gives priority to the drink over the components. For example on our regular coffee machine, a user may choose Milk (High) and then Coffee (Black) ; in such a case the user gets served Black Coffee without milk since the machine disregards the milk option. Also the coffee machine always has default settings for the components (Sugar, Milk, Strength).

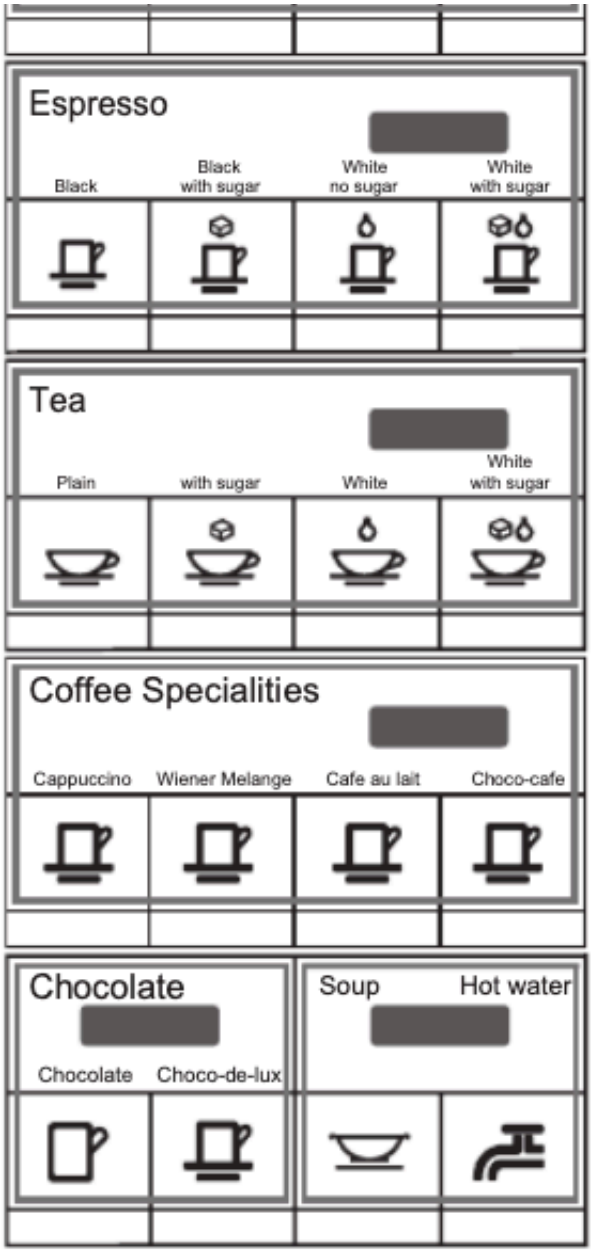
The user will type in a choice such as... Milk High, Strength Low, Drink Cappuchino.
(yes input will strictly be in this format)
However user doesn't have to give all a choice all options. It your job to catch and split(hint) the input and retrieve the right options.

Once you retrieve user choice, calculate the total cost and print that

In [ ]:
```
## code here
```

incase you want to challenge yourself more you can write code to simulate the complete machine





In [ ]:
```
## code here
```

Ex 12

level 1

Write a code to print prime numbers upto n, where n is entered by the user. n<1000.

In [ ]:
```
## code here
```

Ex 13 The Prisoner's dilemma

`level 2`

watch this video: https://www.youtube.com/watch?v=t9Lo2fgxWHw (https://www.youtube.com/watch?v=t9Lo2fgxWHw)

Now write a code where the use plays Ms. Red and the computer (random function) plays Mr. Blue.

User may input - cooperate or deflect.

Random function may choose between those 2 for the computer.

Based on the final pair of choices, print the score.

For example

User input -> Cooperate

Computer choice -> Defect

Final Output -> Ms. Red 3 years, Mr. Blue 0 years.

In [ ]:
```
## code here
```

Ex 14 Capitalize!

`level 1`

You are asked to ensure that the first and last names of people begin with a capital letter in their passports.

For example, alison heck should be capitalised correctly as Alison Heck.

Given a full name, your task is to capitalize the name appropriately.

In [ ]:
```
## code here
```