Answers for Lab 1&&2 - Hongyu (Ray)

July 24, 2019

1 Lab 1

1.1 Calculations

[1]:
```
var1, var2, var3 = map(int, input('Please input three numbers seperated by␣
 ↪commas:').split(','))
print('The numbers you just input are:' ,var1, var2, var3)
print('The average of these numbers is:', (var1 + var2 + var3) / 3)
```

```
Please input three numbers seperated by commas:123,-123,3312
The numbers you just input are: 123 -123 3312
The average of these numbers is: 1104.0
```

1.2 A Parrot

[2]:
```
while True:
    entered = input('Enter anything: ')
    if 'exit' == entered:
        break;
    print(entered)
```

```
Enter anything: hhhh
hhhh
Enter anything: xixixi
xixixi
Enter anything: wacacaca
wacacaca
Enter anything: exit
```

1.3 Make it double

[3]:
```
print(int(input('Enter a number to double: ')) * 2)
```

```
Enter a number to double: 43
86
```

1.4 Printing and Input v1+v2

[4]:
```
name = input('Hello. What is your name?\n--')
age  = int(input('Hello,{0}. My name is Robert. How old are you?\n--'.
 ↪format(name)))

if age < 25:
    print('I\'m 25 years old, so I\'m {0} years older than you.'.format(25-age))
elif age > 25:
    print('I\'m 25 years old, so I\'m {0} years yonger than you.'.
 ↪format(age-25))
else:
    print('I\'m also 25 years old.')

print('\nData registered:\nName: {0}\nAge: {1}'.format(name, age))
```

```
Hello. What is your name?
--Ray
Hello,Ray. My name is Robert. How old are you?
--21
I'm 25 years old, so I'm 4 years older than you.

Data registered:
Name: Ray
Age: 21
```

1.5 A welcome message

[5]:
```
name  = input('What is your name: ' )
land  = input('Where are you from: ')
feild = input('What do you study: ' )

print('''\nHello {}, I hope you had a nice travel from {}.
I am pretty sure that learning programming is useful in {}.'''.format(name,␣
 ↪land, feild))
```

```
What is your name: Ray
Where are you from: Earth
What do you study: Rocket Engineering

Hello Ray, I hope you had a nice travel from Earth.
I am pretty sure that learning programming is useful in Rocket Engineering.
```

---

2 Lab 2

2.1 A Bookstore

[6]:
```
book_num = int(input('Enter the number of books: '))
cost  = 24.95 * (1-0.4) * book_num + 3 + (book_num-1) * 0.75
print('The total cost of %d books is: %.3f Euro\'s' % (book_num, cost))
```

```
Enter the number of books: 6
The total cost of 6 books is: 96.570 Euro's
```

2.2 Odd or Even

[7]:
```
num = input('Enter a number: ')
if int(num) & 1:
    print('The number {} is odd'.format(num))
else:
    print('The number {} is even'.format(num))
```

```
Enter a number: 666
The number 666 is even
```

2.3 Parcel Delivery

[10]:
```
def check_weight(weight):
    if weight >= 0 and weight < 2:
        return "0-2"
    elif weight >= 2 and weight < 5:
        return "2-5"
    elif weight >= 5 and weight <= 10:
        return "5-10"

def calculate_postage(dest, weight):
    eu_postage = {
        "0-2" : 13.00,
        "2-5" : 19.50,
        "5-10": 25.00

    }
    wld_postage = {
        "0-2" : 24.50,
        "2-5" : 34.30,
        "5-10": 58.30
    }

    if dest.lower() == 'europe':
        return eu_postage[check_weight(weight)]
    if dest.lower() == 'world':
```

```
        return wld_postage[check_weight(weight)]

# -------- call functions -------- #
dest = input('Enter destination: ')
weight = float(input('Enter weight: '))

print('The cost is', calculate_postage(dest, weight), 'euro\'s')
```

```
Enter destination: eUropE
Enter weight: 3
The cost is 19.5 euro's
```

2.4 Simple Area Calculator

[11]:
```
def triangle():
    base   = float(input('Enter the base value: '))
    height = float(input('Enter the height value: '))
    return base * height / 2

def rectangle():
    length = float(input('Enter the lenght value: '))
    width  = float(input('Enter the width value: '))
    return length * width

def circle():
    from math import pi as pi
    radius = float(input('Enter the radius value: '))
    return pi * radius**2

calculator = {
    "triangle" : triangle,
    "rectangle": rectangle,
    "circle"   : circle
}

# -------- call functions -------- #
shape = input('Enter the shapes name: ').lower()
area  = calculator[shape]()
print('Area of this {} is {}.'.format(shape, area))
```

```
Enter the shapes name: CirclE
Enter the radius value: 2
Area of this circle is 12.566370614359172.
```

2.5 Flowchart to code

[12]:
```
max_val = int(input('Enter a number: '))

for num in range(max_val):
    if not(num % 2):
        print(num)
```

```
Enter a number: 9
0
2
4
6
8
```

2.6 Squares Table

[13]:
```
import random

def ask_and_check(r_num):
    ans = input('What is the square of {}:'.format(r_num))
    if ans == 'q' or ans == 'Exit':
        return 'quit'
    elif r_num**2 == int(ans):
        return 'right'
    else:
        return 'wrong'

# -------- call functions -------- #
switch = True

while switch:
    chances = 3
    r_num = random.randint(1,20)

    while chances > 0:
        result = ask_and_check(r_num)
        if result == 'quit':
            switch = False
            break
        elif result == 'right':
            print('Correct! Keep it up.')
            break
        elif result == 'wrong':
            chances -= 1
```

```
What is the square of 7:234
What is the square of 7:544
What is the square of 7:56
What is the square of 8:32
What is the square of 8:64
Correct! Keep it up.
What is the square of 17:289
Correct! Keep it up.
What is the square of 4:1
What is the square of 4:6
What is the square of 4:6
What is the square of 10:100
Correct! Keep it up.
What is the square of 7:q
```

2.7 Parents helping tool when buying games

[15]:
```
PEGI = {
    3 : '''PEGI 3
The content of games with a PEGI 3 rating is considered suitable for all age␣
 ↪groups. The game should not contain any sounds or pictures that are likely␣
 ↪to frighten young children. A very mild form of violence (in a comical␣
 ↪context or a childlike setting) is acceptable. No bad language should be␣
 ↪heard.''',

    7 : '''PEGI 7
Game content with scenes or sounds that can possibly frightening to younger␣
 ↪children should fall in this category. Very mild forms of violence (implied,␣
 ↪non-detailed, or non-realistic violence) are acceptable for a game with a␣
 ↪PEGI 7 rating.''',

    12: '''PEGI 12
Video games that show violence of a slightly more graphic nature towards␣
 ↪fantasy characters or non-realistic violence towards human-like characters␣
 ↪would fall in this age category. Sexual innuendo or sexual posturing can be␣
 ↪present, while any bad language in this category must be mild. Gambling as␣
 ↪it is normally carried out in real life in casinos or gambling halls can␣
 ↪also be present (e.g. card games that in real life would be played for␣
 ↪money).''',

    16: '''PEGI 16
This rating is applied once the depiction of violence (or sexual activity)␣
 ↪reaches a stage that looks the same as would be expected in real life. The␣
 ↪use of bad language in games with a PEGI 16 rating can be more extreme,␣
 ↪while games of chance, and the use of tobacco, alcohol or illegal drugs can␣
 ↪also be present.''',
```

```
    18: '''PEGI 18
The adult classification is applied when the level of violence reaches a stage␣
 ↪where it becomes a depiction of gross violence, apparently motiveless␣
 ↪killing, or violence towards defenceless characters. The glamorisation of␣
 ↪the use of illegal drugs and explicit sexual activity should also fall into␣
 ↪this age category. '''
}

age = int(input('Enter age for a game advice: '))
labels = []

for label,_ in PEGI.items():
    if age >= label:
        labels.append(label)
labels.sort(reverse=True)

print('According to PEGI, A player of the age 14 can play games with labels ',␣
 ↪end='')
for i in range(len(labels)):
    if i == len(labels)-1:
        print('and', end=' ')
    print(labels[i], end=' ')
print('\n*******\nGames labeled with', labels[0], ':\n', PEGI[labels[0]])
```

```
Enter age for a game advice: 14
According to PEGI, A player of the age 14 can play games with labels 12 7 and 3
*******
Games labeled with 12 :
 PEGI 12
Video games that show violence of a slightly more graphic nature towards fantasy
characters or non-realistic violence towards human-like characters would fall in
this age category. Sexual innuendo or sexual posturing can be present, while any
bad language in this category must be mild. Gambling as it is normally carried
out in real life in casinos or gambling halls can also be present (e.g. card
games that in real life would be played for money).
```