PLF Session 3 WORKSHEET FOR STUDENTS

UCLA, Econ 10P: Introduction to Python for Economists

Exercises

1. a) Write code that (i) asks a user to input a number, and (ii) prints the sign of the number (e.g., positive, negative, or zero). Example Output: "-1 is a negative number."

b) Same thing as in 1a),But update your code so that if the number is positive, tell whether the number is larger than 5 using a nested if...else... statement.

In [ ]:
```
print("Enter your number:")
x=input()
x = int(x)
if x < 0:
    print(str(x) + " is a negative number")
elif x == 0:
    print(str(x) + " is zero")
else:
    print(str(x) + " is a positive number")
```

In [3]:
```
print("Enter your number:")
x=input()
x = int(x)
if x < 0:
    print(str(x) + " is a negative number")
elif x == 0:
    print(str(x) + " is zero")
else:
    print(str(x) + " is a positive number")
    if x > 5:
        print(str(x) + " is larger than 5")
    else:
         print(str(x) + " is smaller or equal to 5")
```

```
Enter your number:
34
34 is a positive number
34 is larger than 5
```

2. Sum the integers from 0 to 5 using a `for` loop. Print your result.

In [1]:
```
sum = 0
for i in range(0,6):
    sum +=i
print(sum)
```

```
15
```

3. Print odd number 1 to 9 using a `for` loop

In [8]:
```
for i in range(1,10):
    if i%2==1:
        print(i)
```

```
1
3
5
7
9
```

10. Compute the monthly interest rate. Prompt the user to enter the initial deposit amount, the future value of deposit, and the duration of the deposit (in months). You can use the formula

$$FV = PV(1+r)^n$$

,

$$\frac{FV}{PV} = (1+r)^n$$

,

$$1 + r = (\frac{FV}{PV})^{\frac{1}{n}},$$

$$r = (\frac{FV}{PV})^{\frac{1}{n}} - 1,$$

where PV = present value of the initial deposit, r = monthly rate, and n = number of months. Output the result to the screen.

Note: You can use the function math.log(x, base). Remember to import math moudule

In [ ]:
```
import math
rate = 0
PV = 0
months = 0
FV = 0
print("Enter initial deposit amount:")
PV=input()
print("Enter the future value of deposit:")
FV =input()
print("Enter the number of months your initial deposit will be held:")
months=input()

rate = (float(FV)/float(PV))**(1/float(months))-1

print("The monthly interest rate is: " + str(rate))
```

In [ ]:
```
import math
rate = 0
PV = 0
months = 0
FV = 0
print("Enter initial deposit amount:")
PV=input()
print("Enter the future value of deposit:")
FV =input()
print("Enter the number of months your initial deposit will be held:")
months=input()

rate = (float(FV)/float(PV))**(1/float(months))-1

print("The monthly interest rate is: " + str(rate))
```

```
Enter initial deposit amount:
```

1. Given a list of numbers [1, 2, 3, 4, 5, 6, 7]. Write a program to turn every item of a list into its square.
   Expected Output: [1, 4, 9, 16, 25, 36, 49]

In [6]:
```
# Solution 1
numbers = [1, 2, 3, 4, 5, 6, 7]
i=0
for i in range(len(numbers)):
    numbers[i]=numbers[i]**2
print(numbers)
```

```
[1, 4, 9, 16, 25, 36, 49]
```

2. Write code where you ask the user to create a list of 5 numbers. Write a program to find value 20 in the list, and if it is present, replace it with 200. Only update the first occurrence of an item.
   Inputted Array: [5,10, 15, 20 , 25] Expected Output: [5, 10, 15, 200, 25]

In [9]:
```
listNum = []
for values in range(5):
    print("Please input your number: ")
    val = input()
    if int(val)==20:
        listNum.append(200)
        continue
    listNum.append(val)

print(listNum)
```

```
Please input your number:

 5

Please input your number:

 20

Please input your number:

 300

Please input your number:

 4

Please input your number:

 5

['5', 200, '300', '4', '5']
```

3. Given a list list1 = [5, 20, 15, 20, 25, 50, 20], write a program to remove all occurrences of item 20. USE A WHILE LOOP
   Expected Output:[5, 15, 25, 50]

In [ ]:
```
# Solution 2
list1 = [5, 20, 15, 20, 25, 50, 20]

while 20 in list1:
    list1.remove(20)
print(list1)
```

5. Below are the two lists. Write a Python program to convert them into a dictionary in a way that item from list1 is the key and item from list2 is the value.
   keys = ['Ten', 'Twenty', 'Thirty']
   values = [10, 20, 30]
   Expected output: {'Ten': 10, 'Twenty': 20, 'Thirty': 30}

In [ ]:

```
# Solution 2
keys = ['Ten', 'Twenty', 'Thirty']
values = [10, 20, 30]

# empty dictionary
res_dict = {}

for i in range(len(keys)):
    res_dict.update({keys[i]: values[i]})
print(res_dict)
```