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# -*- coding: utf-8 -*-
"""
Spyder Editor
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Program: MBA 2nd yr
"""

"""
Question 1: Mean and Standard Deviation of numbers from 50 and 250 incremented by 10
"""
import statistics

n = list(range(50, 260, 10))
print(n)

print("mean of the range: ", statistics.mean(n))
print("Std Dev of the range: ", statistics.stdev(n))


"""
Question 2: Sum of numbers from 1 to 10 (by 1) each multiplied by the natural log of the numbers fr
"""
numbers = list(range(1,11,1))
print(numbers)

import numpy as np
logar = np.log(numbers)
print("The natural logarithm of numbers: ", logar)

result = np.multiply(numbers, logar)
print(result)

result_final = sum(result)
print("sum of the numbers multiplied with their natural log: ", result_final)


"""
Question 3: What is the sum of all the powers of 3**i for i in the range of 1 to 10?
(Hint: The best possible solution for this is to use np.power(3,x) where x is a vector or list of r
This function will raise 3 to all the powers. You can also use 3.**x where again x is a range of va
but for ** x needs to be generated by np.arange.)
"""
import numpy as np
x = list(range(1,10,1))
print(x)
y = np.power(3,x)
print(y)
print("sum of all powers of 3**x: ", sum(y))


"""
Question 4: Find the mean of a set of 50 uniform random variables distributed between 2 and 4?
Run this twice. Is your answer the same, or different? Why?
"""
num = np.random.uniform(low = 2, high = 4, size = 50)
print(num)
print(np.mean(num))
```

```
# The mean of 50 random numbers differ every time I run the code. The possible reason for this char
# the random numbers being generated by the machine. As we know that the processor clock speed diff
# time the processor executes a program so the seed value of the processor and program changes the
# numbers and hence the mean changes


"""
Question 5: The function np.mod(a,b) in the numpy library is the modulo of a with respect to b.
This is the remainder of a when divided by b.
a. Using a loop print all the numbers between 1 and 100 which are evenly divisible by 5.
b. Now repeat the same procedure, but without a for loop.
(This is a big hint. You will probably need an array of numbers between 1 and 100.
To do this use the command np.arrange(1,101)). A regular list will not work well. You need the nump
"""
mod = list(range(1, 101))
print(mod)

# Using loop statement
for i in mod:
    if(i%5 == 0):
        print(i)

# Without using loop statement
my_list = list(range(1,101))
print(x)

result = list(filter(lambda x: (x % 5 == 0), my_list))
print("The numbers divisible by 5 are: ", result)


"""
You know the earnings for three stocks, MSFT = 100, AAPL=50, IBM=25.
Write Python code which puts these in a dictionary, with the ticker symbols as the key.
Add a line of Python which would add GOOG=200. Could you also add a numpy array of earnings for GOO
"""
stocks = {"MSFT":100, "AAPL":50, "IBM":25}
print("The dictionary of stocks: ", stocks)
stocks["GOOG"] = 200
print("The new dictionary of stocks: ", stocks)
a = np.array([1.2, 4.4, 6.0])
stocks["GOOG"] = a
print("The updated dictionary of stocks: ", stocks)
```