**2019 Spring Session-2: CSEE5590/490 – Special Topics**

**Python Programming**

<https://goo.gl/forms/7dnZz2LwFNhH8uiH3>

**Lesson2: List, Tuples, Functions, Loops, if Conditions in python**

1. **Write a python program to take the total number of plants as an input on first line and all the space separated heights of the plants on a second line. Finally Output the average height value on a single line to three decimals.**

**Input:**

10

161 182 161 154 176 170 167 171 170 174

**Output:**

169.375

Code:

#10  
#161 182 161 154 176 170 167 171 170 174  
  
#Requesting the number of plants:  
num\_plants = input ('Please, enter the number of plants: ')  
  
#Requesting the lengths of n plants:  
length\_plants = input ('Please, enter the length of the ' + num\_plants + ' plants separated by a space: ')  
  
#Creating a string list by spliting numbers between spaces:  
nums\_string = length\_plants.split()  
  
#Importing Decimal type character:  
from decimal import Decimal  
  
#Transforming string to Decimal list:  
nums\_numbers = [Decimal(i) for i in nums\_string]  
  
#Checking that the lengths imputed matched the number of plants inputed:  
if Decimal(num\_plants) != Decimal(len(nums\_numbers)):  
 print ('The number of plants and the number of lengths inputed do not match. Please, try again')  
else:  
 average = sum(nums\_numbers)/len(nums\_numbers)  
  
 #Rouding the number to 3 decimals:  
 print('\nThe average length of the plants entered is: ' + str(round(average, 3)))

Output:

Please, enter the number of plants: 10

Please, enter the length of the 10 plants separated by a space: 161 182 161 154 176 170 167 171 170 174

The average length of the plants entered is: 168.600

1. Write a python program to implement Stack and Queue data structures using “List” and its functions in python:

Refer this link: <https://docs.python.org/3/tutorial/datastructures.html>

Code:

#Creating the stack:  
num1 = input ('Please, enter your first number for the stack: ')  
num2 = input ('Please, enter your second number for the stack: ')  
num3 = input ('Please, enter your third number for the stack: ')  
stack = [num1, num2, num3]  
print ('\nYour stack is: ' + str(stack))  
  
#Adding the numbers to the stack:  
num4 = input ('Please, enter a forth number to be added to the stack: ')  
num5 = input ('Please, enter a fifth number to be added to the stack: ')  
stack.append('4')  
stack.append('5')  
print ('\nYour stack after adding these two numbers is: ' + str(stack))  
  
#Removing the last number to the stack:  
num6 = input('Would you like to remove the last number from the stack (Y/N): ')  
if num6 == 'Y':  
 stack.pop()  
 print ('The remaining numbers on the stack are: ' + str(stack))  
else:  
 print('The remaining numbers on the stack are: ' + str(stack))  
  
#Creating the queue:  
from collections import deque  
name1 = input ('\nPlease, enter your first name for the queue: ')  
name2 = input ('Please, enter your second name for the queue: ')  
name3 = input ('Please, enter your third name for the queue: ')  
queue = deque([name1, name2, name3])  
print('\nThe names included in your queue are: ' + str(queue))  
  
#Adding and removing names to the queue:  
name4 = input ('\nPlease, enter a name to be added in the queue: ')  
name5 = input ('Please, enter another name to be added in the queue: ')  
queue.append(name4)  
queue.append(name5)  
queue.popleft()  
queue.popleft()  
  
#Printing the final queue:  
print('\nThe remaining names included in your queue are: ' + str(queue))

Output:

Please, enter your first number for the stack: 1

Please, enter your second number for the stack: 2

Please, enter your third number for the stack: 3

Your stack is: ['1', '2', '3']

Please, enter a forth number to be added to the stack: 4

Please, enter a fifth number to be added to the stack: 5

Your stack after adding these two numbers is: ['1', '2', '3', '4', '5']

Would you like to remove the last number from the stack (Y/N): Y

The remaining numbers on the stack are: ['1', '2', '3', '4']

Please, enter your first name for the queue: Ana

Please, enter your second name for the queue: Tom

Please, enter your third name for the queue: Tim

The names included in your queue are: deque(['Ana', 'Tom', 'Tim'])

Please, enter a name to be added in the queue: Sam

Please, enter another name to be added in the queue: Jim

The remaining names included in your queue are: deque(['Tim', 'Sam', 'Jim'])

1. **Write a python program to swap cases. In other words, convert all lowercase letters to uppercase letters and vice versa.**

**For Example:**

**Www.HackerRank.com → wWW.hACKERrANK.COM**

Code:

#Www.HackerRank.com  
  
#Requesting the characters:  
to\_swap = input("\nPlease, enter the characters you would like to case swap: ")  
  
#Printing the characters swapped:  
print('\nYour swapped characters are:' + to\_swap.swapcase())

Output:

Please, enter the characters you would like to case swap: Www.HackerRank.com

Your swapped characters are:wWW.hACKERrANK.COM