

CE259 – PIP Programming Assignment

1	<p>You are given a string. Your task is to count the frequency of letters of the string and print the letters in descending order of frequency.</p> <p>If the following string is given as input to the program:</p> <pre>aabbccdde</pre> <p>Then, the output of the program should be:</p> <ul style="list-style-type: none"> b 3 a 2 c 2 d 1 e 1
Code:	<pre>a=input() dic={} for i in a: if dic.get(i)!=None: dic[i]+=1 else: dic[i]=1 arr=[dic[i] for i in dic] arr.sort(reverse=True) dic1={} for i in arr: for j in dic: if dic[j]==i: dic1.update({j:i}) dic.pop(j) break for key,value in dic1.items(): print(key,value)</pre>
Output:	<pre>C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/1.py aabbccdde b 3 a 2 c 2 d 1 e 1 Process finished with exit code 0</pre>
2	<p>Write a procedure to find min, max, mean, standard deviation, variance of number list.</p> <p>Example</p> <p>Input: 10 50 80 70 49 23 11 4</p> <p>output: 4 80 37.13 27.25 848.70</p>
Code:	<pre>from re import A import statistics import pandas as pd sr = pd.Series([10, 25, 3, 25, 24, 6])</pre>

	<pre> mean = sr.mean() median = sr.median() mode = sr.mode() range1 = sr.max() - sr.min(); stdeviation = sr.std(axis=0,skipna=True) print(mean) print(median) print(mode) print(range1) print(stdeviation) print("Variance of sample set is % s" %(statistics.variance(sr))) </pre>
Output:	<pre> C:/Users/DeLL/PycharmProjects/python/venv/Scripts/python.exe C:/Users/DeLL/PycharmProjects/python/2.py 15.5 17.0 0 25 dtype: int64 22 10.290772565750348 Variance of sample set is 105.9 </pre>
3	<p>You are given an integer array height of length n. There are n vertical lines drawn such that the two endpoints of the ith line are (i, 0) and (i, height[i]). Find two lines that together with the x-axis form a container, such that the container contains the most water. Return the maximum amount of water a container can store. Notice that you may not slant the container.</p> <p>Input: height = [1,8,6,2,5,4,8,3,7]</p> <p>Output: 49</p> <p>Explanation: The above vertical lines are represented by array [1,8,6,2,5,4,8,3,7]. In this case, the max area of water (blue section) the container can contain is 49. Example 2:</p> <p>Input: height = [1,1]</p> <p>Output: 1</p>
Code:	<pre> def maxArea(A, Len): area = 0 for i in range(Len): for j in range(i + 1, Len): area = max(area, min(A[j], A[i]) * (j - i)) return area a = [int(n) for n in input("Enter an array: ").split()] len1 = len(a) print(maxArea(a, len1)) </pre>
Output:	<pre> C:/Users/DeLL/PycharmProjects/python/venv/Scripts/python.exe C:/Users/DeLL/PycharmProjects/python/3.py Enter an array: 1 2 3 4 4 3 5 6 3 18 Process finished with exit code 0 </pre>
4	<p>Given a list of integers, write a program to print the count of all possible unique combinations of numbers whose sum is equal to K. Input The first line of input will contain space-separated integers. The second line of input will</p>

	<p>contain an integer, denoting K. Output The output should be containing the count of all unique combinations of numbers whose sum is equal to K.</p> <p>Sample Input 1 2 4 6 1 3 6</p> <p>Sample Output 1 3</p>
Code:	<pre>from itertools import combinations num = [int(n) for n in input("Enter an array: ").split()] k = int(input("Enter the sumation you want to check combination about: ")) cnt = 0 for i in range(1, len(num)+1): for c in combinations(num, i): if sum(c) == k: cnt += 1 print(cnt)</pre>
	<pre>C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/4.py Enter an array: 2 4 6 1 3 Enter the sumation you want to check combination about: 6 3 Process finished with exit code 0 </pre>
5	Explain about the different types of Exceptions in Python with suitable example.
5_1	<p>exception ArithmeticError</p> <p>This class is the base class for those built-in exceptions that are raised for various arithmetic errors such as:</p> <ul style="list-style-type: none"> • OverflowError • ZeroDivisionError • FloatingPointError
Example	<pre>try: a = 10/0 print (a) except ArithmeticError: print ("This statement is raising an arithmetic exception.") else: print ("Success.")</pre>
Output	<pre>C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/5.py This statement is raising an arithmetic exception. Process finished with exit code 0</pre>
5_2	<p>exception LookupError</p> <p>This is the base class for those exceptions that are raised when a key or index used on mapping or sequence is invalid or not found. The exceptions raised are :</p> <ul style="list-style-type: none"> • KeyError • IndexError
Example	<pre>try: a = [1, 2, 3] print (a[3]) except LookupError: print ("Index out of bound error.")</pre>

Output	C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/5_2.py Index out of bound error. Process finished with exit code 0	
5_3	exception AttributeError An AttributeError is raised when an attribute reference or assignment fails such as when a non-existent attribute is referenced.	
Example	class Attributes(object): pass object = Attributes() print(object.attribute)	
Output	C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/5_3.py Traceback (most recent call last): File "C:/Users/DeLL/PycharmProjects/python/5_3.py", line 6, in <module> print(object.attribute) AttributeError: 'Attributes' object has no attribute 'attribute' Process finished with exit code 1	
8	Program to demonstrate the Overriding of the Base Class method in the Derived Class.	
Code:	class P1_class(): def show(self): print("Inside Parent Class 1") class P2_class(): def display(self): print("Inside Parent Class 2") class Child_class(P1_class, P2_class): def show(self): print("Inside Child Class") obj = Child_class() obj.show() obj.display()	
Output	C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/8.py Inside Child Class Inside Parent Class 2 Process finished with exit code 0	
9	Write Pythonic code to create a function named move_rectangle() that takes an object of Rectangle class and two numbers named dx and dy. It should change the location of the Rectangle by adding dx to the x coordinate of corner and adding dy to the y coordinate of corner.	

Code	<pre> class Point(object): pass class Rectangle(object): pass rectangle = Rectangle() bottom_left = Point() bottom_left.x = 8.0 bottom_left.y = 3.0 top_right = Point() top_right.x = 9.0 top_right.y = 6.0 rectangle.corner1 = bottom_left rectangle.corner2 = top_right dx = 15.0 dy = 16.0 def move_rectangle(rectangle, dx, dy): print(f"The rectangle started with bottom left corner at ({rectangle.corner1.x},{rectangle.corner1.y})") f"\nTop right corner at ({rectangle.corner2.x},{rectangle.corner2.y})" f"\ndx is {dx} and dy is {dy}" rectangle.corner1.x = rectangle.corner1.x + dx rectangle.corner2.x = rectangle.corner2.x + dx rectangle.corner1.y = rectangle.corner1.y + dy rectangle.corner2.y = rectangle.corner2.y + dy print(f"It ended with a bottom left corner at ({rectangle.corner1.x},{rectangle.corner1.y})") f"\nTop right corner at ({rectangle.corner2.x},{rectangle.corner2.y})" move_rectangle(rectangle, dx, dy) </pre>
Output	<pre> C:\Users\DeLL\PycharmProjects\python\venv\Scripts\python.exe C:/Users/DeLL/PycharmProjects/python/9.py The rectangle started with bottom left corner at (8.0,3.0) Top right corner at (9.0,6.0) dx is 15.0 and dy is 16.0 It ended with a bottom left corner at (23.0,19.0) Top right corner at (24.0,22.0) Process finished with exit code 0 </pre>