**COURSE OUTCOME 3(CO3):**

1. Work with built-in packages

import statistics

# Calculate average values

print("Mean : ",statistics.mean([1, 3, 5, 7, 9, 11, 13]))

print("Mean : ",statistics.mean([1, 3, 5, 7, 9, 11]))

print("Mean : ",statistics.mean([-11, 5.5, -3.4, 7.1, -9, 22]))

print("===============================")

# Calculate middle values

print("Median : ",statistics.median([1, 3, 5, 7, 9, 11, 13]))

print("Median : ",statistics.median([1, 3, 5, 7, 9, 11]))

print("Median : ",statistics.median([-11, 5.5, -3.4, 7.1, -9, 22]))

print("===============================")

# Calculate the mode

print("Mode :",statistics.mode([1, 3, 3, 3, 5, 7, 9, 11]))

print("Mode :",statistics.mode([1, 1, 3, -5, 7, -9, 11]))

print("Mode :",statistics.mode(['red', 'green', 'blue', 'red']))

print("===============================")

# Calculate the variance from a sample of data

print("Varience :",([1, 3, 5, 7, 9, 11]))

print("Varience :",statistics.variance([2, 2.5, 1.25, 3.1, 1.75, 2.8]))

print("Varience :",statistics.variance([-11, 5.5, -3.4, 7.1]))

print("Varience :",statistics.variance([1, 30, 50, 100]))

print("===============================")

# Calculate harmonic mean

print("Hermonic mean",statistics.harmonic\_mean([40, 60, 80]))

print("Hermonic mean",statistics.harmonic\_mean([10, 30, 50, 70, 90]))

print("-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-")

import random

print(random.random())

print("===============================")

mylist = ["apple", "banana", "cherry"]

random.shuffle(mylist)

print(mylist)

print("===============================")

random.seed(10)

print(random.random())

print("===============================")

mylist = ["apple", "banana", "cherry"]

print(random.choice(mylist))

print("===============================")

print(random.randrange(3, 9))

output:

Mean : 7

Mean : 6

Mean : 1.8666666666666667

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Median : 7

Median : 6.0

Median : 1.05

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Mode : 3

Mode : 1

Mode : red

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Varience : [1, 3, 5, 7, 9, 11]

Varience : 0.4796666666666667

Varience : 70.80333333333334

Varience : 1736.9166666666667

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Hermonic mean 55.38461538461538

Hermonic mean 27.97513321492007

-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-

0.3241658472337896

===============================

['cherry', 'apple', 'banana']

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0.5714025946899135

===============================

banana

===============================

6

2. Create a package graphics with modules rectangle, circle and sub-package 3D-graphics with modules cuboid and sphere. Include methods to find area and perimeter of respective figures in each module. Write programs that finds area and perimeter of figures by different importing statements. (Include selective import of modules and import \* statements)

**rectangle.py**

**def area(r):**

**print(3.14\*r\*r)**

**def perimeter(r):**

**print(2\*3.14\*r)**

**circle.py**

def area(l,b):

print(“area:”,l\*b)

def perimeter(l,b):

print(“perimeter:”2\*l+2\*b)

**cuboid.py**

def area(l,b,h):

print("Area of Cuboid: ",(2\*l\*b)+(2\*l\*h)+(2\*h\*b))

def perimeter(l,b,h):

print("Perimeter of Cuboid: ", 4\*(l+b+h))

**sphere.py**

**def area(r):**

**print("Surface Area of Sphere: ",4\*3.14\*r\*r)**

**def volume(r):**

**print("Volume of Sphere: ",(4/3)\*3.14\*r\*r\*r)**

**graphicsn.py**

**from graphics import rectangle**

**from graphics import circle**

**from graphics import sphere**

**from graphics import cuboid**

**print("Read values: \n Rectangle:\n")**

**l=int(input("Enter length"))**

**b=int(input("Enter breadth"))**

**r\_area=rectangle.area(l,b)**

**r\_perimeter=rectangle.perimeter(l,b)**

**r=int(input("enter the radius of circle"))**

**print(circle)**

**circle.area(r)**

**circle.perimeter(r)**

**l=int(input("Enter the length of Cuboid: "))**

**b=int(input("Enter the breadth of Cuboid: "))**

**h=int(input("Enter the height of Cuboid: "))**

**cuboid.area(l,b,h)**

**cuboid.perimeter(l,b,h)**

**print()**

**r=int(input("Enter the radius of Sphere: "))**

**sphere.area(r)**

**sphere.volume(r)**

**OUTPUT**

Read values:

Rectangle:

Enter length10

Enter breadth12

120

44

enter the radius of circle6

area: 113.03999999999999

perimeter: 37.68

Enter the length of Cuboid: 10

Enter the breadth of Cuboid: 13

Enter the height of Cuboid: 2

Area of Cuboid: 352

Perimeter of Cuboid: 100

Enter the radius of Sphere: 12

Surface Area of Sphere: 1808.6399999999999

Volume of Sphere: 7234.559999999999