

## **COURSE OUTCOME 3**

**Date: 15/11/2023**

### **1.Work with built-in packages.**

#### **BUILT-IN PACKAGES IN PYTHON**

Python comes with a comprehensive standard library that includes a wide range of built-in packages and modules. These modules provide functionality for tasks ranging from file I/O to web development. Here are some commonly used built-in packages in Python:

1. os : Operating system interface, provides a way of using operating system-dependent functionality like reading or writing to the file system.

```
import os
```

2. sys : Provides access to some variables used or maintained by the interpreter and to functions that interact strongly with the interpreter.

```
import sys
```

3. math : Mathematical functions such as basic arithmetic operations, logarithms, trigonometric functions, etc.

```
import math
```

4. datetime : Date and time handling.

```
import datetime
```

5. json : JSON encoder and decoder.

```
import json
```

6. urllib : URL handling modules, including parsing, quoting, and fetching.

```
from urllib import request, parse
```

7. random : Generate pseudo-random numbers.

```
import random
```

8. re : Regular expression operations.

```
import re
```

9. collections : Implements specialized container datatypes.

```
from collections import Counter, defaultdict
```

10. sqlite3 : SQLite database interface.

```
import sqlite3
```

11. csv : CSV file reading and writing.

```
import csv
```

12. gzip : Support for gzip files.

```
import gzip
```

13. socket : Low-level networking interface.

```
import socket
```

14. argparse : Command-line argument parsing.

```
import argparse
```

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**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)**

### **Program**

**#graphics/rectangle.py**

**rectangle.py:**

```
def area(length,width):  
    return length*width  
def perimeter(length,width):  
    return 2*(length+width)
```

**#graphics/circle.py**

**circle.py:**

```
import math  
def area(r):  
    return math.pi*r**2  
def perimeter(r):  
    return math.pi*r*2
```

**#threeDgraphics/cuboid.py**

**cuboid.py**

```
def surfacearea(length,width,height):  
    return 2*(length*width+width*height+height*length)  
def volume(length,width,height):  
    return length*width*height
```

## **#threeDgraphics/sphere.py**

### **sphere.py:**

```
import math
def surfacearea(radius):
    return 4*math.pi*radius**2
def volume(radius):
    return (4/3)*math.pi*radius**3
```

### **main.py**

```
from graphics import rectangle,circle
from graphics.threedgraphics import cuboid,sphere
#using rectangle module
Print("Rectangle")
length=int(input("Enter rectangle length:"))
width=int(input("Enter rectangle width:"))
print("Area of the rectangle=",rectangle.area(length,width))
print("Perimeter of the rectangle=",rectangle.perimeter(length,width))
#using circle module
Printf("Circle")
r=int(input("Enter radius of circle"))
print("Area of the circle=",circle.area(r))
print("Perimeter of the circle=",circle.perimeter(r))
#using cuboid module
Print("Cuboid")
length=int(input("Enter cuboid length:"))
width=int(input("Enter cuboid width:"))
height=int(input("Enter cuboid height:"))
print("surfacearea of the cuboid=",cuboid.surfacearea(length,width,height))
print("volume of the cuboid=",cuboid.volume(length,width,height))
#using sphere module
Print("Sphere")
radius=int(input("Enter radius of sphere"))
print("surfacearea of the sphere=",sphere.surfacearea(radius))
print("volume of the sphere=",sphere.volume(radius))
```

## Output

```
mits@mits-HP-280-Pro-G6-Microtower-PC:~/Desktop/python$ python3  
main.py
```

### Rectangle

```
Enter rectangle length:3  
Enter rectangle width:4  
Area of the rectangle= 12  
Perimeter of the rectangle= 14
```

### Circle

```
Enter radius of circle2  
Area of the circle= 12.566370614359172  
Perimeter of the circle= 12.566370614359172
```

### Cuboid

```
Enter cuboid length:2  
Enter cuboid width:4  
Enter cuboid height:6  
surfacearea of the cuboid= 88  
volume of the cuboid= 48
```

### Sphere

```
Enter radius of sphere5  
surfacearea of the sphere= 314.1592653589793  
volume of the sphere= 523.5987755982989  
mits@mits-HP-280-Pro-G6-Microtower-PC:~/Desktop/python$
```