

COURSE OUTCOME 3

DATE : 15-11-2023

1. Work with built-in packages.

BUILT-IN PACKAGES

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 data types.

```
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 to find the area and perimeter of figures by different importing statements. (Include selective import of modules and import * statements).

PROGRAM

CO3/Graphics/Rectangle.py

```
def area(l, b):  
    return l*b  
def perimeter(l, b):  
    return 2*(l+b)
```

CO3/Graphics/Circle.py

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

CO3/Graphics/3DGraphics/Cuboid.py

```
def surface_area(l, b, h):  
    return 2*(l*b+b*h+h*l)  
def volume(l, b, h):  
    return l*b*h
```

CO3/Graphics/3DGraphics/Sphere.py

```
import math
def surface_area(r):
    return 4*math.pi*r**2
def volume(r):
    return (4/3)*math.pi*r**3
def area(l, b):
    return l * b
def perimeter(l, b):
    return 2 * (l + b)
```

CO3/CO3PGM2.py

```
from graphics import Rectangle, Circle
from graphics.subgraphics import Cuboid, Sphere
print("Area and Perimeter of Rectangle")
l=int(input("Enter length : "))
b=int(input("Enter breadth : "))
print("Area of the Rectangle : ",Rectangle.area(l,b),"\nPerimeter of the
Rectangle : ",Rectangle.perimeter(l,b))

print("Area and Perimeter of Circle")
r=int(input("Enter the radius : "))
print("Area of the Circle : ",Circle.area(r),"\nPerimeter of the Circle :
",Circle.perimeter(r))

print("Surface area and Volume of Cuboid")
l=int(input("Enter length : "))
b=int(input("Enter breadth : "))
h=int(input("Enter height : "))
```

```
print("Surface area of the Cuboid :  
",Cuboid.surface_area(l,b,h),"\\nVolume of the Cuboid :  
",Cuboid.volume(l,b,h))
```

```
print("Surface area and Volume of Sphere")  
r=int(input("Enter the radius : "))  
print("Surface area of the Sphere : ",Sphere.surface_area(r),"\\nVolume  
of the Sphere : ",Sphere.volume(r))
```

OUTPUT

Area and Perimeter of Rectangle

Enter length : 10

Enter breadth : 20

Area of the Rectangle : 200

Perimeter of the Rectangle : 60

Area and Perimeter of Circle

Enter the radius : 10

Area of the Circle : 314.1592653589793

Perimeter of the Circle : 62.83185307179586

Surface area and Volume of Cuboid

Enter length : 10

Enter breadth : 20

Enter height : 30

Surface area of the Cuboid : 2200

Volume of the Cuboid : 6000

Surface area and Volume of Sphere

Enter the radius : 10

Surface area of the Sphere : 1256.6370614359173

Volume of the Sphere : 4188.790204786391