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
```