

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
```

COURSE OUTCOME 3

Date: 15/11/2023

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

```
# packages/graphics/rectangle.py
def area (length,width):
    return length*width
def perimeter (length,width):
    return 2*(length+width)
```

```
# packages/graphics/circle.py
import math
def area(radius):
    return math.pi*radius*radius
def perimeter(radius):
    return 2 * math.pi * radius
```

```
# packages/graphics/threedgraphics/cuboid.py
def surfacearea(length, width, height):
    return 2 * (length * width + width * height + height * length)
def volume(length, width, height):
    return length * width * height
```

```
# packages/graphics/threedgraphics/sphere.py
import math
def surface_area(radius):
    return 4 * math.pi * radius**2
def volume(radius):
    return (4/3) * math.pi * radius**3
```

```
# packages/main.py
from graphics import rectangle,circle
from graphics.threedgraphics import cuboid,sphere
```

```

# Using rectangle module
length=int(input("Enter length: "))
width =int(input("Enter width: "))
print("Area of rectangle: ",rectangle.area(length,width))
print("Perimeter of rectangle: ",rectangle.perimeter(length,width))
# Using circle module
radius=int(input("Enter radius: "))
print("Area of circle: ",circle.area(radius))
print("Perimeter of circle: ",circle.perimeter(radius))
# Using cuboid module from 3Dgraphics sub-package
cuboid_length =int(input("Enter length: "))
cuboid_width = int(input("Enter width: "))
cuboid_height = int(input("Enter height: "))
print("Cuboid Surface Area: ", cuboid.surfacearea(cuboid_length, cuboid_width,
cuboid_height))
print("Cuboid volume: ", cuboid.volume(cuboid_length, cuboid_width,
cuboid_height))
# Using sphere module from 3Dgraphics sub-package
sphere_radius = int(input("Enter radius: "))
print("Sphere Surface Area: ", sphere.surface_area(sphere_radius))
print("Sphere Volume: ", sphere.volume(sphere_radius))

```

Output

```

mits@mits-HP-280-Pro-G6-Microtower-PC:~$ python3 main.py
Enter length: 3
Enter width: 4
Area of rectangle: 12
Perimeter of rectangle: 14
Enter radius: 4
Area of circle: 50.26548245743669
Perimeter of circle: 25.132741228718345
Enter length: 3
Enter width: 4
Enter height: 5
Cuboid Surface Area: 94
Cuboid volume: 60
Enter radius: 4
Sphere Surface Area: 201.06192982974676
Sphere Volume: 268.082573106329
mits@mits-HP-280-Pro-G6-Microtower-PC:~$

```