COURSE OUTCOME 3

DATE:05/11/2024

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
```

DATE:14/11/2024

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**)**
   CO5->Graphics->threeD

PROGRAM

main.py

```
from Graphics import rectangle, circle
from Graphics.threeD import cuboid, sphere

length = float(input("Enter the length of the rectangle: "))
width = float(input("Enter the width of the rectangle: "))
print("Perimeter of rectangle =", rectangle.perimeter(length, width))
print("Area of rectangle =", rectangle.area(length, width))
radius = float(input("\nEnter the radius of the circle: "))
print("Perimeter of circle =", circle.perimeter(radius))
print("Area of circle =", circle.area(radius))

length = float(input("\nEnter the length of the cuboid: "))
width = float(input("Enter the width of the cuboid: "))
height = float(input("Enter the height of the cuboid: "))
print("Surface area of cuboid =", cuboid.surfacearea(length, width,
height))
print("Volume of cuboid =", cuboid.volume(length, width, height))
radius = float(input("\nEnter the radius of the sphere: "))
```

```
print("Surface area of sphere =", sphere.surfacearea(radius))
print("Volume of sphere =", sphere.volume(radius))
```

Graphics

rectangle.py

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

circle.py

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

threeD

cuboid.py

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

sphere.py

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

OUTPUT

a)

Enter the length of the rectangle: 3

Enter the width of the rectangle: 4

Perimeter of rectangle = 14.0

Area of rectangle = 12.0

Enter the radius of the circle: 10

Perimeter of circle = 62.83

Area of circle = 314.16

Enter the length of the cuboid: 2

Enter the width of the cuboid: 3

Enter the height of the cuboid: 4

Surface area of cuboid = 52.0

Volume of cuboid = 24.0

Enter the radius of the sphere: 8

Surface area of sphere = 804.248

Volume of sphere = 2144.7

b)

Enter the length of the rectangle: 20

Enter the width of the rectangle: 10

Perimeter of rectangle = 60.0

Area of rectangle = 200.0

Enter the radius of the circle: 5

Perimeter of circle = 31.41592653589793

Area of circle = 78.53981633974483

Enter the length of the cuboid: 50
Enter the width of the cuboid: 40
Enter the height of the cuboid: 30
Surface area of cuboid = 9400.0
Volume of cuboid = 60000.0

Enter the radius of the sphere: 50
Surface area of sphere = 31415.926535897932
Volume of sphere = 523598.7755982988