COURSE OUTCOME 3

DATE: 13/11/2024

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

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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)

Path- home/Aswin_python/graphics/threeD

PROGRAM:

main.py
main.py includes importing modules and calling functions to calculate area and perimeter of shapes.

```
from graphics import rectangle,circle
from graphics.threed import cuboid,sphere

l=int(input("Enter the length of rectangle:\t"))
b=int(input("Enter the width of rectangle:\t"))
print("Area of rectangle is",rectangle.area(l,b))
print("Perimeter of rectangle is",rectangle.perimeter(l,b))

r=int(input("Enter the radius of circle:"))
print("Area of circle",circle.area(r))
print("Perimeter of rectangle",circle.perimeter(r))

l=int(input("Enter the length of cuboid:"))
b=int(input("Enter the width of cuboid:"))
h=int(input("Enter the height of cuboid:"))
print("Surface area of cuboid",cuboid.surfacearea(l,b,h))
print("Volume of cuboid",cuboid.volume(l,b,h))

r=int(input("Enter the radius of sphere:"))
print("Surface area of sphere is",sphere.surfacearea(r))
print("Volume of sphere is",sphere.volume(r))
```

graphics
#graphics is a package that includes modules rectangle.py and circle.py

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

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

rectangle.py

```
def area(l,b):
    return(l*b)

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

threeD
#threeD is a sub-package inside of graphics that includes modules cuboid.py and sphere.py

sphere.py
```
import math

def surfacearea(r):
    return(4*math.pi*r**2)

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

cuboid.py

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

OUTPUT:

Enter length of rectangle:10
Enter width of rectangle:2
Area of a rectangle is 20
Perimeter of a rectangle is 24
Enter radius of circle:10
Area of a circle is 100.59142857142857
Perimeter of a circle is 62.55857142857143
Enter length of cuboid:3
Enter width of cuboid:4
Enter height of cuboid:5
Surface area of a cuboid is 94
Volume of a cuboid is 60
Enter radius of sphere:6
Surface area of a sphere is 452.5714285714286
Volume of sphere is 905.1428571428572