**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

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1. 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:**

**#graphics/rectangle.py**

def area(rlength,rwidth):

return rlength \* rwidth

def perimeter(rlength,rwidth):

return 2\*(rlength+rwidth)

**#graphics/circle.py**

import math

def area(cradius):

return math.pi\*cradius\*\*2

def perimeter(cradius):

return 2\*math.pi\*cradius

**#threedgraphicscuboid.py**

def surfacearea(clength,cwidth,cheight):

return 2\*((clength\*cwidth)+(cwidth\*cheight)+(cheight\*clength))

def volume(clength,cwidth,cheight):

return clength\*cwidth\*cheight

**#threedgraphics/sphere.py**

import math

def surfacearea(sradius):

return 4\*math.pi\*sradius\*\*2

def volume(sradius):

return (4/3)\*math.pi\*sradius\*\*3

**main.py**

from graphics import rectangle,circle

from graphics.threedgraphics import cuboid,sphere

#using rectangle module

rlength=int(input("enter the length of rectangle: "))

rwidth=int(input("enter the width of rectangle: "))

print("area of rectangle= ",rectangle.area(rlength,rwidth))

print("perimeter of rectangle= ",rectangle.perimeter(rlength,rwidth))

#using circle module

cradius=int(input("enter the radius of circle: "))

print("area of circle= ",circle.area(cradius))

print("perimeter of circle= ",circle.perimeter(cradius))

#using cuboid module

clength=int(input("enter the length of cuboid: "))

cwidth=int(input("enter the width of cuboid: "))

cheight=int(input("enter the width of cuboid: "))

print("surfacearea of cuboid= ",cuboid.surfacearea(clength,cwidth,cheight))

print("volume of cuboid= ",cuboid.volume(clength,cwidth,cheight))

#using sphere module

sradius=int(input("enter the radius of sphere: "))

print("surfacearea of sphere= ",sphere.surfacearea(sradius))

print("volume of sphere= ",sphere.volume(sradius))

**Output:**

mits@mits-HP-280-Pro-G6-Microtower-PC:~/Desktop/sahala$ python3 main.py

enter the length of rectangle: 4

enter the width of rectangle: 3

area of rectangle= 12

perimeter of rectangle= 14

enter the radius of circle: 4

area of circle= 50.26548245743669

perimeter of circle= 25.132741228718345

enter the length of cuboid: 3

enter the width of cuboid: 2

enter the width of cuboid: 1

surfacearea of cuboid= 22

volume of cuboid= 6

enter the radius of sphere: 6

surfacearea of sphere= 452.3893421169302

volume of sphere= 904.7786842338603

mits@mits-HP-280-Pro-G6-Microtower-PC:~/Desktop/sahala$