**1.Work with built-in packages**

**Math module**

import math

print("The value of pi ",math.pi)

import math as m

print("The value of pi ",m.pi)

from math import pi,sqrt

print(math.pi)

print(math.sqrt(2))

print(math.tan(90))

print(math.cos(30))

**Output**

The value of pi 3.141592653589793

The value of pi 3.141592653589793

3.141592653589793

1.4142135623730951

-1.995200412208242

0.15425144988758405

**Time Module**

import time

print("current time in sec",time.time())

print("current time",time.ctime())

print("current time after 30 s",time.ctime(time.time()+30))

t=time.localtime()

print("time ",t)

print("current year",t.tm\_year)

print("current month",t.tm\_mon)

print("current day",t.tm\_mday)

print("current hour",t.tm\_hour)

print("current week",t.tm\_wday)

print("day of year",t.tm\_yday)

**Output**

current time in sec 1639933877.1339073

current time Sun Dec 19 22:41:17 2021

current time after 30 s Sun Dec 19 22:41:47 2021

time time.struct\_time(tm\_year=2021, tm\_mon=12, tm\_mday=19, tm\_hour=22, tm\_min=41, tm\_sec=17, tm\_wday=6, tm\_yday=353, tm\_isdst=0)

current year 2021

current month 12

current day 19

current hour 22

current week 6

day of year 353

**Calendar module**

import calendar

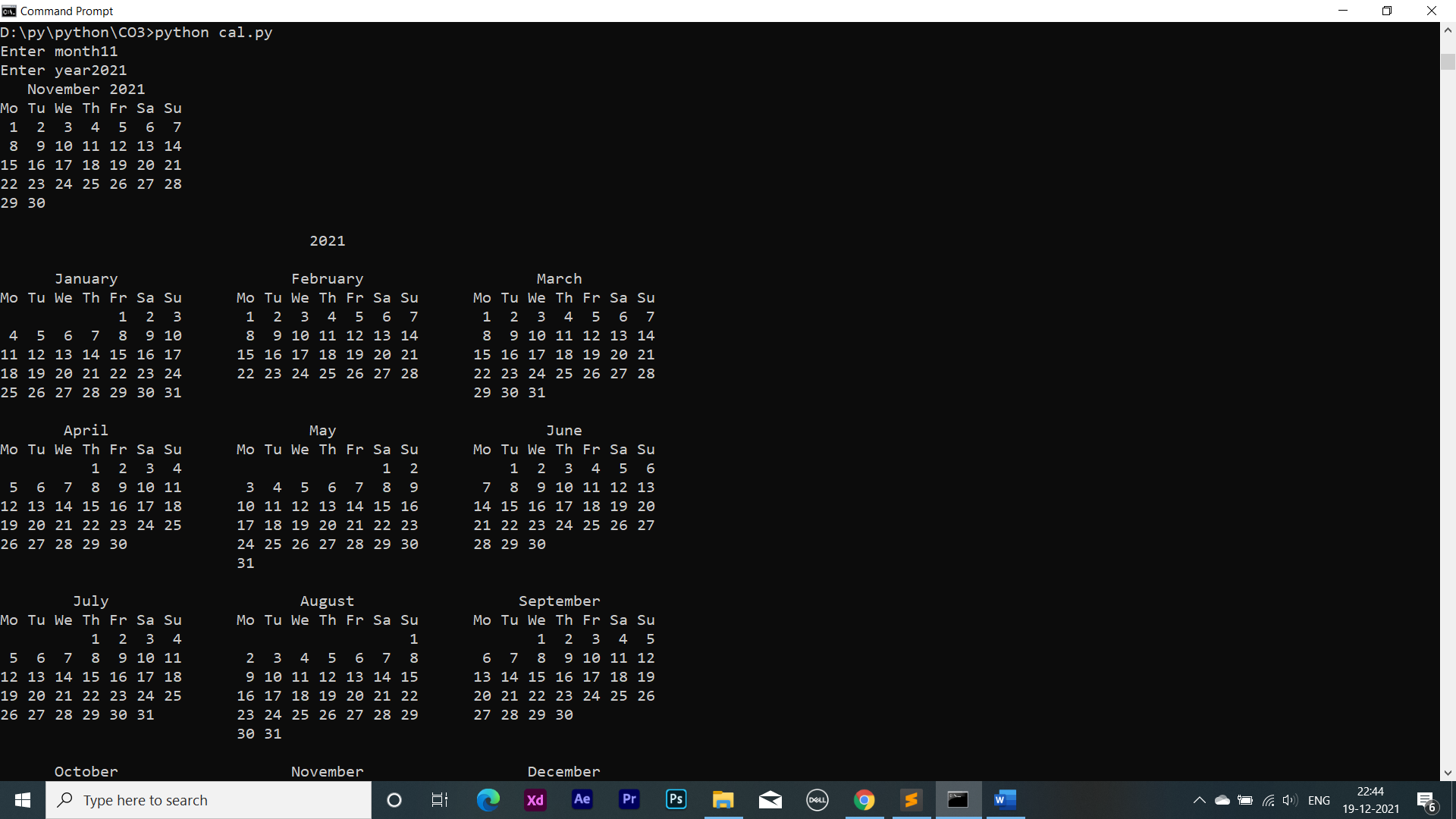
mm=int(input("Enter month"))

yy=int(input("Enter year"))

print(calendar.month(yy,mm))

print(calendar.calendar(2021))

**Output**

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**Date time module**

import datetime

t=datetime.time(22,56,44)

print(t)

print("hour",t.hour)

print("Minute",t.minute)

print("second",t.second)

print("Micro second",t.microsecond)

d=datetime.date.today()

print(d)

print("year",d.year)

print("month",d.month)

print("day",d.day)

d1=datetime.date.today()

print(d1)

td=datetime.timedelta(days=2)

print(td)

d2=d1+td

print(d2)

dt=datetime.datetime.combine(d1,t)

print(dt)

**Output**

22:56:44

hour 22

Minute 56

second 44

Micro second 0

2021-12-19

year 2021

month 12

day 19

2021-12-19

2 days, 0:00:00

2021-12-21

2021-12-19 22:56:44

**Statistics module**

import statistics as s

print("harmonic\_mean ",s.harmonic\_mean([20,30,40]))

print("mean ",s.mean([9,10,24,35,36]))

print("median ",s.median([9,10,24,35,36]))

print("mode ",s.mode([9,10,24,35,36]))

print("variance ",s.variance([9,10,24,35,36]))

**Output**

harmonic\_mean 27.69230769230769

mean 22.8

median 24

mode 9

variance 169.70000000000002

**Random module**

import random

random.seed(10)

print(random.random())

print(random.uniform(20, 60))

lst = ["orange", "apple", "graphes"]

print(random.sample(lst, k=2))

print(random.random())

lst2 = ["orange", "apple", "graphes"]

random.shuffle(lst2)

print(lst2)

lst3 = ["orange", "apple", "graphes"]

print(random.choice(lst3))

**Output**

0.5714025946899135

37.155562187004584

['graphes', 'orange']

0.20609823213950174

['orange', 'graphes', 'apple']

Graphes

**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)**

**Graphics**

**Circle**

def perimeter(r):

return(2\*3.14\*r)

def area(r):

return(3.14\*r\*r)

**Rectangle**

def perimeter(l,b):

return(2\*(l+b))

def area(l,b):

return(l\*b)

**Threedgraphics**

**Cuboid**

def perimeter(l,b,h):

return(4\*(l+b+h))

def area(l,w,h):

return(2\*l\*w+2\*l\*h+2\*h\*w)

**Sphere**

def perimeter(r):

return(2\*3.14\*r)

def area(r):

return(4\*3.14\*r\*r)

**Area**

from threedgraphics import cuboid

from threedgraphics import sphere

from graphics import rectangle

from graphics import circle

l=int(input("Enter length of cuboid:"))

w=int(input("Enter width of cuboid:"))

h=int(input("Enter height of cuboid:"))

b=int(input("Enter breadth of cuboid:"))

print("Area of cuboid=",cuboid.area(l,w,h))

print("perimeter of cuboid=",cuboid.perimeter(l,b,h))

r=int(input("Enter the radius of sphere:"))

print("Area of sphere=",sphere.area(r))

print("perimeter of sphere=",sphere.perimeter(r))

l=int(input("Enter length of rectangle:"))

b=int(input("Enter breadth of rectangle:"))

print("Area of rectangle=",rectangle.area(l,b))

print("Perimeter of rectangle=",rectangle.perimeter(l,b))

r=int(input("Enter radius of circle:"))

print("Area of Circle:",circle.area(r))

print("Perimeter of Circle:",circle.perimeter(r))

**Output**

Enter length of cuboid:5

Enter width of cuboid:4

Enter height of cuboid:3

Enter breadth of cuboid:7

Area of cuboid= 94

perimeter of cuboid= 60

Enter the radius of sphere:5

Area of sphere= 314.0

perimeter of sphere= 31.400000000000002

Enter length of rectangle:3

Enter breadth of rectangle:4

Area of rectangle= 12

Perimeter of rectangle= 14

Enter radius of circle:6

Area of Circle: 113.03999999999999

Perimeter of Circle: 37.68