**Task 3.1 :**

**Source code:**

import math

print("Logarithm",math.log10(13))

print("Power",math.pow(10,2))

print("Floor",math.floor(10.25201))

print("Ceil",math.ceil(10.25201))

print("absolute", abs(-10.024))

print("Factorial",math.factorial(5))

**Output:**

Logarithm 1.1139433523068367

Power 100.0

Floor 10

Ceil 11

absolute 10.024

Factorial 120

**Task 3.2 :**

**Program :**

Here’s the structure:

shop/

\_\_init\_\_.py

weight\_calc.py

main.py

**1. shop/weight\_calc.py**

# weight\_calc.py

def calculate\_total\_weight(widgets, gizmos):

WIDGET\_WEIGHT = 75 # grams

GIZMO\_WEIGHT = 112 # grams

total\_weight = (widgets \* WIDGET\_WEIGHT) + (gizmos \* GIZMO\_WEIGHT)

return total\_weight

**2. shop/init.py**

# \_\_init\_\_.py

# This makes 'shop' a package

**3. main.py**

# main.py

from shop import weight\_calc

def main():

widgets = int(input("Enter the number of widgets: "))

gizmos = int(input("Enter the number of gizmos: "))

total\_weight = weight\_calc.calculate\_total\_weight(widgets, gizmos)

print(f"The total weight of the parts is {total\_weight} grams.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Sample Input and Output :**

Enter the number of widgets: 5

Enter the number of gizmos: 3

The total weight of the parts is 731 grams .

**Task 3.3 :**

**Source code:**

import os

import sys

import platform

import sysconfig

print("os name", os.name)

print(os.getcwd())

print(os.listdir())

print(os.getlogin())

print("platform name", sys.platform)

print("platform.system()", platform.system())

print("platform.release()", platform.release())

**Output:**

os.name nt

/tmp/sessions/8ab062fead14b3db

['main.py']

<built-in function getlogin>

posix.uname\_result(sysname='Linux', nodename='5c10b58a99fb', release='5.11.0-1017-gcp', version='#19~20.04.1-Ubuntu SMP Thu Aug 12 05:25:25 UTC 2021', machine='x86\_64')

sys.platform Win32

platform.system() Windows

sys.release() 11

**task 3.4 :**

**Source code:**

import random

fortunes = ["Good things come to those who wait.",

"Patience is a virtue.",

"The early bird gets the worm.",

"A wise man once said, everything in its own time and place.",

"Fortune cookies rarely share fortunes."]

print (random.choice(fortunes))

**Sample Output 1**

Patience is a virtue.

**Sample Output 2**

The early bird gets the worm.

**Task 3.5 :**

**Program**

1. Folder structure:

my\_package/

\_\_init\_\_.py

math\_utils.py

string\_utils.py

main.py

my\_package/math\_utils.py

# math\_utils.py

def add(a, b):

return a + b

def multiply(a, b):

return a \* b

def factorial(n):

if n == 0 or n == 1:

return 1

return n \* factorial(n - 1)

my\_package/string\_utils.py

# string\_utils.py

def reverse\_string(s):

return s[::-1]

def count\_vowels(s):

vowels = 'aeiouAEIOU'

return sum(1 for char in s if char in vowels)

my\_package/\_\_init\_\_.py

# \_\_init\_\_.py

from .math\_utils import add, multiply, factorial

from .string\_utils import reverse\_string, count\_vowels

(This makes it easy to access all functions directly from my\_package.)

2. Main Program (main.py)

# main.py

from my\_package import add, multiply, factorial, reverse\_string, count\_vowels

# Math functions

print("Addition:", add(10, 5))

print("Multiplication:", multiply(3, 4))

print("Factorial of 5:", factorial(5))

# String functions

print("Reversed string:", reverse\_string("Python"))

print("Number of vowels:", count\_vowels("Hello World"))

**Sample Output:**

Addition: 15

Multiplication: 12

Factorial of 5: 120

Reversed string: nohtyP

Number of vowels: 3