Task3: Importing python modules and packages in python programming

Aim:- To write python demonstrating importing python modules and packages.

a. You are tasked with developing a modular calculator application in Python. The calculator should support basic arithmetic operations: addition, substraction, multiplication and division. Each operation should be implemented in a separate module. Additionally, you should create a main program to handle user input, call the appropriate module, and display the results.

Algorithm:

1. Define functions for addition, substraction, multiplication, and division.
2. Handle division by zero by raising an error if the divisor is zero.
3. Import the module (mymath) containing these functions
4. initialize two numbers. (a=10, b=5).
5. Call each function using mymath. <function_name>(a,b)
6. print the result of all operations.

Program:

```
def add(a,b):
    return a+b
def substract(a,b):
    return a-b
def multiply(a,b):
    return a*b
```

Output:

Addition : 15
Subtraction: 5
multiplication: 50
Division: 20

```
def divide (a,b):
    if b==0:
        raise value Error ("cannot divide by zero")
    return a/b

import mymath
a=10
b=5
print ("Addition:", mymath.add (a,b))
print ("substraction:", mymath.subtract(a,b))
print ("multiplication:", mymath.multiply (a,b))
print ("Division:", mymath.divide (a,b))
```

b. you are working on a python project that requires you to perform various mathematical operations and geometric area calculations. To organize your code better, you decide. to create a package named. mypackage which includes sub. packages pack1 & pack 2 with two modules: mathfunctions and area functions Demonstrate the use of the functions by performing a few calculations and. printing the results.

Algorithm.

1. create mathfunctions. py module:
2. create areafunctions. py module:
3. create __init__.py files in pack1 and pack2:
4. create main. py:
5. print the output as expected.

Program:

1. create the mathfunctions. Py module.

```
def add(a,b):
    return a+b
    def subtract(a,b):
    return a-b
    det multiply (a,b):
    return a*b
det divide (a,b):
  if b==0:
   return "Error! Division by zero."

   return a/b
```

create the area functions.py module import math.

```
def circle_area(radius):
    return math.pi * radius * radius
def rectangle_area(length, width):
    return length * width.
def triangle_area(base, height):
    return 0.5 * base * height
```

create __init__.py in each package folder (pack1 & pack2) from. mathfunctions import add, substract, multiply, divide from. areafunctions import circle_area, rectangle_area, triangle_area

Create the main.py file

```
from pack1 import mathfunctions
from pack2 impoost area functions
# using math functions
print ("Addition:", mathfunctions.add(10,5))
print ("subtraction:", mathfunctions.substract(10,5))
print ("multiplication:", mathfunctions.multiply(10,5))
print ("division:", mathfunctions.divide(10,5))
# using area functions
print ("circle Area (radius=7):", areafunctions.circle_area(7))
print ("rectangle Area (5x10):", area functions.rectangle_area(5,10))
print ("Triangle Area (base=6, height=8):", area functions.triangle_area(6,8))
```

3. Create __init__.py in each package folder (pack1 and pack2)

```
from .mathfunctions import add, subtract, multiply, divide
from .areafunctions import circle_area, rectangle_area, triangle_area
```

Output.

Addition: 15

Subtraction: 5

multiplication: 50

Division: 20

Circle Area (radius = 7): 153.93804002589985

Rectangle area (5x10): 50

Triangle Area (base=6, height=8): 24.0

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PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	20
SIGN WITH DATE	

20/8/25

Results: Thus the program for importing Python modules and packages was successfully executed. and the output was verified