Task 3: Importing Python modules and Packages in the 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 arthmetic operations addition, substraction, multiplication and division. Each operation should be implemented in a seperate module. Additionally, you should create a main program to handle user input, call you appropriate module and display the results.

Algorithm:

1. Define functions for addition, subtraction, 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 results of all operations.

Program:

```
def add(a,b):
    return a+b
def Subtract(a,b):
    return a-b
def multiPly(a,b):
    return a*b
```

output:

Addition : 15

Subtraction : 5

Multiplication : 50

Division : 2.0

```
def divide(a,b):
if b==0:
raise ValueError("Cannot divide by zero")
return a/b
import mymath
a=10
b=5
Print("Addition:", mymath.add(a,b))
Print("subtraction:", 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 of calculations. To organize your code better, you decide to create to a package named mypackage which includes subpackages Pack1 and Pack2 with two modules: mathfunctions and areafunctions Demonstrate the use of the functions by performing a calculation and printing the result.

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.

Output :

Addition : 15

Subtraction : 5

Multiplication : 50

Division : 2.0

Circle Area (radius = 7) : 153.93804002589985

Rectangle Area (5x10) : 50

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

2.
```
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
```

Program:

1 Create the mathfunctions.py module

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

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

2. Create the areafunctions.py module.

```
import math
def circle_area(radius):
return math.Pi*radius*radius
def rectangle_area(length, width):
return length*width
```

3. Create the main.py file

```
from pack import mathfunctions
from pack import areafunctions
#using math functions
Print("Addition:", mathfunctions.add(10,5))
def trangle_area(base, height):
return 0.5*base*height
```

3. Create __init__.py in each package folder (Pack 1 and Pack 2)

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

4. Create the main.py file

```
from Pack import mathfunctions
from Pack import areafunctions
#using math functions
Print("Addition:", mathfunctions.add(10, 5))
Print("subtraction:", mathfunctions.subtract(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):", areafunctions.rectangle_area(5,10))
Print("Triangle Area(base=6, height=8):", areafunctions.triangle
_area(6,8))
```

Result:

Thus, the Program for importing python modules and Packages was successfully excuted and the output was verified.

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EX No.	8
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	20
SIGN WITH DATE	8

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