

Task 3: 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, subtraction, multiplication, and division. Each operation should be implemented in separate module. Additionally, you should create a main program to handle user input, call the appropriate module, & display the result.

Algorithm:

1. Define functions for addition, subtraction, multiplication, & division.
2. Handle division by zero by raising an error if the divisor is zero
3. Import the module (mymath) containing these function.
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 subtract(a,b):  
    return a-b  
def multiply (a,b):  
    return a*b  
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))
```

Out put:

Addition: 15

Subtraction: 5

multiplication: 50

Division: 2.0

```
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 calculations. To organize your includes & sub-packages pack1 and pack2 with two modules: math functions 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 area functions.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  
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  
def triangle_area (base, height):
```

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

return 0.5 * base * height

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

4. Create the main.py file

```
from Pack import mathfunctions.
```

```
from Pack import areafunctions
```

```
print("Addition:",mathfunctions.add(10,5))
```

```
print("Subtraction:",mathfunctions.subtract(10,5))
```

```
print("Multiplication:",mathfunctions.multiply(10,5))
```

```
print("Division:",mathfunctions.divide(10,5))
```

```
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))
```

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EX No.	3
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	15
SIGN WITH DATE	20/11/2023

Result:

Thus, the program for importing python modules and packages was successfully executed and the output was verified.