MODULE & LIBRARIES

Module:

- A file containing code (functions, classes, variables, etc.) that can be imported and used in other Python programs.

Libraries:

- A collection of modules and packages that provide specific functionality.

MODULE & LIBRARIES

Module:

1. Create math_utils.py

```python
1   def add(a, b):
2       """Add two numbers"""
3       return a + b
4
5   def multiply(a, b):
6       """Multiply two numbers"""
7       return a * b
8
9   def factorial(n):
10      """Calculate factorial of n"""
11      if n <= 1:
12          return 1
13      return n * factorial(n - 1)
14
15  PI = 3.14159
16
17  class Calculator:
18      def __init__(self):
19          self.history = []
20
21      def calculate(self, operation, a, b):
22          if operation == "add":
23              result = add(a, b)
24          elif operation == "multiply":
25              result = multiply(a, b)
26          else:
27              result = None
28
29          self.history.append(f"{operation}({a}, {b}) = {result}")
30          return result
```

MODULE & LIBRARIES

Module:

   2. Import functions or class from math_utils.py

```
3    from math_utils import add, multiply, factorial, PI, Calculator
4
5    result = add(5, 3)
6    print(f"Addition Result: {result}")
```

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Libraries:

```python
21     import os
22     import sys
23     import datetime
24     import random
25
26     sys.path.append(os.path.dirname(os.path.dirname(os.path.abspath(__file__)))) # Adjust path for imports to root directory
27
28     now = datetime.datetime.now()
29     today = datetime.date.today()
30     formatted_date = now.strftime("%Y-%m-%d %H:%M:%S")
31
32     print(f"Now date: {now}")
33     print(f"Today's Date: {today}")
34     print(f"Current Date and Time: {formatted_date}")
35
36     random_number = random.randint(1, 100)
37     random_choice = random.choice(['apple', 'banana', 'orange'])
38     numbers = [1, 2, 3, 4, 5]
39     random.shuffle(numbers)
40
41     print(f"Random Number: {random_number}")
42     print(f"Random Choice: {random_choice}")
43     print(f"Shuffled List: {numbers}")
```