Week 6 Assignment

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Unit: ICT_102
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Tutorial:

Program 1 : For math_module.py

```
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):
    try:
        result = a / b
    except ZeroDivisionError:
        result = "Division by zero is not allowed."
    return result

def arithmetic_operations(a, b):
    addition = add(a, b)
    subtraction = subtract(a, b)
    multiplication = multiply(a, b)
    division = divide(a, b)
    return addition, subtraction, multiplication, division

def find_max_min(arr):
    max_val = max(arr)
    min_val = min(arr)
    return max_val, min_val


def calculate_mean_median(arr):
    n = len(arr)
    sorted_arr = sorted(arr)
    mean = sum(arr) / n
    if n % 2 == 0:
        median = (sorted_arr[n // 2 - 1] + sorted_arr[n // 2]) / 2
    else:
```

```
        median = sorted_arr[n // 2]
    return mean, median

def array_operations(arr, number):
    results = []
    for element in arr:
        sum_result = add(element, number)
        difference_result = subtract(element, number)
        product_result = multiply(element, number)
        quotient_result = divide(element, number)
        results.append((sum_result, difference_result, product_result,
quotient_result))
    return results
```

```
Output :
C:\Users\61411\PycharmProjects\pythonProject\.venv\Scripts\python.exe
C:\Users\61411\PycharmProjects\pythonProject\.venv\math_module.py

Process finished with exit code 0
```

Program 2: For main.py

```
from math_module import arithmetic_operations, find_max_min,
calculate_mean_median, array_operations

def main():

    numbers = [10, 5, 7, 3, 8]
    a = 15
    b = 5

    print(f"Arithmetic operations on {a} and {b}:")
    addition, subtraction, multiplication, division = arithmetic_operations(a,
b)
    print(f"Addition: {addition}")
    print(f"Subtraction: {subtraction}")
    print(f"Multiplication: {multiplication}")
    print(f"Division: {division}")

    print("\nFinding maximum and minimum:")
    max_val, min_val = find_max_min(numbers)
    print(f"Maximum value: {max_val}")
    print(f"Minimum value: {min_val}")
```

```
    print("\nCalculating mean and median:")
    mean, median = calculate_mean_median(numbers)
    print(f"Mean: {mean}")
    print(f"Median: {median}")

    print("\nArray operations with a number:")
    results = array_operations(numbers, b)
    for i, result in enumerate(results):
        print(f"For element {numbers[i]}:")
        print(f"Sum: {result[0]}")
        print(f"Difference: {result[1]}")
        print(f"Product: {result[2]}")
        print(f"Quotient: {result[3]}")
        print()

if __name__ == "__main__":
    main()
```

Output :

```
C:\Users\61411\PycharmProjects\pythonProject\.venv\Scripts\python.exe
C:\Users\61411\PycharmProjects\pythonProject\.venv\main.py
Arithmetic operations on 15 and 5:
Addition: 20
Subtraction: 10
Multiplication: 75
Division: 3.0

Finding maximum and minimum:
Maximum value: 10
Minimum value: 3

Calculating mean and median:
Mean: 6.6
Median: 7

Array operations with a number:
For element 10:
Sum: 15
```

```
Difference: 5
Product: 50
Quotient: 2.0

For element 5:
Sum: 10
Difference: 0
Product: 25
Quotient: 1.0

For element 7:
Sum: 12
Difference: 2
Product: 35
Quotient: 1.4

For element 3:
Sum: 8
Difference: -2
Product: 15
Quotient: 0.6

For element 8:
Sum: 13
Difference: 3
Product: 40
Quotient: 1.6


Process finished with exit code 0
```