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- BATCH : 03

TASK : 1

```
#write a program to design a simple calculator
def add(x, y):
    return x + y
def subtract(x, y):
    return x - y
def multiply(x, y):
    return x * y
def divide(x, y):
    if y == 0:
        return "Error! Division by zero."
    return x / y
print("Select operation:")
print("1. Add")
print("2. Subtract")
print("3. Multiply")
print("4. Divide")
choice = input("Enter choice (1/2/3/4): ")
num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))
if choice == '1':
    print(f"{num1} + {num2} = {add(num1, num2)}")
elif choice == '2':
    print(f"{num1} - {num2} = {subtract(num1, num2)}")
elif choice == '3':
    print(f"{num1} * {num2} = {multiply(num1, num2)}")
elif choice == '4':
    print(f"{num1} / {num2} = {divide(num1, num2)}")
else:
    print("Invalid input")
```

```
Select operation:
1. Add
2. Subtract
3. Multiply
4. Divide
Enter choice (1/2/3/4): 3
Enter first number: 65
Enter second number: 65
65.0 * 65.0 = 4225.0
```

TASK : 2

```
# --------------------------------
# Task 2: Sorting Student Marks
# --------------------------------

marks = [88, 92, 79, 85, 95]
print(sorted(marks))  # Ascending order


def sort_student_marks_descending(marks):
    if not all(isinstance(mark, int) and 0 <= mark <= 100 for mark in marks):
        raise ValueError("Marks must be integers between 0 and 100.")
    return sorted(marks, reverse=True)

print(sort_student_marks_descending(marks))  # Descending order
```

```
[79, 85, 88, 92, 95]
[95, 92, 88, 85, 79]
```

TASK : 3

```
# --------------------------------
# Task 3: Prime Number Validation
# --------------------------------

def isPrime(n):
    if n < 2:
        return False
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False
    return True

print(isPrime(2))   # True
print(isPrime(4))   # False
print(isPrime(17))  # True
print(isPrime(1))   # False
```

```
True
False
True
False
```

TASK : 4

```
#Create a user interface for a student grading system.

# The UI should accept marks of 5 subjects.
# Calculate total marks and percentage.
# Display grade based on percentage:
# >=90: A
# >=75: B
# >=60: C
# <60: Fail

def calculate_grade(marks):
    total_marks = sum(marks)
    percentage = (total_marks / 500) * 100
    if percentage >= 90:
        grade = 'A'
    elif percentage >= 75:
        grade = 'B'
    elif percentage >= 60:
        grade = 'C'
    else:
        grade = 'Fail'
    return total_marks, percentage, grade
# Taking input for 5 subjects
marks = []
for i in range(1, 6):
    mark = float(input(f"Enter marks for subject {i}: "))
    marks.append(mark)
total, percent, grade = calculate_grade(marks)
print(f"Total Marks: {total}")
print(f"Percentage: {percent:.2f}%")
print(f"Grade: {grade}")
```

```
Enter marks for subject 1: 45
Enter marks for subject 2: 58
Enter marks for subject 3: 56
Enter marks for subject 4: 95
Enter marks for subject 5: 56
Total Marks: 310.0
Percentage: 62.00%
Grade: C
```

TASK : 5

```
# --------------------------------
# Task 5: Unit Conversion
# --------------------------------

def kilometers_to_miles(km):
    return km * 0.621371

def miles_to_kilometers(miles):
    return miles * 1.60934

print(kilometers_to_miles(10))   # 6.21371
print(miles_to_kilometers(6.2))  # ~9.98
```

```
6.21371
9.977908000000001
```