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1. Write a Python program that swaps the values of two variables without using a temporary variable, only using arithmetic operations.
   Sample Input A=10 ,B= 61 Output : A=61,B= 10

```python
a = 10
b = 61

a = a + b
b = a - b
a = a - b

print("A =", a)
print("B =", b)
```

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2. Write a python program that takes two integers as input and performs bitwise AND, OR, XOR, left shift, and right shift operations on them. Print the results in binary format

```python
# Take two integers as input
num1 = int(input("Enter the first integer: "))
num2 = int(input("Enter the second integer: "))

# Perform bitwise AND operation
result_and = num1 & num2

# Perform bitwise OR operation
result_or = num1 | num2

# Perform bitwise XOR operation
result_xor = num1 ^ num2

# Perform left shift operation
result_left_shift = num1 << num2

# Perform right shift operation
result_right_shift = num1 >> num2

# Print results in binary format
print("Bitwise AND:", bin(result_and))
```

```python
print("Bitwise OR:", bin(result_or))
print("Bitwise XOR:", bin(result_xor))
print("Left Shift:", bin(result_left_shift))
print("Right Shift:", bin(result_right_shift))
```

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3. Write a Python program that takes two integers as input and performs the following operations:
   1. Sum of the two integers
   2. Difference of the two integers
   3. Product of the two integers
   4. Quotient (integer division) of the two integers
   5. Remainder (modulus) of the two integers

```python
def get_input():
    num1 = int(input("Enter first integer: "))
    num2 = int(input("Enter second integer: "))
    return num1, num2

def perform_operations(num1, num2):
    while True:
        operation = input("Enter operation (+, -, *, /, %, q to quit): ")
        if operation == "+":
            print(num1 + num2)
        elif operation == "-":
            print(num1 - num2)
        elif operation == "*":
            print(num1 * num2)
        elif operation == "/":
            if num2 != 0:
                print(num1 // num2)
            else:
                print("Error: Division by zero")
        elif operation == "%":
            if num2 != 0:
                print(num1 % num2)
            else:
                print("Error: Division by zero")
        elif operation == "q":
            break
```

```python
        else:
            print("Invalid operation. Please try again.")

num1, num2 = get_input()
perform_operations(num1, num2)
```

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4. Write a Python program that takes a temperature in Fahrenheit as input and converts it to
   Celsius using the formula: C=5/9(F−32). Display the converted temperature.

```python
fahrenheit = float(input("Enter temperature in Fahrenheit: "))
celsius = (5/9) * (fahrenheit - 32)
print(f"{fahrenheit} Fahrenheit is equal to {celsius:.2f} Celsius")
```

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5. Write a Python program for counting the digits in a number.
         Input
         Enter number:89589
         Output: 5

```python
def count_digits():
    number = int(input("Enter a number: "))
    count = 0
    while number != 0:
        number = number // 10
        count += 1
    print(f"The number of digits in {number} is {count}.")

count_digits()
```

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6. Write a python program for the following Expressions
         i) 24 // 6 % 3
         ii) float(4 + int(2.39) % 2)
         iii) 2 ** 2 ** 3

```python
print(24 // 6 % 3)
print(float(4 + int(2.39) % 2))
print(2 ** 2 ** 3)
```

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7. Write a python program to Print the following pattern

     1
     1 2
     1 2 3
     1 2 3 4
     1 2 3 4 5

```python
n = 5
for i in range(1, n+1):
    for j in range(1, i+1):
        print(j, end=" ")
    print()
```

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8. Write a Python program to find the maximum of three numbers entered by the user.
   Test case
   Input : 3 7 2
   Output : 7

```python
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))
num3 = float(input("Enter the third number: "))
maximum_number = max(num1, num2, num3)
print("The maximum of the three numbers is:", maximum_number)
```

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9. Write a Python program that takes input for marks obtained in different subjects from the user and calculates the total marks, percentage, and grade based on predefined grade criteria.

```python
def calculate_grade(percentage):
    if percentage >= 90:
        return 'A'
    elif 80 <= percentage < 90:
        return 'B'
    elif 70 <= percentage < 80:
        return 'C'
    elif 60 <= percentage < 70:
        return 'D'
```

```python
    else:
        return 'F'

num_subjects = int(input("Enter the number of subjects: "))
marks = []
for i in range(num_subjects):
    subject_marks = float(input(f"Enter marks obtained in subject {i+1}: "))
    marks.append(subject_marks)
total_marks = sum(marks)
percentage = (total_marks / (num_subjects * 100)) * 100
grade = calculate_grade(percentage)
print(f"\nTotal Marks: {total_marks}")
print(f"Percentage: {percentage:.2f}%")
print(f"Grade: {grade}")
```

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