In [1]:
```
#basic Calculator performing

num1 = float(input("Enter first number: "))
operator = input("Enter operator (+, -, *, /): ")
num2 = float(input("Enter second number: "))

# Perform operation
if operator == '+':
    result = num1 + num2
elif operator == '-':
    result = num1 - num2
elif operator == '*':
    result = num1 * num2
elif operator == '/':
    if num2 != 0:
        result = num1 / num2
    else:
        result = "❌ Error: Cannot divide by zero"
else:
    result = "❌ Invalid operator"

print("Result:", result)
```

```
Result: 4.0
```

In [2]:
```
#  Decimal to Binary Converter

decimal = int(input("Enter a decimal number: "))
binary = bin(decimal)[2:]
print("Binary equivalent:", binary)
```

```
Binary equivalent: 1010
```

In [3]:
```
#users age

age = int(input("enter your age: "))
if age<18:
    print("you are a minor: ")
elif age<60:
    print("you are an adult: ")
else:
    print("you are a senior: ")
```

```
you are an adult:
```

In [4]:
```
# Swap two variables without using a third variable

a = int(input("Enter first number (a): "))
b = int(input("Enter second number (b): "))
a = a + b
b = a - b
a = a - b

print("Vafter swapping:")
```

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

```
Vafter swapping:
a = 2
b = 1
```

In [5]:
```
# first 10 numbers of fibonacci series

a, b = 0, 1
print("Fibonacciseries:")
for _ in range(10):
    print(a, end=' ')
    a, b = b, a + b
```

```
Fibonacciseries:
0 1 1 2 3 5 8 13 21 34
```

In [6]:
```
#check prime or not

num = int(input("Enter a number: "))
if num > 1:
    for i in range(2, num):
        if num % i == 0:
            print("Not a prime number")
            break
    else:
        print("Prime number")
else:
    print("Not a prime number")
```

```
Prime number
```

In [7]:
```
#3rd nbr is sum of the 1st and 2nnd nbr

a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
c = int(input("Enter third number: "))

if c == a + b:
    print("Third number is the sum of first two.")
else:
    print("Third number is not the sum.")
```

```
Third number is the sum of first two.
```

In [8]:
```
#custom model created

def calculate_factorial(n):
    result = 1
    for i in range(1, n + 1):
        result *= i
    return result
print(calculate_factorial(5))
```

```
120
```

In [9]:
```python
#divisor is zero

a = float(input("Enter numerator: "))
b = float(input("Enter denominator: "))

if b != 0:
    print("Result:", a / b)
else:
    print("Error: Cannot divide by zero")
```

```
Error: Cannot divide by zero
```

In [10]:
```python
#return the maximum value

def find_max(numbers):
    return max(numbers)

nums = [3, 5, 9, 1, 6]
print("Maximum value:", find_max(nums))
```

```
Maximum value: 9
```

In [11]:
```python
#prints greet

def greet(name, age=25):
    print(f"Hello {name}, you are {age} years old")

greet("Alice")
greet("Bob",30)
```

```
Hello Alice, you are 25 years old
Hello Bob, you are 30 years old
```

In [12]:
```python
#count number of vowels in a string

text = input("Enter a string: ")
vowels = 'aeiouAEIOU'
count = 0
for char in text:
    if char in vowels:
        count += 1
print("Number of vowels:", count)
```

```
Number of vowels: 5
```

In [13]:
```python
#prints a multiplication table

num = int(input("Enter a number: "))
for i in range(1, 11):
    print(f"{num} x {i} = {num * i}")
```

```
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

In [17]:
```
#print a right angled triangle of '*'

print("*    ")
print("**   ")
print("***  ")
print("**** ")
print("*****")
```

```
*
**
***
****
*****
```

In [18]:
```
#print a pyramid of '*'

print('    *    ')
print('   ***   ')
print('  *****  ')
print(' ******* ')
print('*********')
```

```
    *
   ***
  *****
 *******
*********
```

In [19]:
```
###SET--B

#pallindrome number

x = int(input("Enter number: "))
if str(x) == str(x)[::-1]:
    print(True)
else:
    print(False)
```

```
True
```

In [20]:
```
#single number

nums = [4, 1, 2, 1, 2]
result = 0
for num in nums:
```

```
    result ^= num
print("Single Number:", result)
```

```
Single Number: 4
```

In [21]:
```
#two sum

nums = [2, 7, 11, 15]
target = 9
for i in range(len(nums)):
    for j in range(i + 1, len(nums)):
        if nums[i] + nums[j] == target:
            print([i, j])
```

```
[0, 1]
```

In [22]:
```
#happy number

def is_happy(n):
    seen = set()
    while n != 1 and n not in seen:
        seen.add(n)
        n = sum(int(ch) ** 2 for ch in str(n))
    return n == 1

print(is_happy(19))
```

```
True
```

In [24]:
```
#contains duplicate


nums = [1, 2, 3, 1]
if len(nums) == len(set(nums)):
    print(True)
else:
    print(False)
```

```
False
```

In [ ]:
```

```