

#The sum of Two Numbers

Objective: Write a program to calculate the sum of two numbers.

Input: Two integers.

Program :

```
n1 = int(input("Enter first Number : "))
n2 = int(input("Enter second Number : "))
Sum_of_numbers = n1+n2
print("The sum of",n1,"and",n2,"is",Sum_of_numbers)
```

output :

```
Enter first Number : 50
Enter second Number : 30
The sum of 50 and 30 is 80
```

#Odd or Even

Objective: Determine whether a number is odd or even.

Input: A single integer.

Program :

```
num = int(input("Enter the number : "))
if num % 2 == 0:
    print(num,"is even")
else:
    print(num,"is odd")
```

output :

```
Enter the number : 9
9 is odd
```

#Factorial Calculation

Objective: Compute the factorial of a given number n (i.e., $n! = n \times (n-1) \times \dots \times 1$).

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Input: A single integer n .

Program :

```
import math
```

```
num = int(input("Enter a non-negative integer: "))
```

```
if num < 0:
```

```
    print("Factorial is not defined for negative numbers")
```

```
else:
```

```
    fact = math.factorial(num)
```

```
    print(fact)
```

output :

Enter a non-negative integer: 6

720

#Fibonacci Sequence

Objective: Generate the first n numbers in the Fibonacci sequence (e.g., 0, 1, 1, 2, 3, 5, ...).

Input: Integer n .

Program :

```
def fibonacci_sequence(n):  
    if n <= 0:  
        return []  
    elif n == 1:  
        return [0]  
    else:  
        list = [0, 1]  
        while len(list) < n:  
            next = list[-1]+list[-2]  
            list.append(next)  
        return list  
num = int(input("Enter the number of fibonacci numbers : "))  
fib = fibonacci_sequence(num)  
print(fib)
```

output :

Enter the number of fibonacci numbers : 7

[0, 1, 1, 2, 3, 5, 8]

#Reverse a String

Objective: Reverse the characters in a string.

Input: A string

Program :

```
def reverse_string(string):  
    return string[::-1]  
my_string = str(input("Enter the String : "))  
reversed_string = reverse_string(my_string)
```

```
print(reversed_string)
```

output :

Enter the String : Chaitanya

aynatiahC

#Palindrome Check

Objective: Check if a string reads the same backward as forward.

Input: A string.

Program :

```
def is_palindrome(string):  
    return string == string[::-1]  
  
string1 = str(input("Enter the String1 : "))  
string2 = str(input("ENter the string2 : "))  
  
print(string1, "is palindrome:", is_palindrome(string1))  
print(string2, "is palindrome:", is_palindrome(string2))
```

output :

Enter the String1 : Fruit

ENter the string2 : sweets

Fruit is palindrome: False

sweets is palindrome: False

#Leap Year Check

Objective: Determine whether a year is a leap year.

Input: An integer year (e.g., 2024).

Program :

```
def is_leap_year(year):  
    if (year % 4 == 0 and year % 100 != 0) or year % 400 == 0:  
        return True  
    else:  
        return False  
  
year1 = int(input("Enter the number : "))  
year2 = int(input("Enter the number : "))  
year3 = int(input("Enter the number : "))  
year4 = int(input("Enter the number : "))  
  
print(year1, "is leap year:", is_leap_year(year1))  
print(year2, "is leap year:", is_leap_year(year2))  
print(year3, "is leap year:", is_leap_year(year3))  
print(year4, "is leap year:", is_leap_year(year4))
```

output :

Enter the number : 1995

Enter the number : 2000

Enter the number : 1998

Enter the number : 2005

1995 is leap year: False

2000 is leap year: True

1998 is leap year: False

2005 is leap year: False

#Armstrong Number

Objective: Check if a number equals the sum of its digits raised to the power of the number of digits.

Program:

```
def armstrong_number(n):  
    digit = str(n)  
    return n == sum(int(d) ** len(digit) for d in digit)  
  
num = int(input("Enter a number: "))  
print(f"Is {num} an Armstrong number? {armstrong_number(num)}")
```

output :

Enter a number: 153

Is 153 an Armstrong number? True.

Enter a number: 231

Is 231 an Armstrong number? False.

#Custom Encryption-Decryption System

Program:

```
def encrypt(text, shift):  
    encrypted_text = ""  
    for char in text:  
        if char.isalpha():  
            shift_base = 65 if char.isupper() else 97  
            encrypted_text += chr((ord(char) - shift_base + shift) % 26 + shift_base)
```

```
        else:
            encrypted_text += char
    return encrypted_text

def decrypt(encrypted_text, shift):
    return encrypt(encrypted_text, -shift)

message = "Hello World!"
shift_key = 3

encrypted_message = encrypt(message, shift_key)
decrypted_message = decrypt(encrypted_message, shift_key)

print(f"Original: {message}")
print(f"Encrypted: {encrypted_message}")
print(f"Decrypted: {decrypted_message}")
```

output :

Enter the string : Chaitanya kumar

Original: Chaitanya kumar

Encrypted: Fkdlwdqbd nxpdu

Decrypted: Chaitanya kumar