**1. Check if a String is a Palindrome**

**Problem Statement:**

Write a program that takes a string as input and checks if it is a palindrome. A palindrome is a word, phrase, or number that reads the same forward and backward, ignoring spaces, punctuation, and letter casing.

**Input:**

* A string s.

**Output:**

* Print "Palindrome" if the string is a palindrome.
* Print "Not Palindrome" if the string is not a palindrome.

**Example 1:**

**Input:**

arduino

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"madam"

**Output:**

Copy code

Palindrome

**Example 2:**

**Input:**

arduino

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"hello"

**Output:**

mathematica

Copy code

Not Palindrome

**2. Find the Maximum and Minimum Values in an Array**

**Problem Statement:**

Write a program that takes an array of numbers and finds both the maximum and minimum values in the array.

**Input:**

* An array of integers arr.

**Output:**

* Print the maximum and minimum values in the array.

**Example 1:**

**Input:**

javascript

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[3, 1, 5, 7, -2, 9]

**Output:**

yaml

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Maximum Value: 9

Minimum Value: -2

**Example 2:**

**Input:**

javascript

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[0, 0, 0, 0, 0]

**Output:**

yaml

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Maximum Value: 0

Minimum Value: 0

**3. Sum of Digits in a Number**

**Problem Statement:**

Write a program that takes a number as input and calculates the sum of its digits.

**Input:**

* An integer n.

**Output:**

* The sum of the digits of n.

**Example 1:**

**Input:**

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123

**Output:**

Copy code

6

**Example 2:**

**Input:**

yaml

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9876

**Output:**

Copy code

30

**1. Reverse a String**

**Problem Statement:**

Write a program that takes a string as input and returns the string reversed.

**Input:**

* A string s.

**Output:**

* The reversed string.

**Example 1:**

**Input:**

arduino

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"Hello"

**Output:**

arduino

Copy code

"olleH"

**Example 2:**

**Input:**

arduino

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"JavaScript"

**Output:**

arduino

Copy code

"tpircSavaJ"

**2. Check for Prime Number**

**Problem Statement:**

Write a program that takes an integer n and checks if it is a prime number.

**Input:**

* An integer n.

**Output:**

* Print "Prime" if the number is prime.
* Print "Not Prime" if the number is not prime.

**Example 1:**

**Input:**

Copy code

7

**Output:**

mathematica

Copy code

Prime

**Example 2:**

**Input:**

Copy code

10

**Output:**

mathematica

Copy code

Not Prime

**Constraints:**

* Assume n will be a positive integer.

**3. Find the Factorial of a Number**

**Problem Statement:**

Write a program that takes an integer n and returns the factorial of that number.

**Input:**

* An integer n.

**Output:**

* The factorial of n.

**Example 1:**

**Input:**

Copy code

5

**Output:**

Copy code

120

**Example 2:**

**Input:**

Copy code

3

**Output:**

Copy code

6

**Constraints:**

* n is a non-negative integer (0 ≤ n ≤ 12).

**4. Count the Occurrences of a Character in a String**

**Problem Statement:**

Write a program that takes a string s and a character c as input, and returns how many times the character c appears in the string s.

**Input:**

* A string s.
* A character c.

**Output:**

* The number of times c appears in s.

**Example 1:**

**Input:**

makefile

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s = "programming", c = "g"

**Output:**

Copy code

2

**Example 2:**

**Input:**

makefile

Copy code

s = "hello world", c = "l"

**Output:**

Copy code

3

**5. Fibonacci Series up to n Terms**

**Problem Statement:**

Write a program that takes an integer n and generates the Fibonacci series up to n terms. The Fibonacci series is a sequence where each number is the sum of the two preceding ones, starting from 0 and 1.

**Input:**

* An integer n.

**Output:**

* The Fibonacci series up to the nth term.

**Example 1:**

**Input:**

makefile

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n = 5

**Output:**

Copy code

0 1 1 2 3

**Example 2:**

**Input:**

makefile

Copy code

n = 7

**Output:**

Copy code

0 1 1 2 3 5 8

**Bonus: Additional Challenges for Each Question**

1. **Reverse a String:** Modify the program to reverse the string without using built-in functions like reverse().
2. **Check for Prime Number:** Enhance the program to handle negative numbers and give a proper message for non-positive integers.
3. **Find the Factorial of a Number:** Modify the program to use a recursive approach for calculating the factorial.
4. **Count the Occurrences of a Character in a String:** Modify the program to also count how many times a word appears in a string.
5. **Fibonacci Series:** Modify the Fibonacci program to return the Fibonacci sequence using a memoization approach for large n values.