Q-1: Help fitness manager to Calculate the Body Mass Index (BMI) of clients.

Sample test case:

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| --- |
| Input: Enter weight(kg) and height(m^2) 72.57 1.78  Output: The Body Mass Index (BMI) is: 22.9043 |

Constraints:

* The values of weight(kg) and height(m^2) should be positive integers.

Q-2: Write a program to find maximum and minimum of two numbers without using loop and any condition.

Sample test case:

|  |
| --- |
| Input: 17 19  Output: max = 19  min = 17 |

Q-3: Create program to check if two numbers are equal without using arithmetic operators comparison operators.

Sample test case:

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| --- |
| Input: 5 5  Output: x is equal to y |
|  |

Q-4: You will be given an integer n, your task is to return the sum of all natural number less than or equal to n.

As the answer could be very large, return answer modulo 109+7.

Sample test case:

|  |
| --- |
| Input: 5  Output: Sum of natural numbers up to 5 (mod 10^9 + 7): 15 |

Constraints:

* The value of n should be positive integers.

Q-5: Given three integers 'A' denoting the first term of an arithmetic sequence , 'C' denoting the common difference

of an arithmetic sequence and an integer 'B'. you need to tell whether 'B' exists in the arithmetic sequence or not.

Return 1 if B is present in the sequence. Otherwise, returns 0.

Sample test case:

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| --- |
| Input: A = 1, B = 2, C = 3  Output: 2 is not present in the arithmetic sequence. |

Q-6: As a part of conversion calculator you are tasked to Convert temperature from Fahrenheit to Celsius

Sample test case:

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| --- |
| Input: 75.0  Output: The temperature in Celsius is: 23.8889 |

Q-7: Write a program to swap two numbers using bitwise XOR operator.

Sample test case:

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| --- |
| Before swap: a = 10, b = 20  After swap: a = 20, b = 10 |

Constraints:

* Don’t use third variable for swapping.

Q-8: In a mathematics class, the teacher challenges the students to find all Armstrong numbers between 1 and 1000.

An Armstrong number (also known as a narcissistic number) is a number that is equal to the sum of its own digits each raised to the power of the number of digits in the number.

For example, 153 is an Armstrong number because 1^3 + 5^3 + 3^3 = 153.

Write a program to help students.

Sample test case:

|  |
| --- |
| All the Armstrong numbers between 1 to 1000 : 1 2 3 4 5 6 7 8 9 153 370 371 407 |

Q-9: Generate a magical number which is equal to the sum of digits of a given number.

Sample test case:

|  |
| --- |
| Input: 549  Output: Sum of digits: 18 |

Constraints:

* Consider positive numbers only.

Q-10: Alice and Bob are participating in a coding competition. The challenge they are facing is to check whether a given string is a palindrome or not.

Write a program to help them.

Sample test case:

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| --- |
| Input: mom  Output: mom is a palindrome. |

Q-11: The teacher has a list of exam scores (an array of integers) from a recent test.

The scores need to be sorted in ascending order, from the lowest score to the highest score.

Implement the bubble sort algorithm to sort an array of integers in ascending order.

Sample test case:

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| --- |
| Input: 3 8 98 76 32 31  Output: Sorted array: 3 8 31 32 76 98 |

Q-12: Alex and Bella are playing a game with binary numbers. Alex gives Bella a positive integer, and Bella's task is to find the length of the longest sequence of consecutive set bits (1s) in the binary representation of the given integer. Write program to help Bella.

Sample test case:

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| --- |
| Input: 19  Output: Length of longest sequence of consecutive set bits: 2 |

Q-13: In a video game called "Magical Potions," players can collect magical potions to boost their power. Each magical potion has a unique numeric value associated with it.

Players are curious to know if a particular potion can be represented as a power of 2.

You need to help them by creating a program that checks if a given potion's value is a power of 2 or not.

Sample test case:

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| --- |
| Input: 16  Output:16 is a power of 2. |

Q-14: Alice is learning how to program and wants to practice by writing a program to generate the Fibonacci series. Help Alice to generate Fibonacci series.

Sample test case:

|  |
| --- |
| Input: Enter the number of terms: 8  Output: Fibonacci series: 0 1 1 2 3 5 8 13 |

Constraints:

* Number to terms to generate Fibonacci series up to should be positive.

Q-15: Given a positive integer N, print count of set bits in it.

Sample test case:

|  |
| --- |
| Input: N = 6  Output: 2 |

Constraints:

* Integer N should be positive only.