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**Foundation Course – Assignment 2**

*Deadline: 10 July 2024*

1. Write a program to delete the duplicates from an array.

**Example:** If A = {2,2,5,8,5,9,3} then output should be A = {2,5,8,9,3}

1. Write a program to find the largest and the second largest number in an array.
2. Write a program that places all the zeros in an array at the end of the list.
3. Write a program to find the first non-repeating character in a string. (**Medium**)

**Example:** If the string is "Swiss", then the output should be 'w'.

1. Write a program to merge two sorted arrays into a single sorted array.

**Example:** If A = [1, 3, 5, 7] and B = [2, 4, 6, 8], then the output should be [1, 2, 3, 4, 5, 6, 7, 8].

1. Write a program to find the missing number in an array containing n distinct numbers taken from 0, 1, 2, ..., n.

**Example:** If A = [3, 0, 1,4], then the output should be 2.

1. Write a program to check whether a number is Armstrong number or not.

Hint: Armstrong number is a number that is equal to the sum of cubes of its digits.

**Example:** If A= 153, it's an Armstrong number because 1^3 + 5^3 + 3^3 = 153.

1. Write a program to find the longest common prefix in an array of strings.

**Example:** If the input is ["interstellar", "internet", "intermediate"], the output should be "inter".

1. Write a program that prints the Fibonacci sequence up to n terms (where n is user input).
2. Write a program that reads ***N*** integers, determines how many positive and negative values have been read and computes the total and average of input values.

**Sample Output:**

Enter N: 4

Enter 4 values: 1 2 -1 3

The number of positive numbers: 3

The number of negative numbers: 1

Total is: 5

Average is: 1.25

**Evaluation Criteria:**

* **Correctness:** Does the program solve the problem as described? Does it handle edge cases properly?
* **Code Quality:** Is the code well-structured and readable? Are variables and functions named appropriately?
* **Efficiency:** Is the code unnecessarily complex or slow? Are there simpler or faster ways to solve the problem?
* **Comments:** Are there comments explaining complex pieces of code? Is the purpose of each function and variable explained?

using System;

namespace MyApp

{

internal class Program

{

static void Main(string[] args)

{

string[] input = { "interstellar", "internet", "intermediate" };

string longestCommonPrefix = FindLongestCommonPrefix(input);

Console.WriteLine($"Longest common prefix: {longestCommonPrefix}");

}

public static string FindLongestCommonPrefix(string[] strs)

{

if (strs == null || strs.Length == 0)

return "";

string prefix = strs[0];

for (int i = 1; i < strs.Length; i++)

{

while (strs[i].IndexOf(prefix) != 0)

{

prefix = prefix.Substring(0, prefix.Length - 1);

if (prefix.Length == 0)

return "";

}

}

return prefix;

}

}

}

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using System;

namespace MyApp

{

internal class Program

{

static void Main(string[] args)

{

Console.Write("Enter the number of terms for Fibonacci sequence: ");

int n = Convert.ToInt32(Console.ReadLine());

Console.WriteLine("Fibonacci Sequence:");

for (int i = 0; i < n; i++)

{

Console.Write(Fibonacci(i) + " ");

}

Console.WriteLine();

}

public static int Fibonacci(int n)

{

if (n <= 1)

return n;

else

return Fibonacci(n - 1) + Fibonacci(n - 2);

}

}

}

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using System;

namespace MyApp

{

internal class Program

{

static void Main(string[] args)

{

Console.Write("Enter the number of integers: ");

int N = Convert.ToInt32(Console.ReadLine());

int positiveCount = 0, negativeCount = 0;

int total = 0;

double average = 0.0;

for (int i = 0; i < N; i++)

{

Console.Write($"Enter integer {i + 1}: ");

int num = Convert.ToInt32(Console.ReadLine());

if (num > 0)

positiveCount++;

else if (num < 0)

negativeCount++;

total += num;

}

if (N > 0)

average = (double)total / N;

Console.WriteLine($"Positive numbers: {positiveCount}");

Console.WriteLine($"Negative numbers: {negativeCount}");

Console.WriteLine($"Total: {total}");

Console.WriteLine($"Average: {average}");

}

}

}