MM GUIDE
van data naar inzicht

Introduction

In this document you will find some questions. You have to answer these questions by writing a piece of code in C# .NET. You are of course allowed to use the internet for reference, but please refrain from using tools like ChatGPT.

Question 1

This code is part of a .NET console application:

```
static void Main(string[] args)
{
    AnimalList listOfAnimals = new AnimalList();
    DoubleList listOfNumbers = new DoubleList();

    listOfNumbers.DoSomething(2.5);
    listOfAnimals.DoSomething(new Animal());
}

public class Animal
{
    public string Name { get; set; }
    public List<string> Habitats { get; set; }
}

public class AnimalList
{
    public void DoSomething(Animal animal)
    {
        Console.WriteLine("Foo Animal");
    }
}

public class DoubleList
{
    public void DoSomething(double number)
    {
        Console.WriteLine("Foo Number");
    }
}
```

Optimize the code in such a way that you can replace the lists with a `GenericList` class with a single `DoSomething()` method.

Question 2

Write 2 methods to reverse a .NET `LinkedList<T>`, one using loops, one using recursion.

Question 3

Write a piece of code to check if two Strings are anagrams.

What is the space complexity of your solution? What is the time complexity of your solution?

Question 4

Create a function that can determine which parent nodes in a binary tree only have one child of which this child node is also an end node.

Tip: recursiveness!

Below is an example of an unbalanced binary tree that you can use, but make sure the function works on any binary tree. Show the result. For example, the result of the tree shown below should be node 14, 23 and 72.