# Data Structures & Algorithms in Go

This repository provides solutions for the Data Structures & Algorithms In Go course.

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## Arrays

- **SumArray**
- **Sequential Search**
- **Binary Search**
- **Largest Sum Subarray**: Find the subarray with the maximum sum (Kadane's Algorithm).
- **Rotating an Array by k Positions**
- **Array Waveform**: Rearrange the array elements in a wave-like pattern.
- **Index Array**: Map elements to their corresponding indices based on array values.
- **Sorting From 1 to n**
- **Smallest Positive Missing Number**: Identify the smallest positive integer missing from an array.
- **Maximum, Minimum Array**: Find the maximum and minimum elements in an array.
- **Array Index Maximum Difference**: Calculate the maximum difference between indices of an array such that the element at the smaller index is less than or equal to the element at the larger index.

## Recursive Functions

- **Factorial**: Compute the factorial of a number recursively.
- **Print Base 16 Integers**: Convert and print integers in base 16 using recursion.
- **Greatest Common Divisor**: Find the greatest common divisor (GCD) of two numbers using the Euclidean algorithm.
- **Fibonacci Numbers**: Generate the nth Fibonacci number recursively.
- **All Permutations of an Integer List**: Recursively generate all permutations of a list of integers.
- **Tower of Hanoi**: Solve the Tower of Hanoi problem with recursive steps and explanations.

## Usage

To explore the code and test the implementations:

1. Clone this repository:

```
git clone https://github.com/ukhanseecs/ds-algo-go.git
cd ds-algo-go
```