Lab 1

August 2024

1 Maximum Subarray Sum

Given an array of n integers, find the contiguous subarray (containing at least one number) which has the largest sum and return its sum.

Example

- **Input:** $[-2, 1, -3, 4, -1, 2, 1, -5, 4]$
- **Output:** 6
- **Explanation:** The subarray $[4, -1, 2, 1]$ has the largest sum $= 6$.

2 Longest Increasing Subsequence (LIS)

Given an array of n integers, find the length of the longest increasing subsequence.

A subsequence is a sequence derived from another sequence by deleting some or no elements without changing the order of the remaining elements.

Example

- **Input:** $[10, 9, 2, 5, 3, 7, 101, 18]$
- **Output:** 4
- **Explanation:** The longest increasing subsequence is $[2, 3, 7, 101]$, which has a length of 4.