

**Question:**

You are given a list of stock prices for a particular stock, where each element in the list represents the price of the stock on a given day. Your task is to write a function to find the maximum profit that can be obtained by buying and selling the stock exactly once. You cannot sell a stock before you buy one.

For example, given the prices [7, 1, 5, 3, 6, 4], the maximum profit that can be obtained is 5, which is achieved by buying on day 2 (price = 1) and selling on day 5 (price = 6).

Write a function **max\_profit(prices)** that takes in a list of stock prices and returns the maximum profit that can be obtained.

Requirements:

- Implement the **max\_profit** function.
- The function should return an integer representing the maximum profit.
- Handle the edge cases.

Constraints:

- Each element in the list will be a positive integer representing the price of the stock on that day.

Your task is to implement the **max\_profit** function efficiently, considering the time complexity and space complexity of your solution. You may use any data structures or algorithms to solve the problem.