309. Best Time to Buy and Sell Stock with Cooldown

题目描述： https://leetcode.com/problems/best-time-to-buy-and-sell-stock-with-cooldown/

> 给定股票每天的价格，可以买卖多次但是同一时刻只能进行一笔交易，要想买新的必须把旧的卖掉！而且卖掉之后有一天的cooldown期，必须一天之后才能进行另一次交易。
> 例如：

```
prices = [1, 2, 3, 0, 2]
maxProfit = 3
transactions = [buy, sell, cooldown, buy, sell]
```

解题思路：

动态规划。
因为有两种交易，所以有两个数组。
s[i]代表i时刻如果卖出股票，则最大的收益
b[i]代表i时刻如果买入股票，则最大的收益
s[0] = 0;
b[0] = - p[0], i == 0 b[1] = - p[1], i == 1
s[i] = max(b[i - 1]+p[i], s[i - 1] - p[i - 1] + p[i]), i >= 1
b[i] = max(s[i - 2] - p[i], b[i - 1] + p[i - 1] - p[i]), i >= 2

代码：

```cpp
class Solution {
public:
    int maxProfit(vector<int>& prices) {
        int len = prices.size();
        int res = 0;
        if(len < 2) {
            return 0;
        }
        vector<int> bf(len, 0);
        vector<int> sf(len, 0);
        bf[0] = -prices[0];
        for(int i = 1; i < len; i++) {
            sf[i] = max(bf[i-1] + prices[i], sf[i-1]-prices[i-1]+prices[i]);
            res = max(res, sf[i]);
            if(i == 1) {
                bf[i] = -prices[1];
            }
            else {
                bf[i] = max(sf[i-2]-prices[i], bf[i-1]+prices[i-1]-prices[i]);
            }
        }
        return res;
    }
};
```