

# Problem 3466: Maximum Coin Collection

## Problem Information

**Difficulty:** Medium

**Acceptance Rate:** 52.74%

**Paid Only:** Yes

**Tags:** Array, Dynamic Programming

## Problem Description

Mario drives on a two-lane freeway with coins every mile. You are given two integer arrays, `lane1` and `lane2`, where the value at the `i`th index represents the number of coins he `_gains or loses_` in the `i`th mile in that lane.

\* If Mario is in lane 1 at mile `i` and `lane1[i] > 0`, Mario gains `lane1[i]` coins. \* If Mario is in lane 1 at mile `i` and `lane1[i] < 0`, Mario pays a toll and loses `abs(lane1[i])` coins. \* The same rules apply for `lane2`.

Mario can enter the freeway anywhere and exit anytime after traveling **at least** one mile. Mario always enters the freeway on lane 1 but can switch lanes **at most** 2 times.

A **lane switch** is when Mario goes from lane 1 to lane 2 or vice versa.

Return the **maximum** number of coins Mario can earn after performing **at most 2 lane switches**.

**Note:** Mario can switch lanes immediately upon entering or just before exiting the freeway.

**Example 1.**

**Input:** `lane1 = [1,-2,-10,3]`, `lane2 = [-5,10,0,1]`

**Output:** 14

**Explanation:**

\* Mario drives the first mile on lane 1. \* He then changes to lane 2 and drives for two miles. \* He changes back to lane 1 for the last mile.

Mario collects  $1 + 10 + 0 + 3 = 14$  coins.

**Example 2.**

**Input:** lane1 = [1,-1,-1,-1], lane2 = [0,3,4,-5]

**Output:** 8

**Explanation:**

\* Mario starts at mile 0 in lane 1 and drives one mile. \* He then changes to lane 2 and drives for two more miles. He exits the freeway before mile 3.

He collects  $1 + 3 + 4 = 8$  coins.

**Example 3.**

**Input:** lane1 = [-5,-4,-3], lane2 = [-1,2,3]

**Output:** 5

**Explanation:**

\* Mario enters at mile 1 and immediately switches to lane 2. He stays here the entire way.

He collects a total of  $2 + 3 = 5$  coins.

**Example 4.**

**Input:** lane1 = [-3,-3,-3], lane2 = [9,-2,4]

**Output:** 11

**Explanation:**

\* Mario starts at the beginning of the freeway and immediately switches to lane 2. He stays here the whole way.

He collects a total of  $9 + (-2) + 4 = 11$  coins.

**Example 5.**

**Input:** lane1 = [-10], lane2 = [-2]

**Output:** -2

**Explanation:**

\* Since Mario must ride on the freeway for at least one mile, he rides just one mile in lane 2.

He collects a total of -2 coins.

**Constraints:**

\*  $1 \leq \text{lane1.length} == \text{lane2.length} \leq 105$  \*  $-109 \leq \text{lane1}[i], \text{lane2}[i] \leq 109$

## Code Snippets

### C++:

```
class Solution {
public:
    long long maxCoins(vector<int>& lane1, vector<int>& lane2) {

    }
};
```

### Java:

```
class Solution {
    public long maxCoins(int[] lane1, int[] lane2) {

    }
}
```

**Python3:**

```
class Solution:  
    def maxCoins(self, lane1: List[int], lane2: List[int]) -> int:
```