

# [CS 11] Prac 9I – Competitive Catherine

## Problem Statement

EVO has decided to hold the competitive tournament for the game "Catherine" this year as a round robin tournament.

There are  $n$  players, each with a given skill level, and each unique pair of players will have exactly one match. For example, for  $n = 5$  players, there will be exactly 10 matches.

EVO knows their audience, and knows exactly how much excitement each match-up will generate! For a match between two players with skill levels  $s_1$  and  $s_2$ , they have come up with the following formula for the amount of **excitement** that the match will generate:

$$\text{excitement} = \begin{cases} s_1 s_2 & \text{if } s_1 s_2 \text{ is odd;} \\ s_1 s_2 + s_1 + s_2 + 1 & \text{if } s_1 s_2 \text{ is even.} \end{cases}$$

Given the skill levels of the  $n$  players, what is the total amount of excitement across all matches?

## Task Details

Your task is to implement a function called `total_excitement`. This function has a single parameter, a `tuple` or `list` of  $n$  `int`s.

The function must return an `int` denoting the total excitement across all  $n$  matches.

## Restrictions

(See 9a for more restrictions)

For this problem in particular:

- Recursion is allowed.
- The source code limit is 2000.

## Example Calls

### Example 1 Function Call

```
total_excitement([3, 1, 4])
```

### Example 1 Return Value

```
33
```

## Constraints

- The function `total_excitement` will be called at most 60,000 times.
- The sum of all  $n$ s is at most 200,000
- $0 \leq n \leq 200,000$
- Each skill level is an integer between 1 and  $10^{10}$ .

## Scoring

- You get 50 🍷 points if you solve all test cases where:
  - $n \leq 50$
  - The sum of all  $n$ s is at most 500.
- You get 60 🍷 points if you solve all test cases where:
  - $n \leq 4,000$
  - The sum of all  $n$ s is at most 8,000.
- You get 70 🍷 points if you solve all test cases.

## Clarifications

No clarifications have been made at this time.

Report an issue

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[CS 11]

Practice 9 🍷

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✔ **Points:** 180 (partial)

🕒 **Time limit:** 9.0s

📄 **Memory limit:** 1G

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➤ **Problem type**

✔ **Allowed languages**  
NONE, py3