

1.21 Gigawatts

You're stuck in the year 1752 and you've made a grave mistake : You accidentally ruined Benjamin Franklin's kite. You're being chased through the city by Ben and his posse. You finally made it back to your time traveling DeLorean when Doc Brown let's you know that there's a serious problem with the Flux Capacitor.

Your Flux Capacitor gets power from two batteries that can each generate different amounts of energy. These energy numbers are stored in two Arrays (**batteryOne** and **batteryTwo**) . In order to travel back to the present you must write a function that will return true if an energy level from **batteryOne** can be added to an energy level from **batteryTwo** in order to create a sum that equals your target number : **gigawattTarget**.

If your two batteries can not be summed to reach the target number you will return false. You will also presumably be captured by Ben Franklin and tortured by the kite police.

Notes from Doc Brown :

- Battery energy levels can have negative numbers
- A potential energy level can also be zero

tl;dr

Return true if you can add a number from **batteryOne** to a number from **batteryTwo** in order to equal the **gigawattNumber**. Otherwise return false.

NOTE :

Anything other than an O(n) solution may time out on certain tests.

Example 1 :

batteryOne : [5, 7, 2, 4]

batteryTwo : [-3, 0, 1]

gigawattTarget : 8

output : true *batteryOne : 7 + batteryTwo : 1 = 8

Example 2 :

batteryOne : [6, 3, 1, 9, 5, 4, 0, 1, -29, 12, 45, 2, 6]

batteryTwo : [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

gigawattTarget : 100

output : false *No numbers from either array add up to the target number

Fix the Infinite Improbability Drive

Don't Panic.

You and your crew (Trillian, Arthur, Ford, and Zaphod Beeblebrox) are stuck on a mattress planet. Not the peaceful, memory foam species of Tempur-Pedic fame, but the highly hostile box-spring species commonly found in dorm rooms.

Your ship's engine : The Infinite Improbability Drive, is unresponsive. Your ship is simply just hanging in the sky In much the same way that bricks don't.

In order to fix the Infinite Improbability Drive and get off this horrid planet, you must help Marvin (your faithful robot companion) reprogram the logic of the engine.

You discover that the drive is incorrectly calculating "improbability". The drive's primary function receives two parameters :

A String (**coordinates**) that contains a number of positive int values between 0-9.

An int value (**remove**) that contains the number of characters that needs to be removed from the **coordinates** String.

Your goal is to manipulate the **coordinates** string by removing the set amount of characters in order to create the lowest possible int value for that string.

Restrictions :

- If the amount of **remove** characters is greater than or equal to the size of the String **coordinates** we need to return a String containing only the number "0"
- We cannot reorder the characters within a String
- No chars in **coordinates** will be negative, nor will **remove** ever be negative
- If **remove** is 0 simple return the coordinates String as is

For example 1:

coordinates : "746209249"

remove : 5

output : "0249"

For example 2:

coordinates : "64738929"

remove : 0

output : "64738929"

For example 3:

coordinates : "12345"

remove : 6

output : "0"

Game of Thrones

The North never forgets.

After your brother was killed during a red themed wedding you have been very apprehensive of all dinners and events. You are the scout for the Night's Watch and have been tasked with going to events ahead of time to scope out the venue for potential threats.

Each time you enter a **venue** you create a two dimensional integer array representation of that room. A '0' represents empty space while a '1' represents a person. You are to report back with the number of 'groups' in a room. The Night's Watch has determined that the number of potential groups correlates to the likelihood of being betrayed.

A 'group' contain 1 or more persons ('1') surrounded by empty space ('0' or a 'wall'). Groups can be connected horizontally, vertically, diagonally, or all of the above.

Example Groups :

000

```
010
000
```

```
011
000
000
```

```
100
100
000
```

```
100
010
001
```

```
101
010
011
```

A group can contain any number of people 1 or greater. So a lone person is considered a 'group'.

tl;dr

Given a two dimensional integer array (**venue**) determine the number of 'groups' in that venue. A group is any number of 'people' equal to or greater than 1 (a 'person' is represented by '1', whereas empty space is represented by '0').

Notes :

Any wall (the edge of the array) can be considered empty space. Therefore if you have a 'group' that backs up to a wall they still count as a 'group'.

Example 1 :

```
00001000
00100001
01110000
```

Number of 'groups' : 3

Example 2 :

```
0000001110
0000000000
1000010000
1000000110
```

```
1000000110
1000100000
0001000001
```

Number of 'groups' : 6

Secret letters

Your friends Harry, Ron, and Hermione are planning to break out of school and infiltrate the Ministry of Magic. The problem is that Professor Umbridge has planted listening ears in every corner of the castle.

The only way for you to communicate your plans with your friends is to write notes and to write all of the words in reverse. Umbridge and her goons aren't smart enough to decipher this simple code.

You must write an algorithm that takes in a String (**initialMessage**) and outputs that message where all of the characters in the words are reversed BUT the whitespace is maintained. After all you don't want your friends to be confused with reversed tabs, spaces, and returns.

tl;dr

Reverse the order of chars in individual word(s) within a sentence (**initialMessage**) while still preserving whitespace

Example 1 :

input : "Let's meet in the owlery today "
output : "s'teL teem ni eht yrelwo yadot "

Example 2 :

input : "Dumbledore army meeting at five"
output : "erodelbmuD ymra gniteem ta evif"

Bermuda Triangle

You are the world's foremost leader in conspiracy theories and government cover-ups. You think that you have finally cracked the code on the Bermuda Triangle, but it would take you too long to work out the math by hand so you decide to create an algorithm instead.

You have discovered that the Bermuda Triangle actually MOVES, and given the coordinates of the triangle and the coordinates of a missing plane as well as a missing boat, you want to determine if the missing plane and/or the missing boat disappeared in the triangle coordinates given.

You have to complete the given function `foundInBermudaTriangle` that takes integers `x1, y1, x2, y2, x3, y3, px, bx, py` and `by` as its arguments and returns one integer from `{0, 1, 2, 3, 4}`.

`(x1, y1)` is the coordinate of point A.

`(x2, y2)` is the coordinate of point B.

`(x3, y3)` is the coordinate of point C.

`(px, py)` is the coordinate of the missing plane.

`(bx, by)` is the coordinate of the missing boat.

The return value is:

0: If points A, B and C don't form a new Bermuda Triangle (the government is just trying to throw you off).

1: If the missing plane disappeared in the triangle but the boat did not.

2: If the missing boat disappeared in the triangle but the plane did not.

3: If both the plane and the boat disappeared in the triangle.

4 : If neither the plane nor the boat disappeared in the triangle.

tl;dr

Determine if the given points are within the bermuda triangle.

Clarification

A plane/boat "disappeared in the triangle" if it lies on or inside the triangle.

Constraints

$0 \leq x1, y1, x2, y2, x3, y3, px, bx, py, by \leq 2000$

Example 1

$A = (0, 0)$, $B = (2, 0)$, $C = (4, 0)$, $P = (2, 0)$ and $B = (4, 0)$

Sample Output 1

0

Explanation

Points A, B and C lies on the same line, so it is not possible to form a triangle, so the answer is 0.

Example 2

$A = (3, 1)$, $B = (7, 1)$, $C = (5, 5)$, $P = (3, 1)$ and $B = (0, 0)$

Sample Output 2

1

Explanation

Points A, B and C form a triangle. The plane disappeared in the triangle but the boat did not, so the answer is 1.

Example 3

$A = (3, 1)$, $B = (7, 1)$, $C = (5, 5)$, $P = (1, 1)$ and $B = (4, 3)$

Sample Output 3

2

Explanation

Points A, B and C form a triangle. The boat disappeared in the triangle but the plane did not, so the answer is 2.

Example 4

$A = (3, 1)$, $B = (7, 1)$, $C = (5, 5)$, $P = (5, 2)$ and $B = (6, 3)$

Sample Output 4

3

Explanation

Points A, B and C form a triangle. The plane and the boat disappeared in the triangle, so the answer is 3.

Example 5

$A = (3, 1)$, $B = (7, 1)$, $C = (5, 5)$, $P = (1, 1)$ and $B = (2, 2)$

Sample Output 5

4

Explanation

Points A, B and C form a triangle. Neither the plane nor the boat disappeared in the triangle, so the answer is 4.