Lab Final

CSE 4108

Structured Programming I Lab

November 2022

Lab Tasks

1. You are given a string `'s'` of lowercase English letters and an array `'widths'` denoting how many pixels wide each lowercase English letter is. Specifically, `widths[0]` is the width of `'a'`, `widths[1]` is the width of `'b'`, and so on.

You are trying to write `'s'` across several lines, where each line is no longer than 100 pixels. Starting at the beginning of `'s'`, write as many letters on the first line such that the total width does not exceed 100 pixels. Then, from where you stopped in `'s'`, continue writing as many letters as you can on the second line. Continue this process until you have written all of `'s'`.

Your task is to output two variables:

`res_1` is the **total number of lines**.
`res_2` is the **width** of the last line in pixels.

Input:

```
widths                                                                =
[10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,
10,10,10,10,10],
s = "abcdefghijklmnopqrstuvwxyz"
```

Output: `[3,60]`

2. Suppose you are given four sticks of positive length. The goal is as simple as making a triangle with four sticks. One stick is, of course, spare. It is not allowed to break the sticks or use their partial length.
However, there are some challenging cases. It can happen that it is impossible to construct a triangle of a positive area, but it is possible to construct a **degenerate triangle****. It can be so, that it is impossible to construct a degenerate triangle even.

**A degenerate triangle has all three of its vertices lying on the same straight line, so the triangle is squashed completely flat. One type of degenerate triangle has one vertex lying between the other two; this triangle has zero area, its angles are 0◦, 0◦ and 180◦, and its side lengths satisfy c=a+b, where c is the longest side. Another type of degenerate triangle has two vertices at the same place. It is difficult to say what the angles of such a shape are.

Input

The first line of the input contains four space-separated positive integer numbers not exceeding 100 — lengths of the sticks.

Output

Output **TRIANGLE** if it is possible to construct a non-degenerate triangle. Output **SEGMENT** if the first case cannot take place and it is possible to construct a degenerate triangle. Output **IMPOSSIBLE** if it is impossible to construct any triangle. Remember that you are to use three sticks. It is not allowed to break the sticks or use their partial length.