A string of '0's and '1's is *monotone increasing* if it consists of some number of '0's (possibly 0), followed by some number of '1's (also possibly 0.)

We are given a string S of '0's and '1's, and we may flip any '0' to a '1' or a '1' to a '0'.

Return the minimum number of flips to make S monotone increasing.

**Example 1:**

**Input:** "00110"

**Output:** 1

**Explanation:** We flip the last digit to get 00111.

**Example 2:**

**Input:** "010110"

**Output:** 2

**Explanation:** We flip to get 011111, or alternatively 000111.

**Example 3:**

**Input:** "00011000"

**Output:** 2

**Explanation:** We flip to get 00000000.

**Note:**

1. 1 <= S.length <= 20000
2. S only consists of '0' and '1' characters.