A phrase is a **palindrome** if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers.

Given a string s, return true *if it is a* ***palindrome****, or* false *otherwise*.

**Example 1:**

Input: s = "A man, a plan, a canal: Panama"  
Output: true  
Explanation: "amanaplanacanalpanama" is a palindrome.

**Example 2:**

Input: s = "race a car"  
Output: false  
Explanation: "raceacar" is not a palindrome.

**Example 3:**

Input: s = " "  
Output: true  
Explanation: s is an empty string "" after removing non-alphanumeric characters.  
Since an empty string reads the same forward and backward, it is a palindrome.

**Constraints:**

* 1 <= s.length <= 2 \* 105
* s consists only of printable ASCII characters.