Ransom Note

Given an arbitrary ransom note string and another string containing letters from all the magazines, write a function that will return true if the ransom note can be constructed from the magazines ; otherwise, it will return false.

Each letter in the magazine string can only be used once in your ransom note.

Note:
You may assume that both strings contain only lowercase letters.

```
canConstruct("a", "b") -> false
canConstruct("aa", "ab") -> false
canConstruct("aa", "aab") -> true
```

Solution 1

```java
public class Solution {
    public boolean canConstruct(String ransomNote, String magazine) {
        int[] arr = new int[26];
        for (int i = 0; i < magazine.length(); i++) {
            arr[magazine.charAt(i) - 'a']++;
        }
        for (int i = 0; i < ransomNote.length(); i++) {
            if(--arr[ransomNote.charAt(i)-'a'] < 0) {
                return false;
            }
        }
        return true;
    }
}
```

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Solution 2

O(m+n) with m and n being the lengths of the strings.

```python
def canConstruct(self, ransomNote, magazine):
    return not collections.Counter(ransomNote) - collections.Counter(magazine)
```

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Solution 3

The complexity is O(N), N is the length of magazine.

```
class Solution {
public:
    bool canConstruct(string ransomNote, string magazine) {
        unordered_map<char, int> map;
        for (int i = 0; i < magazine.size(); ++i)
            ++map[magazine[i]];
        for (int j = 0; j < ransomNote.size(); ++j)
            if (--map[ransomNote[j]] < 0)
                return false;
        return true;
    }
};
```

Or you can use a vector with size 26 instead of an unordered_map.

```
class Solution {
public:
    bool canConstruct(string ransomNote, string magazine) {
        vector<int> vec(26, 0);
        for (int i = 0; i < magazine.size(); ++i)
            ++vec[magazine[i] - 'a'];
        for (int j = 0; j < ransomNote.size(); ++j)
            if (--vec[ransomNote[j] - 'a'] < 0)
                return false;
        return true;
    }
};
```

I remember that there are two variations of this question, perhaps they will come in the next few days :)

1. If you can only pick letters from the magazine in order.
2. If the magazine is double sided.

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From Leetcoder.