

Chapter 49: Check two strings are anagrams

Two string with same set of character is called anagram. I have used javascript here.

We will create an hash of str1 and increase count +1. We will loop on 2nd string and check all characters are there in hash and decrease value of hash key. Check all value of hash key are zero will be anagram.

Section 49.1: Sample input and output

Ex1:

```
let str1 = 'stackoverflow';  
let str2 = 'flowerovstack';
```

These strings are anagrams.

// Create Hash from str1 and increase one count.

```
hashMap = {  
  s : 1,  
  t : 1,  
  a : 1,  
  c : 1,  
  k : 1,  
  o : 2,  
  v : 1,  
  e : 1,  
  r : 1,  
  f : 1,  
  l : 1,  
  w : 1  
}
```

You can see hashKey 'o' is containing value 2 because o is 2 times in string.

Now loop over str2 and check for each character are present in hashMap, if yes, decrease value of hashMap Key, else return false (which indicate it's not anagram).

```
hashMap = {  
  s : 0,  
  t : 0,  
  a : 0,  
  c : 0,  
  k : 0,  
  o : 0,  
  v : 0,  
  e : 0,  
  r : 0,  
  f : 0,  
  l : 0,  
  w : 0  
}
```

Now, loop over hashMap object and check all values are zero in the key of hashMap.

In our case all values are zero so its a anagram.

Section 49.2: Generic Code for Anagrams

```
(function(){

    var hashMap = {};

    function isAnagram (str1, str2) {

        if(str1.length !== str2.length){
            return false;
        }

        // Create hash map of str1 character and increase value one (+1).
        createStr1HashMap(str1);

        // Check str2 character are key in hash map and decrease value by one(-1);
        var valueExist = createStr2HashMap(str2);

        // Check all value of hashMap keys are zero, so it will be anagram.
        return isStringsAnagram(valueExist);
    }

    function createStr1HashMap (str1) {
        [].map.call(str1, function(value, index, array){
            hashMap[value] = value in hashMap ? (hashMap[value] + 1) : 1;
            return value;
        });
    }

    function createStr2HashMap (str2) {
        var valueExist = [].every.call(str2, function(value, index, array){
            if(value in hashMap) {
                hashMap[value] = hashMap[value] - 1;
            }
            return value in hashMap;
        });
        return valueExist;
    }

    function isStringsAnagram (valueExist) {
        if(!valueExist) {
            return valueExist;
        } else {
            var isAnagram;
            for(var i in hashMap) {
                if(hashMap[i] !== 0) {
                    isAnagram = false;
                    break;
                } else {
                    isAnagram = true;
                }
            }

            return isAnagram;
        }
    }

    isAnagram('stackoverflow', 'flowerovstack'); // true
    isAnagram('stackoverflow', 'flowervvstack'); // false
}
```

```
})();
```

Time complexity: $3n$ i.e $O(n)$.