Lab 5
FIT Staff
6th week

1 Topics

- Strings
- String functions

2 Reading Materials

In Russian

- `https://informatics.msk.ru/mod/resource/view.php?id=25345`
- `https://informatics.msk.ru/mod/resource/view.php?id=25360`

In English

- `http://www.cplusplus.com/reference/string/string/?kw=string`

3 Problem Set

Problem A. 71817.Amount of capital and small

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to output amount of capital and small letters in string.

Input

First line contains string s.

Output

Output answer for the problem.

Examples

standard input	standard output
AAbbbAAbcde	7 4
aaBB	2 2
BBBBBBBB	0 8

Problem B. 73765.From small to capital

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to change all small letters to capital letters.

Input

First line consist of string s.

Output

Output answer for the problem.

Examples

standard input	standard output
aaBBaa	AABBAA
abababaasbfb	ABABABAASBFB
aA	AA

Problem C. 73912.Substring

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given to strings, s and t,you need to check is the string t substring of string s.

Input

In the first line of input, two strings, s and t.

Output

Output "YES if t is the substring of s, otherwise output "NO"(without quotes).

Examples

standard input	standard output
dabbad abba	YES
abc def	NO
abc abc	YES

Problem D. 73916.Palindromes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to print, is this string palindrome or not.

Input

First line contain string s.

Output

Print YES ,if this string is palindrome, otherwise print NO.

Examples

standard input	standard output
abba	YES
aba	YES
test	NO
palindrome	NO

Problem E. 73921.sum

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You're given integer N, you need to answer, is the sum of digits in odd positions is equal to sum of digits in even positions.

Input

First line contain integer N.

Output

Output "YES"if given condition is true, otherwise print "NO"(without quotes).

Examples

standard input	standard output
123	NO
333	NO
303	NO
2222	YES

Problem F. 74222.Segment

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, and two integers l, r. You need to output substring $s[l; r]$. Numeration of characters in s starts from 0. Guaranteed that l, r can't be out of the border of string.

Input

First line contain string s, and two integers l, r.

Output

Output answer for the problem.

Examples

standard input	standard output
abcde 0 4	abcde
abba 0 3	abba
test 0 2	tes

Problem G. 74816.Equality

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Given two strings s and t, check this two strings for equality.

Input

First line of the input contains two string, s and t.

Output

Output YES, if this two strings are equal, otherwise output NO.

Examples

standard input	standard output
aa ab	NO
aa aa	YES
aaa aaa	YES
acb acb	YES
ace acd	NO

Problem H. 74819.Digits

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to answer, is the amount of every digits in this string is equal.

Input

First line contains string s.

Output

Output YES, if conidition is true, otherwise output NO.

Examples

standard input	standard output
112233	YES
123123	YES
33311	NO
33322322	YES
1122333	NO

Problem I. 74820.Nearly Equal

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Let's call two strings s and t nearly equal, if amount of every letter in s and t is equal. You need to answer, is two strings are nearly equal.

Input

First line contains two strings s and t.

Output

Output YES, if given condition is true, otherwise output NO.

Examples

standard input	standard output
abcde aafd	NO
fffgag gagfff	YES
abcde abcde	YES
zfghs shgfz	YES
aaa bbb	NO

Problem J. 74848.Not palindrome

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s which is not palindrome. You need to answer, is that possible, if we add one letter to s such that s will become palindrome.

Input

First line contain string s.

Output

Output YES if condition can be true, otherwise output NO.

Examples

standard input	standard output
abb	YES
abbe	NO
abcd	NO
ab	YES
are	NO

Problem K. 74852.Vowel letters

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s consisting of small letters, output amount of vowel letters. In english vowel letters are a, e, i, o, and u. (letter 'y' is sometimes vowel, but in this problem we don't take it for the answer)

Input

First line contains string s.

Output

Output answer for the problem.

Examples

standard input	standard output
aeiuo	5
asdfasdf	2
aaaeeeii	8
abacaba	4
test	1

Problem L. 74856.Order

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to output, is that string increasing in alphabetical order. String increasing in alphabetical order, if for every position i in alphabet, we can't find such character that meets before position i and appears in alphabet after letter in position i.

Input

First line contains string s.

Output

Output YES, if the given condition is true otherwise output NO.

Examples

standard input	standard output
abc	YES
abcde	YES
bac	NO
cab	NO
abba	NO

Problem M. 74857.Amount of character

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, character x and number n. In this task you need to answer is the amount of x in the string s is equal to n.

Input

First line contains string s,character x, and number n.

Output

Output YES, if the given condition is true, otherwise output NO.

Examples

standard input	standard output
aaa a 3	YES
abcde e 1	YES
test t 2	YES
abacaba a 4	YES
abacaba a 100	NO

Problem N. 74863.Greeting

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given name of the user, you need to write program that will greet user by the name. Greeting need to be in this pattern "Welcome "+ name.

Input

First line contains the name of the user.

Output

Output answer for the problem.

Examples

standard input	standard output
abcde	Welcome abcde
test	Welcome test
user	Welcome user
student	Welcome student
people	Welcome people

Problem O. 74866.Last

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, which contains only small letters. You need to output character c from s such that, position of the c in alphabet is the most further.

Input

First line contains string s.

Output

Output answer for the problem.

Examples

standard input	standard output
abdfabsbf	s
abacaba	c
aaaa	a
test	t
lastchar	t

Problem P. 74868.Shift

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You're given string s, you need to shift all characters in s to the next character in alphabetical order. If our character is 'z' change it for 'a'.

Input

First line contains string s.

Output

Output answer for the problem.

Examples

standard input	standard output
abba	bccb
zzzaas	aaabbt
ghjsd	hikte
abacab	bcbdbc
test	uftu

Note

In the first sample letter 'a' shifts to the next letter 'b', letter 'b' shifts to the letter 'c'.

Problem Q. 74871

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You're given two strings s and t. You need to answer, can we take string t by copy and pasting string s.

Input

First line contains two strings, s and t.

Output

Output YES, if the given condition is true, otherwise output NO.

Examples

standard input	standard output
abc abcabcabc	YES
a aaaaaaaaa	YES
wa wawawawawa	YES
test testtesttes	NO
abcdf erf	NO

4 Lab Contest

All given task are emplaced in automated checker system for **lab3**:
`http://acm.kbtu.kz/cgi-bin/new-register?action=211&contest_id=127`
Feel free to submit your solutions without attempt count penalty.

5 Solutions

Problem 71817

```
#include<bits/stdc++.h>

using namespace std;

const int N = 100100;

string s;
int ans,ans1;

int main()
{
        cin >> s;
        for(int i = 0;i < s.size();i ++) {
                if(s[i] >= 'a' && s[i] <= 'z') ++ ans;
                else ++ ans1;
        }

        cout << ans << " " << ans1;
        return 0;
}
```

Problem 73765

```
#include<iostream>

using namespace std;

string s;

int main() {
```

```
	cin >> s;

	for(int i = 0;i < (int)s.size();i ++) {
		if(s[i] >= 'a' && s[i] <= 'z') {
			s[i] = s[i] - 'a' + 'A';
		}
	}

	cout << s;

	return 0;
}
```

Problem 73912

```
#include<bits/stdc++.h>

using namespace std;

string s,t;

int main() {

	cin >> s >> t;

	for(int i = 0;i + (int)t.size() - 1 < s.size();i ++) {
		string cur = s.substr(i,(int)t.size());
		if(cur == t) {
			cout << "YES";
			exit(0);
		}
	}
	cout << "NO";
	return 0;
}
```

Problem 73916

```
#include<bits/stdc++.h>
```

```
using namespace std;

string s,t;

int main() {

	cin >> s;
	for(int i = 0;i < (int)s.size() / 2;i ++) {
		if(s[i] != s[(int)s.size() - i - 1]) {
			cout << "NO";
			exit(0);
		}
	}
	cout << "YES";
	return 0;
}
```

Problem 73921

```
#include<bits/stdc++.h>

using namespace std;

string s,t;

int main() {
	cin >> s;
	int sum = 0,sum1 = 0;
	for(int i = 0;i < s.size();i ++) {
	    if(i % 2 == 0) {
	        sum += s[i] - '0';
	    } else {
	        sum1 += s[i] - '0';
	    }
	}
	if(sum == sum1)
	    cout << "YES";
	else
	    cout << "NO";
	return 0;
```

```
}
```

Problem 74222

```
#include <iostream>

using namespace std;

string s,t;
int l,r;

int main() {

	//abcdeffecba
	cin >> s >> l >> r;
	for(int i = l;i <= r;i ++) cout << s[i];
	return 0;
}
```

Problem 74816

```
#include<iostream>
#include<algorithm>

using namespace std;

string s,t;

int main() {

	cin >> s >> t;

	if(s == t)
		cout << "YES";
	else
		cout << "NO";

	return 0;
}
```

Problem 74819

```cpp
#include<iostream>
#include<algorithm>

using namespace std;

int cnt[10];
string s;

int main() {

	cin >> s;
	for(int i = 0;i < s.size();i ++) {
		cnt[s[i] - '0'] ++;
	}
	int maxi = 0,mini = int(1e9);
	// 1e9 - 1000000000, we give very big number, such that
	   this amount can't be exist in the stirng;
	for(int i = 0;i < 9;i ++) {
		if(cnt[i] == 0) continue;
		if(cnt[i] > maxi) maxi = cnt[i];
		if(cnt[i] < mini) mini = cnt[i];
	}
	if(maxi == mini) cout << "YES";
	else cout << "NO";
	return 0;
}
```

Problem 74820

```cpp
#include<iostream>
#include<algorithm>

using namespace std;

const int N = 100100;

string s;
string t;
int cnt[N],cnt1[N];
```

```
int main() {

	cin >> s >> t;

	// we keep two arrays, in each array we save amount letters
	   in each string cnt for s, cnt1 for t.
	for(int i = 0;i < s.size();i ++) {
		cnt[s[i] - 'a'] ++;
	}
	for(int i = 0;i < t.size();i ++) {
		cnt1[t[i] - 'a'] ++;
	}
	for(char i = 'a';i <= 'z';i ++) {
		if(cnt[i - 'a'] != cnt1[i - 'a']) {
			cout << "NO";
			exit(0);
		}
	}
	cout << "YES";
	return 0;
}
```

Problem 74848

```
#include<bits/stdc++.h>

using namespace std;

string s;

int main() {

	cin >> s;

	int l = 0,r = int(s.size()) - 1;

	int cnt = 0;
	// we keep to pointers, on the end of the string, and on
	   the beginning, if letters are
	// unequal we try to pass it by one, if we can't pass it or
```

```
            do this operation before,
        // this is impossible to make condition true.
        while(r > l) {
                if(s[l] == s[r]) {
                        l ++;r --;
                } else {
                        cnt ++;
                        if(cnt >= 2) {
                                cout << "NO";
                                exit(0);
                        }
                        if(s[l + 1] == s[r]) ++ l;
                        else if(s[r - 1] == s[l]) -- r;
                        else {
                                cout << "NO";
                                exit(0);
                        }
                }
        }
        cout << "YES";
        //abcdeffecba
        return 0;
}
```

Problem 74852

```
#include<bits/stdc++.h>

using namespace std;

string s;

int main() {

        //abcdeffecba

        cin >> s;
        int ans = 0;
        for(int i = 0;i < s.size();i ++) {
                if(s[i] == 'a' || s[i] == 'e' || s[i] == 'i' || s[i]
```

```
                == 'o' || s[i] == 'u') ++ ans;
        }
        cout << ans;
        return 0;
}
```

Problem 74856

```
#include<bits/stdc++.h>

using namespace std;

string s;

int main() {

        //abcdeffecba

        cin >> s;
        char cur = s[0];
        for(int i = 1;i < s.size();i ++) {
                if(s[i] == cur) continue;
                if(s[i] > cur) cur = s[i];
                else {
                        cout << "NO";
                        exit(0);
                }
        }
        cout << "YES";
        return 0;
}
```

Problem 74857

```
#include<bits/stdc++.h>

using namespace std;

string s;
char x;
int n;
```

```
int main() {

	//abcdeffecba

	cin >> s >> x >> n;
	int cnt = 0;
	for(int i = 0;i < s.size();i ++) {
		if(s[i] == x) ++ cnt;
	}
	if(cnt == n) cout << "YES";
	else cout << "NO";
	return 0;
}
```

Problem 74863

```
#include<bits/stdc++.h>

using namespace std;

string s;

int main() {

	//abcdeffecba

	cin >> s;
	cout << "Welcome " << s;

	return 0;
}
```

Problem 74866

```
#include<bits/stdc++.h>

using namespace std;

string s;
```

```
int main() {

	//abcdeffecba
	cin >> s;
	char ans = s[0];
	for(int i = 1;i < s.size();i ++) {
		ans = max(ans,s[i]);
	}
	cout << ans;
	return 0;
}
```

Problem 74868

```
#include<bits/stdc++.h>

using namespace std;

string s;

int main() {

	//abcdeffecba
	cin >> s;
	for(int i = 0;i < s.size();i ++) {
		if(s[i] == 'z') s[i] = 'a';
		else s[i] = char(s[i] + 1);
	}
	cout << s << " ";
	return 0;
}
```

Problem 74871

```
#include<bits/stdc++.h>

using namespace std;

string s,t;

int main() {
```

```
        //abcdeffecba
        cin >> s >> t;
        if((int)t.size() % (int)s.size() != 0) {
                cout << "NO";
                exit(0);
        }
        int cnt = (int)t.size() / (int)s.size();
        for(int i = 0;i < cnt;i ++) {
                int l = i * (int)s.size();
                if(t.substr(l,(int)s.size()) != s) {
                        cout << "NO";
                        exit(0);
                }
        }
        cout << "YES";
        return 0;
}
```

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6 Additional tasks for this lab

You can solve additional problems here:
`https://informatics.msk.ru/mod/statements/view.php?id=248`
note: statements are in russian