**Palindrome Check using Recursion**

Given a string, write a recursive function that checks if the given string is a palindrome or not.

**Examples:**

Input : malayalam

Output : Yes

Reverse of malayalam is also

malayalam.

Input : max

Output : No

Reverse of max is not max.

The idea of a recursive function is simple:

1) If there is only one character in string

return true.

2) Else compare first and last characters

and recur for remaining substring.

Below is the implementation of the above idea:

C++Java

// A recursive JAVA program to

// check whether a given String

// is palindrome or not

import java.io.\*;

class GFG

{

// A recursive function that

// check a str(s..e) is

// palindrome or not.

static boolean isPalRec(String str,

int s, int e)

{

// If there is only one character

if (s == e)

return true;

// If first and last

// characters do not match

if ((str.charAt(s)) != (str.charAt(e)))

return false;

// If there are more than

// two characters, check if

// middle substring is also

// palindrome or not.

if (s < e + 1)

return isPalRec(str, s + 1, e - 1);

return true;

}

static boolean isPalindrome(String str)

{

int n = str.length();

// An empty string is

// considered as palindrome

if (n == 0)

return true;

return isPalRec(str, 0, n - 1);

}

// Driver Code

public static void main(String args[])

{

String str = "geeg";

if (isPalindrome(str))

System.out.println("Yes");

else

System.out.println("No");

}

}

**Output**

Yes

**Time Complexity:**O(n)  
**Auxiliary Space:**O(n)

**Another Approach :**

Basically while traversing check whether ith and n-i-1th index are equal or not.

If there are not equal return false and if they are equal then continue with the recursion calls.

C++Java

/\*package whatever //do not write package name here \*/

import java.io.\*;

class GFG {

public static boolean isPalindrome(String s, int i){

if(i > s.length()/2)

{

return true ;

}

return s.charAt(i) == s.charAt(s.length()-i-1) && isPalindrome(s, i+1) ;

}

public static void main (String[] args) {

String str = "geeg" ;

if (isPalindrome(str, 0))

{ System.out.println("Yes"); }

else

{ System.out.println("No"); }

}

}

**Output**

Yes

**Time Complexity:** O(n)  
**Auxiliary Space:**O(n)