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How to split a string in C/C++, Python and Java?

Difficulty Level : Easy • Last Updated : 23 Aug, 2021

Splitting a string by some delimiter is a very common task. For example, we have a comma-separated list of items from a file and we want individual items in an array.

Almost all programming languages, provide a function split a string by some delimiter.

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In C:

```
// Splits str[] according to given delimiters.  
// and returns next token. It needs to be called  
// in a loop to get all tokens. It returns NULL  
// when there are no more tokens.
```

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```
// A C/C++ program for splitting a string
// using strtok()
#include <stdio.h>
#include <string.h>

int main()
{
    char str[] = "Geeks-for-Geeks";

    // Returns first token
    char *token = strtok(str, "-");

    // Keep printing tokens while one of the
    // delimiters present in str[].
    while (token != NULL)
    {
        printf("%s\n", token);
        token = strtok(NULL, "-");
    }

    return 0;
}
```

Output: Geeks
for
Geeks

In C++

Note: The main disadvantage of `strtok()` is that it only works for C string. Therefore we need to explicitly convert C++ string into a C string. Many programmers are unaware that C++ has two additional APIs for string splitting and works with C++ string.

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automatically **tokenizes strings on space char**. Just like "cin" stream stringstream allows you to read a string as a stream of words.

Some of the Most Common used functions of stringstream.

clear() – flushes the stream

str() – converts a stream of words into a C++ string object.

operator << – pushes a string object into the stream.

operator >> – extracts a word from the stream.

The code below demonstrates it.

C++

```
#include <bits/stdc++.h>
using namespace std;

// A quick way to split strings separated via spaces.
void simple_tokenizer(string s)
{
    stringstream ss(s);
    string word;
```

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```
int main(int argc, char const* argv[])
{
    string a = "How do you do!";
    // Takes only space separated C++ strings.
    simple_tokenizer(a);
    cout << endl;
    return 0;
}
```

Output : How

do
you
do!

Method 2: Using C++ find() and substr() APIs.

Prerequisite: [find function](#) and [substr\(\)](#).

This method is **more robust and can parse a string with any delimiter**, not just spaces (though the default behavior is to separate on spaces.) The logic is pretty simple to understand from the code below.

C++

```
#include <bits/stdc++.h>
using namespace std;

void tokenize(string s, string del = " ")
{
    int start = 0;
    int end = s.find(del);
    while (end != -1) {
        cout << s.substr(start, end - start) << endl;
        start = end + del.size();
        end = s.find(del, start);
    }
}
```

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Got It !

```

// Takes C++ string with any separator
string a = "Hi$%do$%you$%do$%!";
tokenize(a, "$%");
cout << endl;

return 0;
}

```

Output: Hi

```

do
you
do
!
```

Method 3: Using temporary string

If you are given that the length of the delimiter is 1, then you can simply use a temp string to split the string. This will save the function overhead time in the case of method 2.

C++

```

#include <iostream>
using namespace std;

void split(string str, char del){
    // declaring temp string to store the curr "word" upto del
    string temp = "";

    for(int i=0; i<(int)str.size(); i++){
        // If cur char is not del, then append it to the cur "word", othe
        // you have completed the word, print it, and start a new word.
        if(str[i] != del){
            temp += str[i];
        }
        else{
            cout << temp << " ";
            temp = "";
        }
    }
    cout << temp << endl;
}

```

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Got It !

```
        cout << temp;
    }

    int main() {

        string str = "geeks_for_geeks";    // string to be split
        char del = '_';    // delimiter around which string is to be split

        split(str, del);

        return 0;
    }
```

Output

geeks for geeks

In Java :

In Java, `split()` is a method in `String` class.

```
// expregexp is the delimiting regular expression;
// limit is the number of returned strings
public String[] split(String regexp, int limit);

// We can call split() without limit also
public String[] split(String regexp)
```

Java

```
// A Java program for splitting a string
// using split()
import java.io.*;
public class Test
{
```

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```
// Split above string in at-most two strings
for (String val: Str.split("-", 2))
    System.out.println(val);

System.out.println("");

// Splits Str into all possible tokens
for (String val: Str.split("-"))
    System.out.println(val);
}
```

Output:

```
Geeks
for-Geeks
```

```
Geeks
for
Geeks
```

In Python:

The `split()` method in Python returns a list of strings after breaking the given string by the specified separator.

```
// regexp is the delimiting regular expression;
// limit is limit the number of splits to be made
str.split(regexp = "", limit = string.count(str))
```

Python

```
line = "Geek1 \nGeek2 \nGeek3"
print(line.split())
```

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Got It !

Output:

```
['Geek1', 'Geek2', 'Geek3']  
['Geek1', '\nGeek2 \nGeek3']
```

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