

Count words in a given string

Given a string, count number of words in it. The words are separated by following characters: space (' ') or new line ('\n') or tab ('\t') or a combination of these.

There can be many solutions to this problem. Following is a simple and interesting solution. The idea is to maintain two states: IN and OUT. The state OUT indicates that a separator is seen. State IN indicates that a word character is seen. We increment word count when previous state is OUT and next character is a word character.

```
/* Program to count no of words from given input string. */
#include <stdio.h>

#define OUT 0
#define IN 1

// returns number of words in str
unsigned countWords(char *str)
{
    int state = OUT;
    unsigned wc = 0; // word count

    // Scan all characters one by one
    while (*str)
    {
        // If next character is a separator, set the state as OUT
        if (*str == ' ' || *str == '\n' || *str == '\t')
            state = OUT;

        // If next character is not a word separator and state is OUT,
        // then set the state as IN and increment word count
        else if (state == OUT)
        {
            state = IN;
            wc++;
        }
        str++;
    }

    return wc;
}
```

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```

        ++wc;
    }

    // Move to next character
    ++str;
}

return wc;
}

// Driver program to tes above functions
int main(void)
{
    char str[] = "One two          three\n four\nfive ";
    printf("No of words: %u\n", countWords(str));
    return 0;
}

```

Output:

```
No of words: 5
```

Time complexity: $O(n)$

This article is compiled by **Narendra Kangralkar**. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

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