

What's difference between `char s[]` and `char *s` in C?

Consider below two statements in C. What is difference between two?

```
char s[] = "geeksquiz";  
char *s = "geeksquiz";
```

Below are the key differences:

Char <code>a[10] = "geek";</code>	Char <code>*p = "geek";</code>
1) <code>a</code> is an array	1) <code>p</code> is a pointer variable
2) <code>sizeof(a)</code> = 10 bytes	2) <code>sizeof(p)</code> = 4 bytes
3) <code>a</code> and <code>&a</code> are same	3) <code>p</code> and <code>&p</code> aren't same
4) <code>geek</code> is stored in stack section of memory	4) <code>p</code> is stored at stack but <code>geek</code> is stored at code section of memory
5) <code>char a[10] = "geek"; <code>a = "hello";</code> //invalid > <code>a</code>, itself being an address and string constant is also an address, so not possible.</code>	5) <code>char *p = "geek"; <code>p = "india";</code> //valid</code>
6) <code>a++</code> is invalid	6) <code>p++</code> is valid
7) <code>char a[10] = "geek"; <code>a[0] = 'b';</code> //valid</code>	7) <code>char *p = "geek"; <code>p[0] = 'k';</code> //invalid > Code section is r- only.</code>

The statements '`char s[] = "geeksquiz"`' creates a character array which is like any other array and we can do all array operations. The only special thing about this array is, although we have initialized it with 9 elements, its size is 10 (Compiler automatically adds `'\0'`)

```
#include <stdio.h>  
int main()  
{  
    char s[] = "geeksquiz";  
    printf("%lu", sizeof(s));  
    s[0] = 'j';  
    printf("\n%s", s);  
    return 0;  
}
```

Output:

The statement `'char *s = "geeksquiz"'` creates a string literal. The string literal is stored in read only part of memory by most of the compilers. The C and C++ standards say that string literals have static storage duration, any attempt at modifying them gives undefined behavior.

`s` is just a pointer and like any other pointer stores address of string literal.

```
#include <stdio.h>
int main()
{
    char *s = "geeksquiz";
    printf("%lu", sizeof(s));

    // Uncommenting below line would cause undefined behaviour
    // (Caused segmentation fault on gcc)
    // s[0] = 'j';
    return 0;
}
```

Output:

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Running above program may generates a warning also "warning: deprecated conversion from string constant to 'char*'". This warning occurs because `s` is not a const pointer, but stores address of read only location. The warning can be avoided by pointer to const.

```
#include <stdio.h>
int main()
{
    const char *s = "geeksquiz";
    printf("%lu", sizeof(s));
    return 0;
}
```

This article is contributed by Abhay Rathi. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above

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