

# How to identify specific digits of an integer input in C?

Asked 16 years, 3 months ago   Modified 11 years, 10 months ago

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I need to get the number of digits containing the number 1. I know in java I can take the input as a `String` and use `charAt`, but I understand there is no implicit String function in C. How can I accomplish this?

c

string

function

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edited Jan 31, 2013 at 19:54



[Simon Hayter](#)

3,161 ● 29 ● 53

asked Sep 15, 2008 at 19:42



[ZXCVC](#)

7,621 ● 8 ● 36 ● 30

12 Answers

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6

Division and modulus are your friends.

```
#include "stdio.h"
```



```
int main(){
    int digits[] = {0,0,0,0,0,0,0,0,0,0};
    int i = 11031;

    while(i > 0){
        digits[i % 10]++;
        i = i / 10;
    }

    printf("There are %d ones.\n", digits[1]);
}
```

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edited Sep 15, 2008 at 19:49

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answered Sep 15, 2008 at 19:44



[Aaron Maenpaa](#)

123k ● 11 ● 97 ● 108



1

Homework?

You'd read it into a `char*` using the `fread()` function, and then store how many bytes were read in a separate variable. Then use a `for` loop to iterate through the buffer and count how many of each byte are present.



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[John Millikin](#)

201k ● 41 ● 215 ● 227



Try something like...

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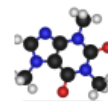
```
int digit = 0;
int value = 11031;

while(value > 0)
{
    digit = value % 10;
    /* Do something with digit... */
    value = value / 10;
}
```

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answered Sep 15, 2008 at 19:47

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Jarrett Meyer

19.6k ● 6 ● 60 ● 52



1

I see this as a basic understanding problem, which inevitably everyone goes through switching from one language to the next.



A good reference to go through to understand how string's work in C when you've started familiarity with java is look at how string.h works. Where as in java string's are an Object and built in, strings in C are just integer arrays.

There are a lot of tutorials out there, one that helped me when I was starting earlier in the year was

[http://www.physics.drexel.edu/students/courses/Comp\\_Physics/General/C\\_basics/](http://www.physics.drexel.edu/students/courses/Comp_Physics/General/C_basics/) look at the string section.

Sometimes asking a question speeds up learning a lot faster than pouring through the text book for hours on end.



1



If you have just the number, then you can do this:

```
int val; //Input
...
int ones = 0;
while(val != 0) {
    ones += ((val % 10) == 1) ? 1 : 0;
    val /= 10;
}
```

If you have a string (char\*), the you'd do something like this:

```
while(*str != '\0') {
    if(*str++ == '1') {
        ones++;
    }
}
```

It's also worth noting that c does have a charAt function, in a way:

```
"java".charAt(i) == "c the language"[i];
```

By indexing into the char\*, you can get the value you want, but you need to be careful, because there is no `indexOutOfBoundsException` exception. The program will crash if

you go over the end of a string, or worse it may continue running, but have a messed up internal state.

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edited Jan 31, 2013 at 19:54

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Simon Hayter

3,161 ● 29 ● 53

answered Sep 15, 2008 at 19:46



Patrick

92.4k ● 11 ● 52 ● 61



0



Something along the lines of:

```
int val=11031;
int count=0;
int i=0;
char buf[100];
sprintf(buf, "%d", val);
for(i=0; (i < sizeof(buf)) && (buf[i]); i++) {
    if(buf[i] == '1')
        count++;
}
```

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answered Sep 15, 2008 at 19:46

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kfh

321 ● 1 ● 6



0



```
int count_digit(int nr, int digit) {  
    int count=0;  
    while(nr>0) {  
        if(nr%10==digit)  
            count++;  
        nr=nr/10;  
    }  
    return count;  
}
```

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answered Sep 15, 2008 at 19:47

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scribu



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This sounds like a homework problem to me. Oh well, it's your life.

You failed to specify the type of the variable that contains the "input integer". If the input integer is an integral type (say, an "int") try this:

```
int countOnes(int input)  
{  
    int result = 0;  
    while(input) {  
        result += ((input%10)==1);  
        result /= 10;  
    }  
    return result;  
}
```

If the "input integer" is in a string, try this:

```
int countOnes(char *input)
{
    int result = 0;
    while(input && *input) {
        result += (*input++ == '1');
    }
    return result;
}
```

Hope this helps. Next time, do your own homework. And get off of my lawn! Kids, these days, ...

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answered Sep 15, 2008 at 19:50

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Robφ

168k ● 20 ● 249 ● 323



0



```
int countDigit(int Number, int Digit)
{
    int counter = 0;

    do
    {
        if( (Number%10) == Digit)
        {
            counter++;
        }
    }while(Digit>0)

    return counter;
}
```

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answered Sep 15, 2008 at 19:53

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Robert Deml

12.5k ● 21 ● 69 ● 92



0



Something along the lines of this:

```
#include <stdio.h>

main() {
    char buf[100];
    char *p = buf;
    int n = 0;
    scanf("%s", buf);
    while (*p) {
        if (*p == '1') {
            n++;
        }
        p++;
    }
    printf ("%s' contains %i ones\n", buf, n);
}
```

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answered Sep 15, 2008 at 20:00

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Mr Shark

26.4k ● 5 ● 31 ● 38



0



This will do it. :-)

```
int count_digits(int n, int d) {
    int count = 0;
    while(n*10/=10) if (n%10==d) count++;
    return count;
}
```

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answered Sep 15, 2008 at 21:30

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hoyhoy

6,351 ● 7 ● 40 ● 36





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For all those who refer to the question as the homework question: I have to say, most of you provided a homework answer.



You don't do division/modulus to get the digits in production code, firstly because it's suboptimal (your CPU is designed for binary arithmetics not decimal) and secondly because it's unintuitive. Even if it's not originally a string, it's more optimal to convert it to one and then count the characters (`std::count` is the way to go in C++).



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edited Dec 8, 2009 at 20:15

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answered Sep 15, 2008 at 21:44



melfar

360 ● 3 ● 16

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The only way to convert an integer to string, is using division/modulus. Even if you use the simplest method possible (itoa from C), it is done this way... In conclusion, the @hoyhoy answer is more optimized than yours, as you need to first convert the integer and then count characters – [rossoft](#) Nov 25, 2009 at 10:29

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