EDUCBA
(https://www.educba.com/software-development/)

←
(https://www.educba.com/inline-function-in-c/)

→
(https://www.educba.com/function-prototype-in-c/)

Definition of C sizeof() Operator

Sizeof() operator in C is machine-dependent functionality which varies from compiler to compiler. It can be said that it is a byte specific functionality. It helps in providing the byte and size of the variables and the number it occupies for the allocation of the variable to the memory.

Syntax with Parameters:

Sizeof() operator in C has various styles for representation:

```
sizeof(type)
```

- **type:** type is the variable passed in the function to represent the type of data type to be used.

```
sizeof(variable-name)
```

- **variable-name:** variable-name is the variable passed to the function for determining the bytes occupied by the memory.

```
sizeof(expression)
```

- **expression:** It is the parameter that is passed to the functionality for determining the bytes in the memory to compute the values for the expression.

How Does sizeof() Operator Work in C?

sizeof() operator is a flexible and versatile operator for computation of the bytes and the memory for ingesting the required values and return those values after computation. It is not at vary with the 64 bits. Also, if the sizeof operator passes a parameter as expression then it will first parse the entire regular expression and then it will return an output with that size of the expression. Similarly, for the other parameters like type and variable-name, it works the same it will take the parameter as type then it will point to the data type as int, char, or float to be taken into consideration for the function. Even the same works for the variable name the value for the variables is also computable. To compute the number of bytes needed when the variable is assigned as an array or the linked list everything gets calculated using the sizeof () operator seamlessly.

Examples of sizeof() in C

Following are the examples are given below:

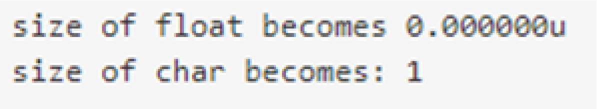
Example #1

This program demonstrates the sizeof operator to be used with the primitive data type as an argument to be passed to get a value of the data type.

Code:

```
#include<stdio.h>
intmain() {
int m = 80;
float n = 5.2;
printf("size of int becomes: %d\n", sizeof(m));
printf("size of float becomes %fu\n", sizeof(n));
printf("size of char becomes: %ld\n", sizeof(char));
return 0;
```

(https://www.educba.com/software-development/)



```
size of float becomes 0.000000u
size of char becomes: 1
```

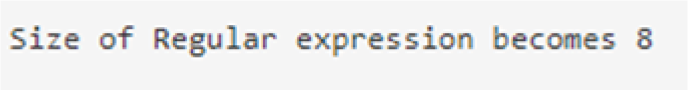
Example #2

This program is used to demonstrate the sizeof() operator where the sizeof() operator will function with the expression and will have a return type as the regular expression itself after passing from the size of operator as a parameter.

Code:

```
#include <stdio.h>
intmain()
{
int p = 15;
float f = 18.20;
int q = 32;
double r = 10.34;
printf("Size of Regular expression becomes %lu", sizeof(p + (f - q
)*r));
return 0;
}
```

Output:



```
Size of Regular expression becomes 8
```

Example #3

Code:

```
#include <stdio.h>
intmain() {
char m_var1 = 26;
int p_var2 = 'i';
double o_var3 = 15.99;
printf("size of the character variable assigned %c\n",
sizeof(m_var1));
printf("size of the integer variable assigned %d\n",
sizeof(p_var2));
printf("size of the double or float variable assigned%f\n",
sizeof(o_var3));
return 0;
}
```

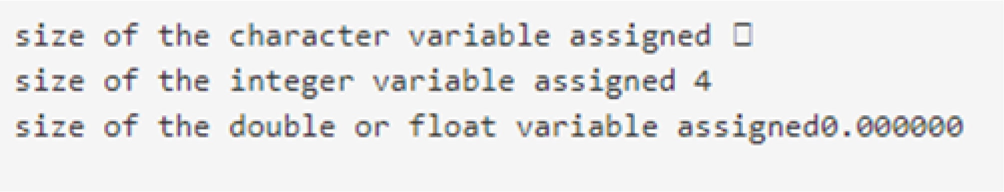
EDUCBA (https://www.educba.com/software-development/)

Related Courses

C++ Training (4 Courses, 5 Projects, 4 Quizzes) (https://www.educba.com/software-development/courses/c-course/?btnz=edu-blg-inline-banner1)

Java Training (40 Courses, 29 Projects, 4 Quizzes) (https://www.educba.com/software-development/courses/java-course/?btnz=edu-blg-inline-banner1)

Output:



```
size of the character variable assigned □
size of the integer variable assigned 4
size of the double or float variable assigned0.000000
```

Example #4

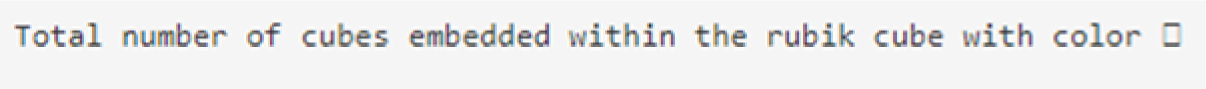
This program is performed for demonstrating the sizeof operator function by passing the user-defined values as a parameter and then calculating the value of the number of values.

Code:

```
#include<stdio.h>
structrubik_cube
{
intcube_no ;
char color;

};
intmain() {
structrubik_cube d;
```

Output:



```
Total number of cubes embedded within the rubik cube with color □
```

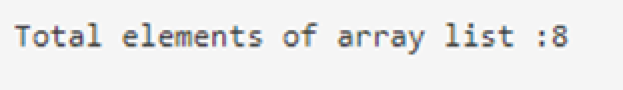
Example #5

This program is used to find the size of the array dynamically using sizeof () operator which is used dynamically allocating the memory to the elements within the array as shown in the output.

Code:

```
#include <stdio.h>
intmain()
{
intarr[] = { 10,19,24,0,6,42,78,60};
printf("Total elements of array list :%u ", sizeof(arr) /
sizeof(arr[5]));
return 0;
}
```

Output:



```
Total elements of array list :8
```

Example #6

This program demonstrates the memory allocation for a float or double value which can be used in the various operating systems as sizeof () operator varies compiler to compiler as

EDUCBA (https://www.educba.com/software-development/)

```
#include<stdio.h>
#include<stdlib.h>
intmain() {
double *s;
s = (double*)malloc(6 * sizeof(double));
return 0;
}
```

Output:

No output

> **Note:** Above example can be used as a use case just to get the memory allocation of any number of bits with the function defined for execution.

Advantages of using sizeof() in C

There are several advantages of using the operators in C same is the case with sizeof() operator in C. Some of the advantages of using the sizeof() operators in C are as follows:

- To find and calculate the number of elements in an array and the type of fashion it is arranged, the sizeof the operator comes as a savior as it is used for the calculation of elements in an array automatically.
- For dynamic allocation of memory while getting allocated to a block it is a great ad advantage as it helps in the memory allocation with enough memory and size of the memory in that particular machine which may be difficult to calculate and keep a hold of.

memory and the value with desired return types of data types, variables, and Expressions. sizeof operator in C can easily perform dynamic allocation of memory easily.

Recommended Articles

This is a guide to sizeof() in C. Here we also discuss the definition and how does sizeof() operator work in c? along with different examples and its code implementation. You may also have a look at the following articles to learn more –

1. Timer in C# (https://www.educba.com/timer-in-c-sharp/)
2. ASCII Value in C (https://www.educba.com/ascii-value-in-c/)
3. Void Pointer in C (https://www.educba.com/void-pointer-in-c/)
4. Stderr in C (https://www.educba.com/stderr-in-c/)

EDUCBA (https://www.educba.com/software-development/)

About Us

Blog (https://www.educba.com/blog/?source=footer)

Who is EDUCBA? (https://www.educba.com/about-us/?source=footer)

Sign Up (https://www.educba.com/software-development/signup/?source=footer)

Corporate Training (https://www.educba.com/corporate/?source=footer)

Certificate from Top Institutions (https://www.educba.com/educbalive/?source=footer)

Contact Us (https://www.educba.com/contact-us/?source=footer)

Verifiable Certificate (https://www.educba.com/software-development/verifiable-certificate/?source=footer)

Reviews (https://www.educba.com/software-development/reviews/?source=footer)

Terms and Conditions (https://www.educba.com/terms-and-conditions/?source=footer)

Privacy Policy (https://www.educba.com/privacy-policy/?source=footer)

Apps

iPhone & iPad (https://itunes.apple.com/in/app/educba-learning-app/id1341654580?mt=8)

Android (https://play.google.com/store/apps/details?id=com.educba.www)

QUIZ

EDUCBA
(https://www.educba.com/software-development/)

Python Tutorials (https://www.educba.com/software-development/software-development-tutorials/python-tutorial/?source=footer)

All Tutorials (https://www.educba.com/software-development/software-development-tutorials/?source=footer)

Certification Courses

All Courses (https://www.educba.com/software-development/courses/?source=footer)

Software Development Course - All in One Bundle (https://www.educba.com/software-development/courses/software-development-course/?source=footer)

Become a Python Developer (https://www.educba.com/software-development/courses/python-certification-course/?source=footer)

Java Course (https://www.educba.com/software-development/courses/java-course/?source=footer)

Become a Selenium Automation Tester (https://www.educba.com/software-development/courses/selenium-training-certification/?source=footer)

Become an IoT Developer (https://www.educba.com/software-development/courses/iot-course/?source=footer)

ASP.NET Course (https://www.educba.com/software-development/courses/asp-net-course/?source=footer)

VB.NET Course (https://www.educba.com/software-development/courses/vb-net-course/?source=footer)

PHP Course (https://www.educba.com/software-development/courses/php-course/?source=footer)

QUIZ