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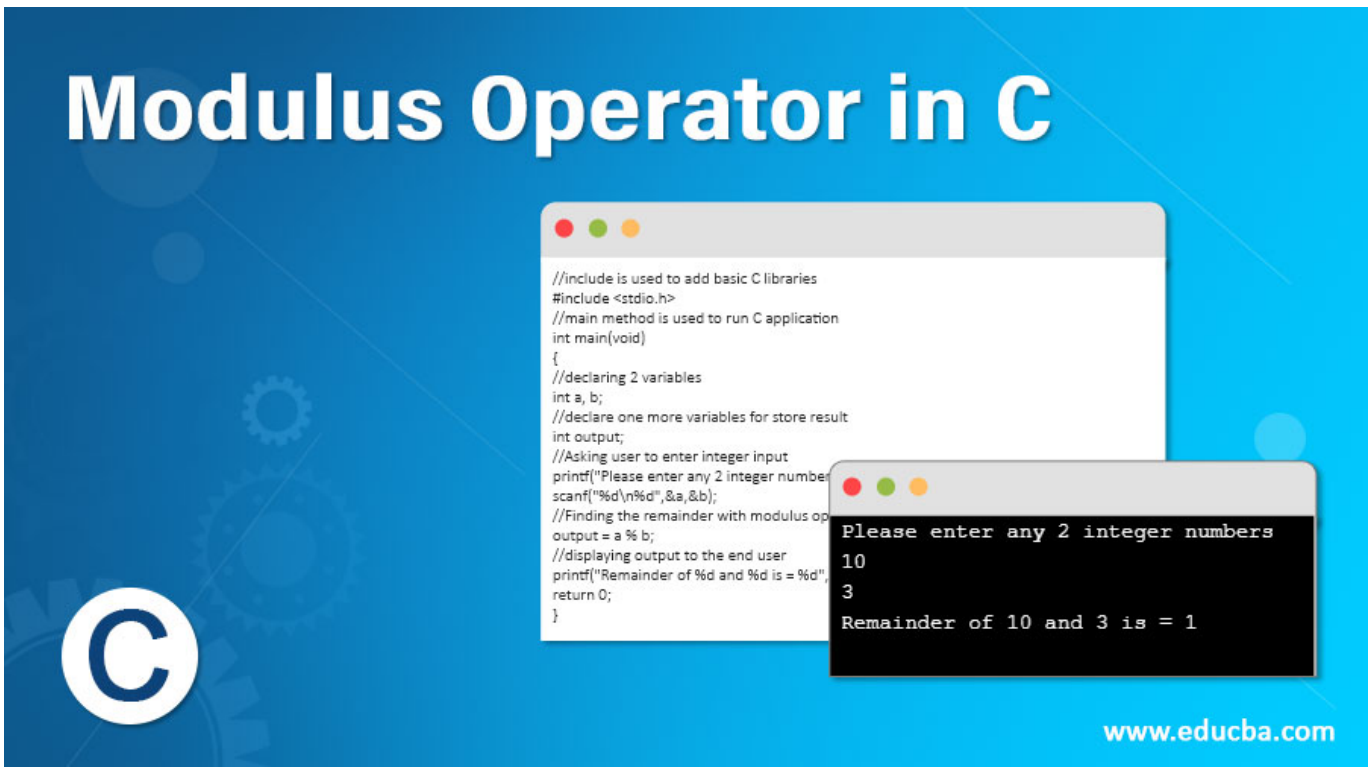

Introduction to Modulus Operator in C

The modulus operator in C is denoted by % (percentile) operator. This modulus operator belongs to arithmetic operators. This modulus operator works in between 2 operands. The modulus operator finds the division with numerator by denominator which results in the remainder of the

Let's consider a and b are 2 integers then the modulus expression becomes

```
a%b
```

Return value possibilities:

- If a is not completely divisible by b then it produces some non-zero integer value.
- If a is completely divisible by b then the remainder becomes 0(zero).
- If a is some number and b is 0 then we get a compile-time error.

How does Modulus Operator work in C?

Modulus operator works based on the value received by the end-user. It always finds the remainder of 2 numbers with respect to the numerator.

The below example will illustrate the exact functionality.

- **Example:** 7 % 3 gives us remainder as 1 because when we divide 7 by 3 then we get 2 as quotient and 1 as remainder.

- **Same** way: 8%3 gives us remainder as 2 because when we divide 8 by 3 then we as quotient and 2 as remainder.

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Example:

Let a=8 and b=3, then

- a%b >> a-(a/b)*b
- 8%3 >> 8-(8/3)*3
- 8-(2)*3
- 8-6
- 2

Therefore 8%3 is 2.

> **Note:** The modulus operator always works with integer numbers only.

Examples to Implement Modulus Operator in C

Below are the examples mentioned:

Example #1

Remainder for integer numbers

Code:


```
//include is used to add basic C libraries
#include <stdio.h>
//main method is used to run C application
```

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```
//declare one more variables for store result
int output;
//Asking user to enter integer input
printf("Please enter any 2 integer numbers \n");
scanf("%d\n%d",&a,&b);
//Finding the remainder with modulus operator
output = a % b;
//displaying output to the end user
printf("Remainder of %d and %d is = %d", a,b,output);
return 0;
}
```

Output:

```
Please enter any 2 integer numbers
10
3
Remainder of 10 and 3 is = 1
```

Example #2

Remainder with float numbers

Code:


```
//include is used to add basic C libraries
#include <stdio.h>
//main method is used to run C application
```

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```
//declare one more variables for store result
float output;
//Asking user to enter integer input
printf("Please enter any 2 integer numbers \n");
scanf("%f\n%f",&a,&b);
//Finding the remainder with modulus operator
output = a % b;
//displaying output to the end user
printf("Remainder of %f and %f is = %f", a,b,output);
return 0;
}
```

Output:

```
main.c: In function ‘main’:
main.c:17:13: error: invalid operands to binary % (have ‘float’ and ‘float’)
  output = a % b;
             ^
```

Explanation: As we discussed in this example we are trying to find out the remainder for 2 float numbers result in a compile-time error.

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Example #3

Remainder for numerator float and denominator int

Code:

```
//include is used to add basic C libraries
#include <stdio.h>
//main method is used to run C application
int main(void)
{
//declaring 2 variables
float a;
int b;
//declare one more variables for store result
int output;
//Asking user to enter integer input
```

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```
//displaying output to the end user
printf("Remainder of %f and %d is = %d", a,b,output);
return 0;
}
```

Output:

```
main.c: In function 'main':
main.c:18:13: error: invalid operands to binary % (have 'float' and 'int')
  output = a % b;
             ^
```

Explanation: In this example float numerator with integer denominator will also result in a compile-time error.

Example #4

Remainder for numerator int and denominator float

Code:

```
//include is used to add basic C libraries
#include <stdio.h>
//main method is used to run C application
int main(void)
{
//declaring 2 variables
int a;
float b;
//declare one more variables for store result
```

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```
//finding the remainder with modulus operator
output = a % b;
//displaying output to the end user
printf("Remainder of %d and %f is = %d", a,b,output);
return 0;
}
```

Output:

```
main.c: In function ‘main’:
main.c:18:13: error: invalid operands to binary % (have ‘int’ and ‘float’)
  output = a % b;
             ^
```

Explanation: In this example int numerator with float denominator will also result in a compile-time error. This concludes both values must be integer type only.

Example #5

Remainder with zero denominators

Code:

```
//include is used to add basic C libraries
#include <stdio.h>
//main method is used to run C application
int main(void)
{
//declaring 2 variables
int a;
```

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```
printf("Please enter any 1 integer number \n");
scanf("%d",&a);
//Finding the remainder with modulus operator
//denominator 0 will result into undefined so we got exception in the output
output = a % b;
//displaying output to the end user
printf("Remainder of %d and %d is = %d", a,b,output);
return 0;
}
```

Output:

```
Please enter any 1 integer number
10
Floating point exception (core dumped)
```

Conclusion

C modulus operator is used to find the remainder of the 2 numbers. This is always integer only. An important conclusion from the above example is modulus operator is applicable only on integer numbers.

Recommended Articles

This is a guide to Modulus Operator in C. Here we discuss an introduction to Modulus C working, calculation along with examples. You can also go through our other related articles to learn more –

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