

BITWISE OPERATORS IN C

http://www.tutorialspoint.com/cprogramming/c_bitwise_operators.htm

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The Bitwise operators supported by C language are listed in the following table. Assume variable A holds 60 and variable B holds 13, then:

Operator	Description	Example
&	Binary AND Operator copies a bit to the result if it exists in both operands.	A & B will give 12 which is 0000 1100
	Binary OR Operator copies a bit if it exists in either operand.	A B will give 61 which is 0011 1101
^	Binary XOR Operator copies the bit if it is set in one operand but not both.	A ^ B will give 49 which is 0011 0001
~	Binary Ones Complement Operator is unary and has the effect of 'flipping' bits.	~A will give -61 which is 1100 0011 in 2's complement form due to a signed binary number.
<<	Binary Left Shift Operator. The left operands value is moved left by the number of bits specified by the right operand.	A << 2 will give 240 which is 1111 0000
>>	Binary Right Shift Operator. The left operands value is moved right by the number of bits specified by the right operand.	A >> 2 will give 15 which is 0000 1111

Example

Try the following example to understand all the bitwise operators available in C programming language:

```
#include <stdio.h>

main()
{
    unsigned int a = 60; /* 60 = 0011 1100 */
    unsigned int b = 13; /* 13 = 0000 1101 */
    int c = 0;

    c = a & b;          /* 12 = 0000 1100 */
    printf("Line 1 - Value of c is %d\n", c );

    c = a | b;          /* 61 = 0011 1101 */
    printf("Line 2 - Value of c is %d\n", c );

    c = a ^ b;          /* 49 = 0011 0001 */
    printf("Line 3 - Value of c is %d\n", c );

    c = ~a;             /* -61 = 1100 0011 */
    printf("Line 4 - Value of c is %d\n", c );

    c = a << 2;         /* 240 = 1111 0000 */
    printf("Line 5 - Value of c is %d\n", c );

    c = a >> 2;         /* 15 = 0000 1111 */
    printf("Line 6 - Value of c is %d\n", c );
}
```

When you compile and execute the above program it produces the following result:

```
Line 1 - Value of c is 12
Line 2 - Value of c is 61
Line 3 - Value of c is 49
Line 4 - Value of c is -61
Line 5 - Value of c is 240
Line 6 - Value of c is 15
```

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