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Introduction to Logical Operators in C

Logical operators are part of binary operators. These operators are specifically used wh
are going to combine two or more requirements together. These can be used in many conditional and relational expressions. On evaluating these conditions, these are the Boolean expressions which give an output of either 1/0 for True/False respectively. Let us below learn

a	b	a && b	a || b
0	0	0	0
0	1	0	1
1	1	1	1
1	0	0	1

And for NOT operator:

a	!a
1	0
0	1

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Types of logical operators with their examples and implementation are explained below.

1. AND Operator

This operator is symbolized by '&&'. This operator gives the true as the output if all the conditions.

Example #1: Let us see a simple example using the AND operator given below.

Code:

```
#include <stdio.h>
int main()
{
int n;
printf("Enter a digit between 1 to 10: ");
scanf("%d",&n);
if((n>0) && (n<=10))
{
printf(" Given number is in between 0 and 10");
}
else if((n>10) && (n<=20))
{
printf("Given number is in between 10 and 20");
}
else

{
```

Output:

```
Enter a digit between 1 to 10: 5
```

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```
#include <stdio.h>
int main()
{
int a,b;
a=855;
b=1300;
if((a>=500) && (b<1000))
{
printf(" This is the first condition");
}
else
{
printf(" This is the second condition");
}
}
```

Output:

```
This is the second condition
```

So, this is how we are going to have the AND condition.

2. OR Operator

This is the condition where any one of the given scenario can be true.

Example #1: Let us check this operator with a small example given below.

```
int main()
{
int n;
printf("Enter a digit between 1 to 20: ");
scanf("%d",&n);
if((n%2==0) || (n%5==0))
{
printf(" Number given is divisible by either 2 or 5");
}
else{
printf(" Number is not divisible by 2 or 5");
}
return 0;
}
```

Output:

```
Enter a digit between 1 to 20: 15
 Number given is divisible by either 2 or 5
```

So, if the given number is either divisible by 2 or 5, then the condition is executed.

Example #2: Now let us see what happens if the same condition is executed with 'and' condition.

Code:

```
#include <stdio.h>
```

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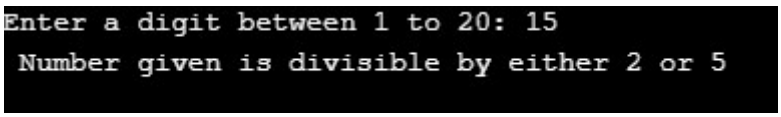
```
scanf("%d",&n);
if((n%2==0) && (n%5==0))
{
printf(" Number given is divisible by 2 and 5");
}
else{
printf(" Number is not divisible by 2 and 5");
}
return 0;
}
```

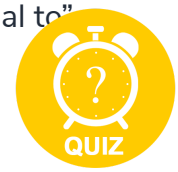
Output:



After comparing the two examples we can understand the main difference between 'AND' and 'OR' logical operators. As the output for these logical operators (https://www.educba.com/logical-operators-in-python/) is a Boolean expression, True/False which is the outcome executes the code inside those conditional statements.

3. NOT Operator

This logical operator is usually defined by symbol '!'. This operator is equal to "not equal to".



Example #1: Let us see a small example of this below.

Code:

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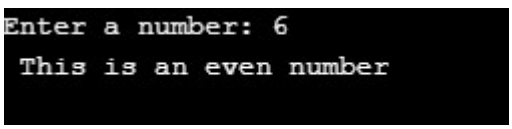
```
int n;
printf("Enter a number: ");
scanf("%d",&n);
if(n %2 != 0)
{
printf(" This is an odd number");
}
else
{
printf(" This is an even number");
}
return 0;
}
```

Output:



Example #2: In a similar way, we can write another example using Not operator.

Code:


```
#include <stdio.h>
int main()
{
int a,b;
```

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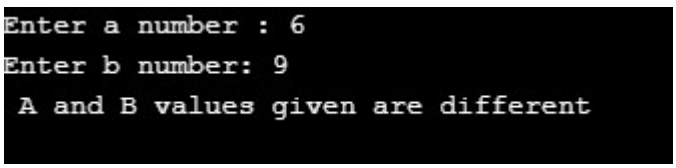
```
if(a!=b)
{
printf(" A and B values given are different");
}
else
{
printf(" A and B values given are same");
}
return 0;
}
```

Output:



So, these are the three logical operators defined through the C programming language.

Example #3: Here let us see one more example where all three of them can be used together.

Code:

```
#include <stdio.h>
int main()
{
int x,y,z;
printf("Enter first number : ");
```

```
scanf("%d",&z);
if((x>=y) && (y>=z))
{
printf(" X is the highest number");
}
else if((x>=y) || (x>=z) )
{
printf(" X is either greater than y or z");
}
else if((x>=y) || (x>=z) && (y>=z))
{
printf(" Both 'and' and 'or' are used and X is definitely larger
");
}
else if( x!=y)
{
printf(" Checking for a condition that X is not equal to Y");
}
else
{
printf("Finally");
}
return 0;
}
```

Output:

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This is just an example of using all these logical operators in one program.

Recommended Articles

This is a guide to Logical Operators in C. Here we discuss the basic concept, different logical operators in C along with examples and code implementation. You can also go through our other suggested articles to learn more –

1. Collections in C# (https://www.educba.com/collections-in-c-sharp/)
2. Logical Operators in JavaScript (https://www.educba.com/logical-operators-in-javascript/)
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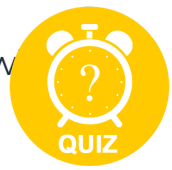

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