

Using Multiple Sensors - Logical Operators

Slide	Topic
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- | | |
|---|---|
| 2 | <u>Logical Operators</u> |
| 3 | <u>Logical Operators - Cheat Sheet</u> |
| 4 | <u>While, If and Logical Operators Examples</u> |
| 5 | <u>Using Logical Operators</u> |

Recall the **Boolean test** for `while` loops and `if-else` conditionals...

`while` (*Boolean test*) `if` (*Boolean test*)

- The **Boolean test** (conditional) can contain *multiple Boolean tests* combined using a “**Logical operator**”, such as:

&&	And
	Or
!	Not

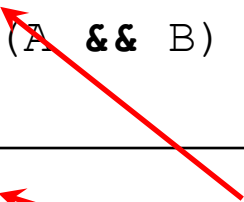
We put parentheses (and) around each *Boolean test*...

`while` ((*Boolean test 1*) && (*Boolean test 2*))

`if` ((*Boolean test 1*) || (!*Boolean test 2*))

- The next slide provides a cheat sheet for **Logical operators**.

Logical Operators - Cheat Sheet

Boolean	English Question	True Example	False Example
A && B	Are both A and B true?	true && true	true && false false && true false && false
A B	Is at least one of A or B true?	true true false true true false	false false
 ! (A && B)	Is at least one of A or B false?	true && false false && true false && false	true && true
 ! (A B)	Are both of A and B false? ! negates the true or false Boolean test.	false false	true true false true true false

While, If and Logical Operators Examples

Source Code

```
1 while ((digital(9) == 0) && (digital(8) == 0))
2 {
3     // Code to repeat...
4 }
5
6 if ((digital(9) == 1) || (digital(8) != 0))
7 {
8     // Code to execute...
9 }
10
11 while ((analog(3) == 512) || (digital(9) == 1))
12 {
13     // Code to repeat...
14 }
15
16
```

Using Logical Operators

What does this say?

Source Code

```
1 #include <kipr/wombat.h>
2
3 int main()
4 {
5     while ((digital(9) == 0) && (digital(8) ==
6 0))
7     {
8         motor(0, 50);
9         motor(3, 50);
10    }
11    motor(0, 0);
12    motor(3, 0);
13    msleep(500);
14    return 0;
15 }
16
```