Make Complicated Decisions

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original source: http://learn.parallax.com/propeller-c-start-simple/make-complicated-decisions

Lesson edited to work with **Dev-C++** IDE by Jeff La Favre 10/22/15

*(Updated 2013-08-08 for SimpleIDE 0.9.4 and its Learn folder's Simple Libraries and Examples) [SimpleIDE is the IDE for use with the robot. This lesson is edited so that we can use **Dev-C++** as the IDE, which does not require a robot – J. La Favre]*

Your programs will often need to decide what to do based on if one condition *AND* another condition are true. Another thing your code might need to check for is if one condition *OR* another condition is true. Decide on Multiple Conditions.c decides if one condition AND another condition are true using the `&&` operator.

- Start **Dev-C++**.
- Open the **File** menu and select **New**. Then select **Source File**.
- Click the mouse in the text window of **Dev-C++** and use the keyboard to enter the following text: **#include <stdio.h>**
- Open the **File** menu and select **Save**, which opens a **Save As** dialog box.
- In the dialog box, open the drop-down labeled **Save as type** and select **c source files(*.c)**. In the **file name** slot enter this name for the file: **decide on multiple conditions.** At the top of the dialog box there is a **Save in** slot, which determines where the file will be saved. Make sure you know the location where you are saving your file so that you can find it later. Now click the **Save** button to save your program file.
- Copy the text in the box on the next page and paste it into the text window of **Dev-C++** under the first line of text you have already entered. Alternatively, enter the text using the keyboard.
- Click the **Save** button to save the code you just pasted or entered with keyboard.
- Examine the program, do you expect it to print one or two messages?

- Run the program by opening the **Execute** menu and selecting **Compile and Run**. If there are no errors in the program, a new program window will open. Compare the actual output to your predicted output.

```
int main()
{
 int a = 100;
 int b = 17;
 printf("a = %d, b = %d\n", a, b);
 if((a > b) && (a == 100))  // if variable a is greater than variable b AND variable  a equals 100, then execute block of code below
 { // start of if block of code
  printf("a is larger than b,\n");
  printf("AND a is 100!\n");
 }  // end of if block of code
}
```

How it Works

The statement `if((a > b) && (a == 100){...}` translates to “if `a` is greater than `b` AND `a` is equal to 100 then, do what’s in the braces.”

Did You Know?

The `&&` operator is called a *logical operator*. Your logical operator options are:

```
&&     Checks if one condition AND another condition are true
||     Checks if one condition OR another condition is true
!      Inverts the result from true to false (1 to 0) or vice-versa
```

Try This

By now, you can probably tell that both conditions have to be true for the AND logical operator to evaluate to true (so that it will execute its code block). For one condition OR another to evaluate to true, either one or both conditions can be true.

- Open the **File** menu and select **Save As** to save a copy of your project as **test or conditions**.
- Edit the code to match the code on the next page and save it.
- Do you expect it to display the second set of messages or not? Test your result
- Modify **`a`** and **`b`** to make it only print one message.

```
int main()
{
  int a = 100;
  int b = 17;
  printf("a = %d, b = %d\n", a, b);
  if((a > b) || (a == 100))   // if variable a is larger than variable b OR variable a is equal to 100, then execute the code block below
  {  // start of if block of code
    printf("a might be larger than b,\n");
    printf("OR a might be 100, \n");
    printf("OR maybe both!  \n");
  }  // end of if block of code
}
```

Your Turn

- Write a program that prints a special message, but only if the value of the `a` variable is in the 100 to 200 range.