Transcript: If-Else Statements

>> Now let's consider if statements. An if statement allows a program to execute a statement or a block of statements contained in curly braces, only under certain conditions. And these conditions are usually described, as a Boolean expression. Let's look at an example. Here we've got int temp = 39 and then in our if statement, we have a Boolean expression, temp less than 50 open brace, the statement, we're gonna print it's cold, and then a closed brace.

So essentially what we have here, if this Boolean expression evaluates to true, it'll do what's inside the block. And namely, print out its code, otherwise it skips this statement and prints out the last statement here, temp equals, whatever the temp is. In fact, notice that that last statement will always be printed.

So let's look at this in, in j graphs. So I've set a break point. Click debug, so we're about to see in this case temp = 79. And we see it over in the debug tab, temp=79. And now, it says, in our if statement here, is temp less than 50?

Well 79 is not less than 50. And so this is gonna be false. So we'll just, when I step we go all the way to the last statement and we print out, Temp = and the temp of course is 79 in this case. And we see that, down at the bottom.

So let's change this, temperature to, let's set it to, 45 let's say and I'll just hit debug. It'll compile it, and then, and then launch the debugger. So now we have temp equal 45, and we ask in the if statement, is temp less than 50? That's true, so this time, we go into the if statement and, we execute the print line and, and we print out it's cold, and then we go on to print out the actual temp.

Now this is our look at the, first look at a control structure diagram on an if statement. The way the symbols work is the little diamond means there's a condition and then the true path is this solid line that comes off to the right, and the false path is this dotted line that goes down.

So we're either gonna come in here and do this, statement inside the block or we're gonna skip it. That's, that's the way that works there. We could also use a Boolean variable, inside the if. In this example here, we've got, temp = 39 again. And we've got Boolean isCold temp less than 50.

And so now isCold is either true or false. And in the if statement we could just say, if isCold and if that evaluates to true we go inside the block and print and do the statement there, it's cold. Otherwise we skip it. So looking at that example, just look at it here.

I'm gonna set this back to 39. And let's, let's run this in debug mode. And so here we've got temp = 39, and then the Boolean isCold equals 50. And notice over here in the debug tab, we see isCold = true. And so in this case, we got if isCold, it's true.

And so, we're gonna go in and print out, it's cold. And what the temperature is. Now, let's look at, another version of the if statement. It's got an else clause on it, and what it allows you to do is, is, if the, condition is true, then we, execute a statement or block just like we did before.

If it's not true, then we can, execute a different block. But in either case, we're gonna execute one or the other, we won't do both and then we'll go on down. Whereas in our previous example, just looking back at it a moment, in this case, we executed the statement inside the block as true, but we always executed this, this last statement, Temp =.

So with the if-else, in that case, we're only going to execute one or the other. So in this example, we've got num1 = 9 num2 =7 and we say if num1 is less than num2. In this case it's false, we would go in and just print out that num1 is greater than or equal to num2, and then print done.

We would always print done in either case, but up here with the if else, if it's true we do the true part, otherwise we, we do the else part. So let's look at that example. So here you can see the, the control structure diagram. This is the true path.

If num1 is less than num2, we go down and do this, otherwise we'll do the else. We'll go down and do the else. So if we do the statement on line seven, the next statement we're gonna execute sort of slide through the dotted lines. It's gonna be down here on line 12.

So it's sort of an easy way, the diagram makes it pretty easy to see what statement is gonna be executed and next. So here in this example, I've got NUM ONE set to two. NUM TWO is seven. So as we execute that, we're asking, is num1 less than num2.

In this case, that's true. 2 is less than 7, and so when I step, we go in the true part, and we're gonna print, print out that num1 is less than num2. But importantly here the next statement to be executed is all the way down here to 12.

So we're gonna skip the else in its block. We've done this and we'll sort of slide through here and this'll be the next statement we execute so we should see the program jump down to there. And then we print done. If we wanna run this with num1 equal nine, let's say.

In this case we'll run down here and, we're again gonna ask is, is nine less than seven? That's gonna be false, and so in this case, we're gonna jump directly to the else, And we'll print out that num1 is in this case greater than or equal to 7.

And then in any case we print Done. So we see the output. What if num1 and num2 were both the same number say 10? Well the only thing we're really asking here is num 1 less than num2. So if it's equal to num2, as it would be if they were both 10, in that case we would do the Ls.

And that's why, in the Ls, we print out, is greater than or equal.