If Else Statements Using Operators

The If Statement

The code in lines 50 to 55 in the example below gets executed if and only if the test evaluates to true. That is the if statement in Java is a test of any boolean expression. The statement following the if will only be executed when the boolean expression evaluates to true. If the boolean expression evaluates to false then the statement following the if will not only be executed.

Review the code below. Note the code on lines 48 – 55. This is a simple if statement where if Num1 is greater than Num2, Num1 will go into a variable called temp, Num1 will now equal Num2 and Num2 will equal temp. In other words Num1 and Num2 will swap values.

```
1   //Wendy Plourde
2   //If Statement example
3   //11/11/2008
4
5           import java.applet.*;
6           import java.awt.*;
7           import java.awt.event.*;
8           import java.awt.Color.*;
9
10          public class IfStatement extends Applet implements ActionListener
11          {
12                  //declare variables
13                  int num1, num2;
14
15
16                  //construct components
17                  Label titleLabel = new Label("If Then Example that will display yur numbers in numerical order");
18                  Label number1Label = new Label("Enter First Number: ");
19                      TextField number1Field = new TextField(15);
20                  Label number2Label = new Label ("Enter a Second Number: ");
21                      TextField number2Field = new TextField(15);
22                  Button goButton = new Button("GO");
23                  Label outputLabel = new Label("Click the GO button to put you numbers in order.");
24
25
26                  //Set up for the applet
27                  public void init()
28                  {
29                      setForeground(Color.blue);
30                      add(titleLabel);
31                      add(number1Label);
32                      add(number1Field);
33                      add(number2Label);
34                      add(number2Field);
35                      add(goButton);
36                      goButton.addActionListener(this); //register the addActionListener
37                      add(outputLabel);
38                      //logo = getImage(getDocumentBase(), "logo.gif");
39                  }
40
41          public void actionPerformed(ActionEvent e)
42                  {
43
44                      num1 = Integer.parseInt(number1Field.getText());
45                      num2 = Integer.parseInt(number2Field.getText());
46
47
```

```
47
48                          // swap numbers, if necessary
49                              if (num1 > num2)
50                              {
51                                  int temp;
52                                  temp = num1;
53                                  num1 = num2;
54                                  num2 = temp;
55                              }
56
57
58              outputLabel.setText("YOUR NUMBERS ARE " + num1 + " " + num2);
59          }
60
61  }
62
63
64
```

Operators are used for mathematical equations, assigning values to variables and used for comparisons like in the code above. The table below shows some of the most used operators.

Operator	Purpose
+	addition of numbers, concatenation of Strings
+=	add and assign numbers, concatenate and assign Strings
-	subtraction
-=	subtract and assign
*	multiplication
*=	multiply and assign
/	division
/=	divide and assign
%	take remainder
%=	take remainder and assign
++	Increment by one
--	De-increment by one
>	Greater than
>=	Greater than or equal to
<	Less then
<=	Less then or equal to

If Else Statement using the Comparison Operators

Review the code below. Note this example is an application where the test score is a fixed value. The test score is tested in each If Statement and if not true will move down to the next else if and test again. If none of the if statements are found true it will drop down to the final else and the grade will equal an "F", as it does in this case.

```
1
2
3
4
5  class IfElseDemo {
6      public static void main(String[] args) {
7
8          int testscore = -96;
9          char grade;
10
11         if (testscore >= 90) {
12             grade = 'A';
13         } else if (testscore >= 80) {
14             grade = 'B';
15         } else if (testscore >= 70) {
16             grade = 'C';
17         } else if (testscore >= 60) {
18             grade = 'D';
19         } else {
20             grade = 'F';
21         }
22         System.out.println("Grade = " + grade);
23     }
24 }
25
26
```

Programming Assignment

1. Recreate the number swap applet on pages 1 and 2.

2. Convert the above code to an applet that will take in a text field to input the grade. Please use all labels to describe input and output fields. You may use an image of your choice. Be creative!

Debugging

1. Find the **Four** common errors in DebugFour.java application