**Problem Statement**

Write a program that will ask the user for two integers, identify which one is larger and which one is smaller, and output the results.  The program should keep doing this until the user enters two zeroes (0 0), which should terminate the program.

This program should make use of methods to perform these tasks.  The *signatures* of the methods are provided, but you must write the code for each method, as well as using each method properly from within your `main` method.

The methods in your program should be:

**public static void main(String [] args)**
The main method is the starting point for all programs.

**public static int min ( int a, int b)**
Determines the smaller value of a and b, and returns the smaller value.

**public static int max ( int a, int b)**
Determines the larger value of a and b, and returns the larger value.

**public static boolean isFinished ( int a, int b )**
Checks to see if the user has entered the termination numbers, 0 0.  If they have, return `true`.  If they have not, return `false`.

**public static void displayValues ( int a, int b )**
Uses the `max()` and `min()` methods to determine the maximum and minimum values, and then displays the values for the user.

**Sample Input & Output**

Input from the user is indicated by **bolded** text.

```
    Please enter two integers - 0 0 to terminate.
    3
    5
    User input: 3 5  Max value: 5  Min value: 3
    Please enter two integers - 0 0 to terminate.
    3
    -5
    User input: 3 -5  Max value: 3  Min value: -5
    Please enter two integers - 0 0 to terminate.
    4
    4
    User input: 4 4  Max value: 4  Min value: 4
    Please enter two integers - 0 0 to terminate.
    0
    0
    User input: 0 0  Program terminated.
```

## Sample Code

The following code provides the entire main method, along with the *signatures* of the other required methods.

```java
class MaxMinAssignment
{
  public static void main (String[] args)
  {
    int x, y;

    do
    {
      System.out.println("Please enters two integers - 0 0 to end program");
      x = In.getInt();
      y = In.getInt();
      System.out.print("User input: " + x + "  " + y + "  ");

      if (isFinished(x,y))
      {
        System.out.println("Program Terminated.");
      }
      else
      {
        displayValues(x, y);
      }
    } while (!isFinished(x,y));
  }

  // Determine the max & min values, then output for the user
  public static void displayValues( int a, int b )
  {
      // your code here
  }

  // Check to see if the user is finished, returns true or false
  public static boolean isFinished( int a, int b )
  {
      // your code here
  }

  // Compares the provided values, a and b, and returns the greater value
  public static int max ( int a, int b )
  {
      // your code here
  }

  // Compares the provided values, a and b, and returns the smaller value
  public static int min (int a, int b)
  {
      // your code here
  }
}
```

**Extension – Method Overloading**

Once you have the program working perfectly, save a copy and continue working under a new file name.  Modify your program to allow for the input of three integer values, terminating when the user enters three zeroes (0 0 0).

In addition to displaying the minimum and maximum, your program should also display the middle value of the three numbers.

The max and min methods for two integer values will actually be very useful in solving this problem, so we wish to keep them as part of the program.  These names, max and min, also make sense for comparing three integers, but with Java, this does not pose a problem.  Review the lesson on **method overloading** to explore this concept.

Your modified program should have the following new methods:

**`public static int min ( int a, int b, int c )`**
Determines the smaller value of a, b, and c, and returns the smaller value.  Uses the two-integer `min()` method.

**`public static int max ( int a, int b, int c )`**
Determines the larger value of a, b, and c, and returns the larger value.  Uses the two-integer `max()` method.

**`public static int mid ( int a, int b, int c )`**
Determines the middle value of a, b, and c, and returns the middle value.

**`public static boolean isFinished ( int a, int b, int c )`**
Checks to see if the user has entered the termination numbers, 0 0 0.  If they have, return `true`.  If they have not, return `false`.

**`public static void displayValues ( int a, int b, int c )`**
Uses the `max()`, `min()`, and `mid()` methods to determine the maximum, minimum, and middle values, and then displays the values for the user.