

Question J8–1: (Solution, p 3) Explain the difference between using an *instance method* in a Java program and using a *class method*.

Question J8–2: (Solution, p 3)

Suppose we were to execute the method at right passing $\langle 5, 2, 7, 0, 6, 1 \rangle$. for the array parameter `intArray`.

- a. Show the sequence of values taken by the variables `k`, `sk`, and `i`.

`k`
`sk`
`i`

- b. What value does the method return?

```
public static int myst(int[] intArray) {
    int k;
    int sk;
    if(intArray[0] > intArray[1]) {
        k = intArray[0];
        sk = intArray[1];
    } else {
        k = intArray[1];
        sk = intArray[0];
    }
    int i = 2;
    while(i < intArray.length) {
        if(intArray[i] > k) {
            sk = k;
            k = intArray[i];
        } else if(intArray[i] > sk) {
            sk = intArray[i];
        }
        i++;
    }
    return sk;
}
```

Question J8–3: (Solution, p 3)

- a. The Java method at right is set up to take an array of floating-point numbers as a parameter and return a floating-point number. Complete it so that it returns the minimum number in its parameter array.

```
import csbsju.cs150.*;

public class FindMin {
    public static double getMinimum(double[] nums) {

    }
}
```

- b. Complete the Java program at right so that it uses the method of part a. to compute the minimum of the array scores, which it should then print on the IOWindow.

```
import csbsju.cs150.*;

public class UseFindMin {
    public static void run() {
        IOWindow io = new IOWindow();
        double[] scores = new double[10];
        int i = 0;
        while(i < scores.length) {
            scores[i] = io.readDouble();
            i++;
        }
    }
}
```

Question J8-4: (Solution, p 3)

Suppose we were to execute the run method at right. What would the program print?

```
import csbsju.cs150.*;

public class Mystery {
    public static double f(double x) {
        return x + x;
    }
    public static double g(double y) {
        y = f(y);
        return y * f(y);
    }
    public static void run() {
        IOWindow io = new IOWindow();
        double z = 2.0;
        io.print(g(z));
        io.println(" " + z);
    }
}
```

Solution J8-1: (Question, p 1) Instance methods are messages that are sent to objects of a class; for example, since `move` is an instance method of a `Robot` class, we can send the `move` message to an individual `Robot` object (created using `new`). Class methods, however, apply to the class itself: That is, a class method is a message we send to the class, not to objects of that class. Since `pow` is a class method of the `Math` class, we send it to the `Math` class, not to individually created `Math` objects.

Solution J8-2: (Question, p 1)

a. k 5 7
sk 2 5 6
i 2 3 4 5 6

b. 6

Solution J8-3: (Question, p 1)

a.

```
import csbsju.cs150.*;

public class FindMin {
    public static double getMinimum(double[] nums) {
        double min = nums[0];
        int i = 0;
        while(i < min) {
            if(nums[i] < min) {
                min = nums[i];
            }
            i++;
        }
        return min;
    }
}
```

b.

```
import csbsju.cs150.*;

public class UseFindMin {
    public static void run() {
        IOWindow io = new IOWindow();
        double[] scores = new double[10];
        int i = 0;
        while(i < scores.length) {
            scores[i] = io.readDouble();
            i++;
        }

        double min = FindMin.getMinimum(scores);
        io.println("Minimum is " + min);
    }
}
```

Solution J8-4: (Question, p 2) 32.0 2.0