Lesson 3 Solutions

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Compiled on Saturday 23rd July, 2016 at 13:10

```java
public class tables {
        public static void main(String[] args) {
                //array with random numbers
                int[] arr = {5,6,2,3,1,4,5,2,9,3,4,2};

                /* Why nested for loops are needed
                 * ==============================
                 * The outside for loop is to increment through the array.
                 * This allows us to get the element to do the table for.
                 * The inside for loop is to increment from 1 to 10.
                 * It allows us to get the number to which the number from the array is multip
                 */

                for(int i = 0; i < arr.length; i++){
                        for(int j = 0; j < 10; j ++){
                                // num increments from 1 to 10
                                int num = j +1;
                                // product is equal to the element in the array multiplied by
                                int product = arr[i] * num;
                                //print out to console
                                System.out.println( arr[i] + " x " + num + " = " + product);
                        }
                        //extra space
                        System.out.println("\n");
                }
        }
}

public class range {
        public static void main(String args[]){
```

```
                // random array of integers
                int[] arr = {5,6,2,3,1,4,5,2,9,3,4,2};

                // set this to the first element
                int max = arr[0], min = arr[0];

                //started from i = 1 as min and max are already set to arr[0]
                for(int i = 1; i < arr.length; i++){
                        if(arr[i] > max){
                                // update the max and min as you go through the code
                                max = arr[i];

                        }
                        if(arr[i] < min){
                                // update the max and min as you go through the code
                                min = arr[i];
                        }
                }

                //the range is equal to the maximum value minus the minimum value
                int range = max - min;

                // should be 8 with the given array
                System.out.println("The range is " + range);
        }
}


public class bubbleSort {
        public static void main(String[] args){
                printArr(sort(new int[]{6, 8, 3, 9,4, 7,5,2,1}));
        }

        public static int[] sort(int[] arr){
                int c = -1;
                int x;
                while(c != 0){
                        c = 0;
                        for(int i = 0; i < arr.length-1; i++){
                                if(arr[i] > arr[i+1]){
                                        x = arr[i];
                                        arr[i] = arr[i+1];
```

```
                                        arr[i+1] = x;
                                        C++;
                                }
                        }
                }
                return arr;
        }

        public static void printArr(int[] arr){
                System.out.print("[ " + arr[0]);
                for(int i = 1; i < arr.length; i++){
                        System.out.print(" , "+ arr[i]);
                }
                System.out.print("]");
        }
}
```