**Black Box Testing**

Create an array to test array size, the array sizes should be composed of the following number of elements:

1. 2,147,483,647 should pass through the program without error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should not encounter an error if all input values are integers. To test for possible input values, refer to integer boundaries or input cases.
2. 2,147,483,646 should pass through the program without error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should not encounter an error if all input values are integers. To test for possible input values, refer to integer boundaries or input cases.
3. 2,147,483,648 the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error if all input values are integers. The error should be caused due to the array size limit imposed by java which is 2,147,483,647. To test for possible input values, refer to integer boundaries or input cases.

Test the following cases, to test for integer boundaries.

1. {0, 1, -2147483648} should pass through the program without error and terminate
   1. When checking to see if the array is sorted it should return ‘False’.
   2. When checking to see if the array is sorted after sorting the array it should return ‘True’ with array {-2147483648, 0, 1}.
2. {0, 1, -2147483647} should pass through the program without error and terminate
   1. When checking to see if the array is sorted it should return ‘False’.
   2. When checking to see if the array is sorted after sorting the array it should return ‘True’ with array {-2147483647, 0, 1}.
3. {0, 1, -2147483649} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error with the value ‘-2147483649’ as the minimum int value in java is -2,147,483,648.
4. {0, 1, 2147483647} should pass through the program without error and terminate
   1. When checking to see if the array is sorted it should return ‘True’.
   2. When checking to see if the array is sorted after sorting the array it should return ‘True’ with array {0, 1, 2147483647}.
5. {0, 1, 2147483646} should pass through the program without error and terminate
   1. When checking to see if the array is sorted it should return ‘True’.
   2. When checking to see if the array is sorted after sorting the array it should return ‘True’ with array {0, 1, 2147483646}.
6. {0, 1, 2147483648} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error with the value ‘2147483648’ as the maximum int value in java is 2,147,483,647.

Test the following cases for input cases:

1. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10} should pass through the program without error and terminate
   1. When checking to see if the array is sorted it should return ‘True’.
   2. When checking to see if the array is sorted after sorting the array it should return ‘True’ with array {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}.
2. {0, 1, 2, 3, 4, a, b, c, d, e, f} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error because the values specified are not all integer values.
3. {a, b, c, d, e, f, g, h, i, j, k, l} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error because the values specified are not all integer values.
4. {1, 2, 3, 4, 5, !, @, #, $, %} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error because the values specified are not all integer values.
5. {!, @, #, $, %, ^, &, \*, (, ), \_} the program should fail with an error and terminate
   1. When sorting the array or checking to see if the array is sorted the program should encounter an error because the values specified are not all integer values.