Programming Exercise 11.5

A Dynamically Sized Array

Purpose. Learn about dynamic arrays, while further reinforcing console input techniques. Learn how to sort numbers stored in an array, low-to-high, and to identify the minimum and maximum values. Learn how to average the numbers stored in an array, while reinforcing what you learned in a previous chapter about functions. And learn how apply Boolean search to the numbers stored in an array, while reinforcing what you learned in a previous chapters about functions, `boolean` variables, and if-statements.

Requirements. Rewrite the `DynamicArray.java` program from chapter 11, renaming it **`DynamicallySizedArray.java`**. Modify it so that the program:

1. ...uses the keyboard (`cin`) for its input instead of a file (`fin`).

2. ...has *prompts* to guide the user for entering size and the values to be stored in the array.

3. ...sort the array from low-to-high before printing the values to the screen.

4. ...output (with labels) the maximum and minimum values in the array.

5. ...prints the average of the values entered, rounded to one digit after the decimal point.

6. ...prints if there are any 'A' grades -- that is, if any values are greater than or equal to 90.

Program I/O. <u>Input</u>: a number of scores from the console keyboard, followed by that many whole number scores. <u>Output</u>: An echo of the scores read ordered low-to-high, their max/min/avg values, and whether or not an 'A' grade was entered, all properly labeled.

Example. Your program's console I/O should look something like this, with user input in blue:

```
How many scores? 4
Enter a number: 96
Enter a number: 94
Enter a number: 64
Enter a number: 92
Sorted: 64 92 94 96
Minimum: 64
Maximum: 96
Average: 86.5
At least one 'A' grade entered
```