

Lab Report 00

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Problem

The problem was to take in a predetermined number of values from the user, use bubble sort to order them from least to greatest, and print out the values in ascending order.

Solution

The first step to the program was obtaining the data from the user. Since the number of values the program took in was 10, the user is asked to enter a value 10 times, and each time the value the user enters is added into the corresponding index of the integer array of size 10 that stores the values.

The next step was to sort these values. The idea of bubble sort is that the program iterates through the array and swaps each pair of numbers that are out of order. It continues doing this until no swaps have been made, which indicates that each pair of numbers is in order and thus the entire list is in order. In the program, a boolean value was initialized representing whether or not there have been any swaps made throughout the array. Then, in a loop that runs while this boolean is true, the boolean is set to false initially and then the program iterates through each index. If the element to the right is less than the current element, the program switches the two elements and sets the boolean to true. Thus, the loop will stop when the boolean is not set to true for any index, meaning that no swaps were made and the list is sorted.

Finally, the program iterates through each index in the now fully sorted array and prints it to the console.

Implementation Problems Encountered

No problems encountered

Lab Report Questions

1. Machine code is the low-level code that is directly executed by the CPU. It is the lowest-level of code visible to the programmer, though it would be highly impractical to write machine code directly.

2. Byte code or intermediate code is created by the compiler and is what is found in a .class file. The bytecode is used by the JVM, which in turn creates corresponding machine code.
3. A program is compiled by the Java Compiler into bytecode, which then goes to the JVM which creates machine code.