**Computer Science 2**   **Lab # 05**



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**CS2 Section # 3**

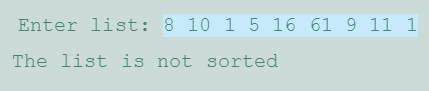
**Due:** Problem A by the **end of the lab** and Problems B by the end of **Saturday** of the same week.

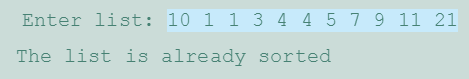
**TOPIC: Sorting**

**Project A:**

**Problem Description:**

Write a test program that prompts the user to enter a list and displays whether the list is sorted or not. Here is a sample run. Note that the first number in the input indicates the number of the elements in the list.





**Analysis:**

(Describe the problem including input and output in your own words. Type your answer in the following with **BLUE font color**)

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| **Only check if a list is sorted in increasing order. Do not have to sort an actual list, only determine if it is sorted or not.** |

**Design:**

(Describe the major steps for solving the problem. Type your answer in the following with **BLUE font color**)

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| * **I want to use a method , I’ll call it isSorted to determine whether or not the array is in increasing order** * **The main method will have a scanner input to ask the user to enter numbers into an array** * **I will use a for loop to put the input numbers into the array** * **Then I will implement my isSorted method into an if statement to output whether the inserted list was sorted or not** |

**Coding:** (Copy and Paste Source Code here. Type your answer in the following with **BLUE font color**)

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| **import java.util.Scanner;**  **public class Sorting {**  **public static void main(String[] args) {**  **Scanner input = new Scanner(System.in);**  **// Prompts user to enter a list**  **System.out.print("Enter list size: ");**  **int size = input.nextInt();**  **System.out.print("Enter " + size + " numbers into list: ");**  **int[] list = new int[size];**  **for (int i = 0; i < list.length; i++){**  **list[i] = input.nextInt();**  **}**  **// Displays whether the list is sorted or not.**  **if(isSorted(list)){**  **System.out.println("The list is already sorted");**  **}else{**  **System.out.println("The list is not sorted");**  **}**  **}**  **/\*method that returns true if already sorted in**  **\*increasing order, else false**  **\*/**  **public static boolean isSorted(int[] list) {**  **for (int i = 0; i < list.length - 1; i++) {**  **if (list[i] > list[i + 1]){**  **return false;**  **}**  **}**  **return true;**  **}**  **}** |

**Testing:** (Describe how you test this program. Type your answer in the following with **BLUE font color**)

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| **RUN three times, using the same input as in the sample runs:**  **Test 1:**  **Enter list size: 10**  **Enter 10 numbers into list: 2 4 6 8 10 12 14 16 18 20**  **The list is already sorted**  **Test 2:…**  **Enter list size: 5**  **Enter 10 numbers into list: 2 3 3 1 5**  **The list is not sorted**  **Test 3:**  **Enter list size: 8**  **Enter 10 numbers into list: 1 1 2 3 5 5 7 21**  **The list is already sorted** |