Test Plan

Nelson Villatoro

CMSC115

Chapter 7, Project 5

December 03, 2024

**Program Goals & Objectives**

This program checks whether an array of user-defined length is sorted. The user specifies the array's size and inputs all the numeric values individually. After completing that step, the program verifies whether the list is sorted in ascending order.

**Program Functional Requirements**

1. **User Input**
   1. The program should prompt the user to enter the size of the list (an integer).
   2. The program should prompt the user to enter that number of integers, one at a time.
2. **Data Processing**
   1. Store the entered integers in an array.
   2. Iterate through the array to compare each element with the next element.
   3. If any element is greater than the following element, the list is not sorted.
   4. ii. If the end of the array is reached without finding such a pair, the list is sorted.
3. **Output**
   1. Display the list of numbers entered by the user.
   2. Display whether the numbers are sorted in ascending order or not.

**Program Pseudocode**

START

Initialize scanner for user input

Display "Enter the size of the list"

Read and store size from user

Create new integer array of specified size

Display "Enter the content of the list"

FOR each position in array

Read and store integer from user into array

Display "The list has [size] integers: "

FOR each number in array

Display number

IF not the last number

Display space

Display new line

IF array is sorted in nondecreasing order

Display "The list is already sorted"

ELSE

Display "The list is not sorted"

Close scanner

FUNCTION check if array is sorted:

FOR each position except last

IF current number is greater than next number

Return false

Return true

END

**Program Flowchart**

**A diagram of a flowchart

Description automatically generated**

**Table 1 – Traceability Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Case | Input/Output | Expected Result | Actual Result | Outcome  (Pass/Fail) |
| 1a | Please enter how many numbers you would like to check (list size): 5  Please enter 5 numbers, one at a time:  (Press Enter after each number)  Number 1: 2  Number 2: 5  Number 3: 3  Number 4: 2  Number 5: 1 | You entered these 5 numbers: 2, 5, 3, 2, 1  The numbers are not sorted in ascending order. | You entered these 5 numbers: 2, 5, 3, 2, 1  The numbers are not sorted in ascending order. | Pass |
| 2a | Please enter how many numbers you would like to check (list size): five | Handle invalid input properly | Exception in thread "main" java.util.InputMismatchException | Fail |
| 3a | Please enter how many numbers you would like to check (list size): 3  Please enter 3 numbers, one at a time:  (Press Enter after each number)  Number 1: 1  Number 2: 2  Number 3: 3 | You entered these 3 numbers: 1, 2, 3  The numbers are sorted in ascending order. | You entered these 3 numbers: 1, 2, 3  The numbers are sorted in ascending order. | Pass |