EE 103 - Lab Work 6

Array Sorting with Maximum Elements

November 27, 2023

Introduction

In this laboratory session, you will be working on a C programming problem related to sorting an array by finding maximum elements in each iteration. The goal is to introduce you to the concept of selection sort and array manipulation.

Problem Statement

Consider the following problem:

> Given an array of integers, your task is to implement a C program that sorts the array by finding the maximum element in each iteration. The sorted array should contain the maximum elements in descending order. You will also create a separate array to store these maximum elements.

Procedure

1. **Function Definitions:** Define the following functions:
   - `void findMaxAndRecord(arguments)`: Finds the maximum element in an array, records it in the result array, and omits the found maximum from further consideration. (40 pts.)
   - `void printArray(arguments)`: Prints the elements of an array. (25 pts.)
2. **Main Function:** Write the `main` function. In this function:
   - Declare an array and print it using the `printArray` function. (5 pts.)
   - Call the `findMaxAndRecord` function in a loop in main to record maximum elements in each step. (25 pts.)
   - Print the sorted array with maximum elements using the `printArray` function. (5 pts.)
3. **Testing:** Test your program with different arrays to ensure it works correctly.
4. **Hint:** You may need ***int n = sizeof(array) / sizeof(array[0]);*** to determine the size of the array.

5. **Sample Outputs:**

```
Original array: 12 61 9 14
Sorted array with max elements: 61 14 12 9
```

```
Original array: 132 124 226 211 21 32 100
Sorted array with max elements: 226 211 132 124 100 32 21
```

```
Original array: 32 12 155 12 14 14 155 155
Sorted array with max elements: 155 155 155 32 14 14 12 12
```