

## Lab Assignment 2

The flowchart should be exported as a pdf – (use export, not save as). For the flowchart the pdf and the graphml file should be uploaded. Pseudocode can be written in a text editor or word – uploading a txt file or a pdf (pdf if done in word: => save as => file format =>pdf). If submitting the files separately call the files Q1 and Q2 according to the question.

It is your responsibility to make sure your file is uploaded correctly. You will be marked on the uploaded files.

Q1) Using pseudocode express an algorithm that:

Reads in an array and prints the value and location (element index) of the local maxima in the array. A local maximum is defined as an element that is greater than both the previous and subsequent element (see Figure 1). For this problem the first and last elements of the array cannot be considered local maxima. You do not need to store the Maxima, just print the values and their locations as they are encountered.

For the below example input array the algorithm should print out  
value 4 location 2,  
value 7 location 5,  
value 6 location 7.

3	2	4	1	3	7	5	6	4
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If you were to graph the array the local maxima would be peaks in the graph.

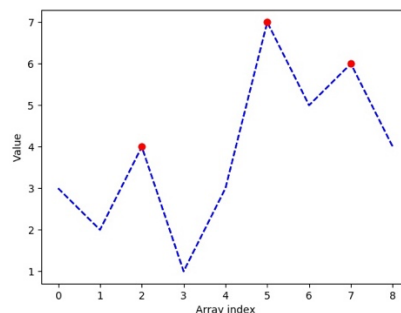


Figure 1: Graph of example array value against array index, the red dots indicate local maxima in the graph.

**10 Marks**

Q2 Express an algorithm using a flowchart that:

Reads in an array of integers, A, from memory and an integer from a user, and then searches for the integer entered by the user in the array. The algorithm should print whether the number is in the array and the position in the array that the number first occurs. The loop should terminate upon finding the first occurrence of the number – do not use a break statement.

**10 Marks**