Flowchart For Selection Sort
Work Sheet: 06-ALG-07-WS

Note to teacher: Included below are several exercises. It's not necessary to finish all exercises. Would be good to have the children do up to the flowchart exercise (i.e. I.C), and then go on to the rest, per time/interest permitting. Or provide the remaining as take away challenge-exercises to the more interested students.
Tip: these exercises are best done by back-and-forth discussions and working things out – if possible divide the class into pairs for such a work through of the exercises.

I. Flowchart for Selection Sort

A. Consider the following list of unsorted numbers. Build the algorithm for using Selection Sort to sort out the list of numbers.
Hint: use the Sorted blank slots alongside to sort out the example unsorted list, to help build the logic/ algorithm

Unsorted	Sorted
12	
14	
8	
7	
25	
39	
85	
72	
61	
79	
18	

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B. Using the algorithm developed above, develop the flowchart for Selection Sort.

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C. Revalidate the flowchart by running the unsorted list below through the developed flowchart.

Unsorted	Sorted
7	
18	
28	
47	
55	
91	
75	
72	
66	
48	

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II. Analyzing Selection Sort

Consider an unsorted list which contains duplicate numbers. e.g. below:

Unsorted
9
2
28
43
57
16
28
34
95
31

Note: 28 is a number that has been repeated in the list.

Will the flowchart for Selection Sort be able to sort such a list? Work the unsorted list through the flowchart to derive your answer. What will happen in general to any unsorted list with a number repeated?

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III. **Per the definition of Selection Sort, the flowchart creates sorted lists which are in ascending order (minimum first) i.e lowest to higher values. If you needed to sort the list in descending order (maximum first) i.e. highest to lower values, how would you need to change the flowchart? What key element of the flowchart would need to be changed?**

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