**Bubble Sort By Hand**

This exercise follows the same pattern as the last one, except that here you'll be doing a BubbleSort, rather than a search. As a result, instead of tracking all the variables, you'll simply re-draw the picture of the array, whenever you swap two elements of the array.

Starting with the array pictured below, fill out the picture of the array, step by step, in order to show how a BubbleSort operates. The first couple of steps are filled in, as a demonstration

Given the method (defined with the SearchingAndSorting class)

**void BubbleSort(int[] array)**

This method will be called from main, in the following manner:

int [] nums = { 17, 12, 21, -3, 0};

SearchingAndSorting sas = new SearchingAndSorting();

sas.BubbleSort(nums);

You will start your 'trace' as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Starting Point | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 17 | 12 | 21 | -3 | 0 |
| Swap 0 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | 17 | 21 | -3 | 0 |
| Swap 1 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | 17 | 21 | -3 | 0 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Swap 2 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | 17 | -3 | 21 | 0 |
| Swap 3 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | 17 | -3 | 0 | 21 |
| Swap 4 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | 17 | -3 | 0 | 21 |
| Swap 5 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | -3 | 17 | 0 | 21 |
| Swap 6 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | -3 | 0 | 17 | 21 |
| Swap 7 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | 12 | -3 | 0 | 17 | 21 |
| Swap 8 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | -3 | 12 | 0 | 17 | 21 |
| Swap 9 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: | -3 | 0 | 12 | 17 | 21 |
| Swap 10 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: |  |  |  |  |  |
| Swap 11 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: |  |  |  |  |  |
| Swap 12 | | | | | |
| Array Index: | 0 | 1 | 2 | 3 | 4 |
| Value: |  |  |  |  |  |