3. Parts a and b both refer to the following sequence:

7, 2, 5, 8, 6, 1, 4, 3

a) Sort the sequence from smallest to largest using selection sort. Show each step on a new   
line, underline the sorted part of the array.

# note, selection sort is like for loop, look for smallest or largest and swap with index 1, once done move on to index 2 and do the same

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steps | 7 | 2 | 5 | 8 | 6 | 1 | 4 | 3 |
| 1 | 1 | 2 | 5 | 8 | 6 | 7 | 4 | 3 |
| 2 | 1 | 2 | 5 | 8 | 6 | 7 | 4 | 3 |
| 3 | 1 | 2 | 3 | 8 | 6 | 7 | 4 | 5 |
| 4 | 1 | 2 | 3 | 4 | 6 | 7 | 8 | 5 |
| 5 | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 6 |
| 6 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 7 |
| 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

b) Sort the sequence from smallest to largest using quicksort. Show each step on a new line.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steps | 7 | 2 | 5 | 8 | 6 | 1 | 4 | 3 |
| 1 | 7 | 2 | 5 | 8 | 6 | 1 | 4 | 3 |
| 2 | 7 | 2 | 5 | 3 | 6 | 1 | 4 | 8 |
| 3 | 7 | 2 | 5 | 3 | 6 | 1 | 4 | 8 |
| 4 | 7 | 2 | 5 | 3 | 4 | 1 | 6 | 8 |
| 5 | 6 | 2 | 5 | 3 | 4 | 1 | 7 | 8 |
| 6 | 1 | 2 | 5 | 3 | 4 | 6 | 7 | 8 |
| 7 | 2 | 1 | 5 | 3 | 4 | 6 | 7 | 8 |
| 8 | 5 | 1 | 2 | 3 | 4 | 6 | 7 | 8 |
| 9 | 4 | 1 | 2 | 3 | 5 | 6 | 7 | 8 |
| 10 | 3 | 1 | 2 | 4 | 5 | 6 | 7 | 8 |
| 11 | 2 | 1 | 3 | 4 | 5 | 6 | 7 | 8 |
| 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |