**Question 7 [12 marks]:**

The following is a sequence of five numbers:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 30 | 20 | 10 | 40 | 50 |

Use Bubble Sort to sort the five numbers in the sequence into **ascending** order.  Show the result of each pass by showing the whole sequence in a new line with sorted numbers underlined.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 |
|  | 30 | 20 | 10 | 40 | 50 |
| Pass 1 | 20 | 10 | 30 | 40 | 50 |
| Pass 2 | 10 | 20 | 30 | 40 | 50 |
| Pass 3 | 10 | 20 | 30 | 40 | 50 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1st pass | 0 | 1 | 2 | 3 | 4 |
| 30 | 20 | 10 | 40 | 50 |
| 1st comp | 20 | 30 | 10 | 40 | 50 |
| 2nd comp | 20 | 10 | 30 | 40 | 50 |
| 3rd comp | 20 | 10 | 30 | 40 | 50 |
| 4th comp | 20 | 10 | 30 | 40 | 50 |
| Swap = yes | | | | | | |
| 2nd pass | 0 | 1 | 2 | 3 | 4 |
| 20 | 10 | 30 | 40 | 50 |
| 1st comp | 10 | 20 | 30 | 40 | 50 |
| 2nd comp | 10 | 20 | 30 | 40 | 50 |
| 3rd comp | 10 | 20 | 30 | 40 | 50 |
| Swap = yes | | | | | | |
| 3rd pass | 0 | 1 | 2 | 3 | 4 |
| 10 | 20 | 30 | 40 | 50 |
| 1st comp | 10 | 20 | 30 | 40 | 50 |
| 2nd comp | 10 | 20 | 30 | 40 | 50 |
| Swap = no | | | | | | |