**Tutorial 04 & 05**

**Sort**

1. Given the following list of numbers:

* 12, 7, 9, 24, 7, 29, 5, 3, 11, 7

Using the table format shown below, trace each pass of the sorting process.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pass** | **12** | **7** | **9** | **24** | **7** | **29** | **5** | **3** | **11** | **7** |
| **1** |  |  |  |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |  |  |  |
| **…** |  |  |  |  |  |  |  |  |  |  |

* 1. Use the Selection Sort algorithm to sort the above list in descending order.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pass** | **12** | **7** | **9** | **24** | **7** | **29** | **5** | **3** | **11** | **7** |
| **1** | 29 | 7 | 9 | 24 | 7 | 12 | 5 | 3 | 11 | 7 |
| **2** | 29 | 24 | 9 | 7 | 7 | 12 | 5 | 3 | 11 | 7 |
| **3** | 29 | 24 | 12 | 7 | 7 | 9 | 5 | 3 | 11 | 7 |
| **4** | 29 | 24 | 12 | 11 | 7 | 9 | 5 | 3 | 7 | 7 |
| **5** | 29 | 24 | 12 | 11 | 9 | 7 | 5 | 3 | 7 | 7 |
| **6** | 29 | 24 | 12 | 11 | 9 | 7 | 5 | 3 | 7 | 7 |
| **7** | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 3 | 5 | 7 |
| **8** | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 7 | 5 | 3 |
| **9** | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 7 | 5 | 3 |

* 1. Use the Insertion Sort algorithm to sort the above list in ascending order.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pass** | **12** | **7** | **9** | **24** | **7** | **29** | **5** | **3** | **11** | **7** |
| **1** | 7 | 12 | 9 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| **2** | 7 | 9 | 12 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| **3** | 7 | 9 | 12 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| **4** | 7 | 7 | 9 | 12 | 24 | 29 | 5 | 3 | 11 | 7 |
| **5** | 7 | 7 | 9 | 12 | 24 | 29 | 5 | 3 | 11 | 7 |
| **6** | 5 | 7 | 7 | 9 | 12 | 24 | 29 | 3 | 11 | 7 |
| **7** | 3 | 5 | 7 | 7 | 9 | 12 | 24 | 29 | 11 | 7 |
| **8** | 3 | 5 | 7 | 7 | 9 | 11 | 12 | 24 | 29 | 7 |
| **9** | 3 | 5 | 7 | 7 | 7 | 9 | 11 | 12 | 24 | 29 |

1. State whether each of the following statements are True or False:
   1. Using Selection Sort, after **N** passes through the list, the first **N** elements are in sorted order.

**Ans: True**

* 1. Using Selection Sort (ascending order), after **N** passes through the list, the first **N**

elements are the **N** smallest elements in the list.

**Ans: True**

* 1. Using Insertion Sort, after **N** passes through the list, the first **N** elements are in sorted order.

**Ans: True**

* 1. Using Insertion Sort (ascending order), after **N** passes through the list, the first **N**

elements are the **N** smallest elements in the list.

**Ans: False**

***-- End of Tutorial --***