Executing a bubble sort - Solution

Task 1 . Sorting a list of names

Katie has created a program that uses a file to store the names of people who have completed her game.

A sample of data is shown in **Figure 1**.

| Toby | Jorge | Vicky | Rhonda | Fatima | Ada |
| --- | --- | --- | --- | --- | --- |

**Figure 1**

Carry out a bubble sort on the data shown in **Figure 1** by filling in the table below. Each row should show one pass of the algorithm and any swaps that have been made.

The first two passes have been completed for you.

| Jorge | Toby | Rhonda | Fatima | Ada | Vicky |
| --- | --- | --- | --- | --- | --- |
| Jorge | Rhonda | Fatima | Ada | Toby | Vicky |
| Jorge | Fatima | Ada | Rhonda | Toby | Vicky |
| Fatima | Ada | Jorge | Rhonda | Toby | Vicky |
| Ada | Fatima | Jorge | Rhonda | Toby | Vicky |
|  |  |  |  |  |  |

**State** the total number of passes made when executing a bubble sort on the data shown in **Figure 1**.

| 5 |
| --- |

Task 2 . Sort by cuisine

Andre is developing a program for a food delivery service. The system allows users to select from a list of cuisines from around the world.

A sample of data is shown in **Figure 2**.

| Persian | Greek | Indian | Thai | Nigerian | Italian | Spanish |
| --- | --- | --- | --- | --- | --- | --- |

**Figure 2**

**State** the number of comparisons that need to be made during the first pass of a bubble sort when applied to the data shown in **Figure 2**.

| 6 |
| --- |

**State** the cuisine that will be in the correct position after one pass when executing a bubble sort on the data shown in **Figure 2**.

| Thai |
| --- |

Show all of the stages of a bubble sort when applied to the data shown in **Figure 2**.

| Greek | Indian | Persian | Nigerian | Italian | Spanish | Thai |
| --- | --- | --- | --- | --- | --- | --- |
| Greek | Indian | Nigerian | Italian | Persian | Spanish | Thai |
| Greek | Indian | Italian | Nigerian | Persian | Spanish | Thai |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**State** the number of passes that need to be made before the data is in order when using a bubble sort on the data shown in **Figure 2**.

| 3 |
| --- |

Explorer Task .

The number of comparisons can be reduced by 1 after each pass of a bubble sort. Why do you think that is?

| After each pass, the next largest value is in its proper place. Therefore, once a pass has completed that value does not need to be checked again so the number of comparisons can be reduced by 1. |
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