Executing an insertion 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**.

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

**Figure 1**

Carry out an insertion 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 elements that have changed position. You should also shade or highlight the elements that are in the sorted sublist.

The initial sorted sublist and first pass has been completed for you.

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

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

| 5 - The first element is already sorted so it takes n - 1 passes, where n is the number of elements. |
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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 cuisine that will be in the sorted sublist to start with when executing an insertion sort on the data shown in **Figure 2**.

| Persian |
| --- |

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

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

Explorer Task .

Perform a bubble sort on the data in **Figure 2** and compare the number of comparisons made when executing an insertion sort.