Reviewing insertion sort - Solution

Task 1 . Native trees

Eliza has been given a list of trees that are common in the UK and wants to record which ones she can find in the town she lives in. To make this easier, Eliza wants to put the tree species into ascending order first.

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

| Elm | Rowan | Birch | Fir | Oak | Beech | Yew | Ash |
| --- | --- | --- | --- | --- | --- | --- | --- |

**Figure 1**

Carry out an insertion sort on the data shown in **Figure 1** by filling in the table below. Each row should show what the list of trees will look like after an additional pass of the algorithm, with the sorted sublist clearly indicated with a coloured or shaded background.

| **pass** | **data** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Elm** | Rowan | Birch | Fir | Oak | Beech | Yew | Ash |
| 1 | **Elm** | **Rowan** | Birch | Fir | Oak | Beech | Yew | Ash |
| 2 | **Birch** | **Elm** | **Rowan** | Fir | Oak | Beech | Yew | Ash |
| 3 | **Birch** | **Elm** | **Fir** | **Rowan** | Oak | Beech | Yew | Ash |
| 4 | **Birch** | **Elm** | **Fir** | **Oak** | **Rowan** | Beech | Yew | Ash |
| 5 | **Beech** | **Birch** | **Elm** | **Fir** | **Oak** | **Rowan** | Yew | Ash |
| 6 | **Beech** | **Birch** | **Elm** | **Fir** | **Oak** | **Rowan** | **Yew** | Ash |
| 7 | **Ash** | **Beech** | **Birch** | **Elm** | **Fir** | **Oak** | **Rowan** | **Yew** |

**Describe** how an insertion sort is performed.

| An insertion sort works by grouping the items into a sorted sublist and an unsorted sublist. With each pass through the list, an item from the unsorted sublist is compared to items in the sorted sublist until it is inserted into the correct position. |
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