**Searching and Sorting Algorithms**

**Question 1**

Use an insertion sort algorithm to put these European cities into alphabetical order

Note: An insertion sort is fairly straightforward but it is not sufficient to just take the list and rewrite it in order as that is not how a computer would do it. You should always show **every step** of the algorithm.

| **Riga** | **Paris** | **Oslo** | **Baku** | **Minsk** |
| --- | --- | --- | --- | --- |
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**Question 2**

Six athletes compete in a long jump competition. Their best jumps are shown below

| 5.50 m | 5.32 m | 5.39 m | 6.50 m | 6.28 m | 6.14 m |
| --- | --- | --- | --- | --- | --- |

Show the stages of a bubble sort to list these jumps in order from shortest to longest. I have completed the first line for you.

Note: A common mistake is to forget the final pass because you realise that the list is already in order. You should always show a pass when **nothing changes** to complete the algorithm.

5.50 5.32 5.39 6.50 6.28 6.14 Compare 5.32 and 5.50 and swap them

5.32 5.50 5.39 6.50 6.28 6.14

**Question 3**

| 1992 | 2000 | 1989 | 1998 | 1990 |
| --- | --- | --- | --- | --- |

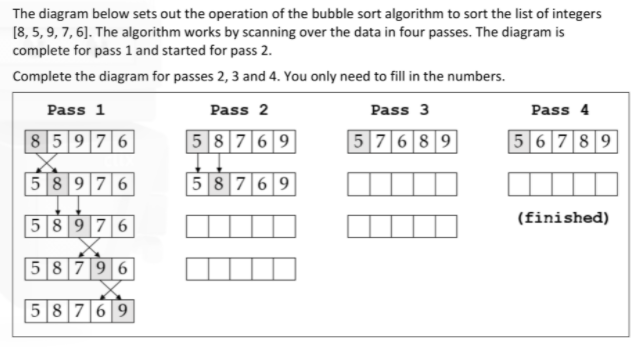
Show all the comparisons of a **bubble sort** algorithm to sort this list.

**Question 4**

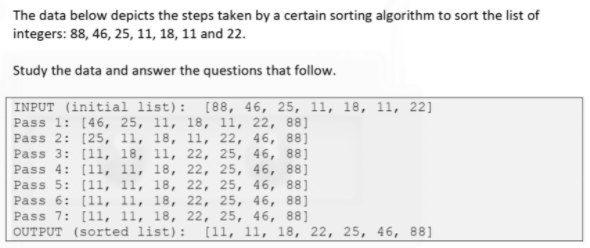
Kim has a hand of playing cards, all of the same suit: 3,7,6,2,5

Arrange these cards in order from lowest to highest using an **simple sort**

**Question 5**

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**Question 6**

(i)State the name of the sorting algorithm

(ii) Explain how the algorithm works

(iii) Referring to pass 5, 6 and 7 identify a limitation of the algorithm

(iv) Suggest how this limitation could be overcome.

1. Six athletes compete in a long jump competition. Their best jumps are shown below

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| --- | --- | --- | --- | --- | --- |

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5.32 5.50 5.39 6.50 6.28 6.14

1. Using the following list, sort the list using: 7, 3, 9,1 ,4
   1. Selection Sort
   2. Insertion Sort
   3. Bubble Sort
2. Using the following list, sort the list using: 3, 44, 38, 5, 47, 15
3. Insertion Sort
4. Bubble Sort
5. Selection Sort