

Question - 1
Question1**SCORE: 5 points**

Consider an employee database where people are added based on hire date and then sorted based on last name. If two people in the employee database have the same last name, which sorting method(s) will not change their order relative to each other? (*Hint: this concept is known as stability*)

- ☐ Selection sort
- ☒ Insertion sort
- ☐ Shell sort
- ☐ All of the above

Question - 2
Question 2**SCORE: 5 points**

How many inversions does the sequence E F J K Y T O R Z W contain?

- ☐ 5
- ☐ 6
- ☒ 7
- ☐ 8

Question - 3
Question 3**SCORE: 5 points**

Given an array in reverse order [6, 5, 4, 3, 2, 1], what are the steps in selection sort?

- ☒ 1 5 4 3 2 6, 1 2 4 3 5 6, 1 2 3 4 5
6
- ☐ 3 5 4 6 2 1, 3 2 4 6 5 1, 3 2 1 6 5 4, 1 2 3 4 5
6
- ☐ 5 6 4 3 2 1, 4 5 6 3 2 1, 3 4 5 6 2 1, 2 3 4 5 6 1, 1 2 3 4 5
6
- ☐ 6 5 4 3 1 2, 6 5 4 1 2 3, 6 5 1 2 3 4, 6 1 2 3 4 5, 1 2 3 4 5

Question - 4
Question 4**SCORE: 5 points**

Given an array in sorted order, which sort runs faster?

- ☐ Selection sort
- ☒ Insertion sort
- ☐ Both

Question - 5
Question 5**SCORE: 30 points**

Your task is to implement a student ranking system using insertion sort. Your `sort()` method should sort students from highest to lowest GPA. You must also implement the `higher()` method used to compare the students' GPAs.

Both methods to be implemented are in the `StudentRank` class. There is also a `Student` class that you should not modify.