**Quick sort**

1. **Describe the goal of one iteration of the quick sort algorithm**
2. **Discuss the importance of choosing a pivot element in Quick Sort and how it affects the algorithm's efficiency.**
3. Visualize quick sort on a set of numbers: [4, 7, 3, 9, 1]
4. **On which input might a quick sort not be the best choice?**
5. Can you explain the concept of partitioning in Quick Sort and its significance in the algorithm's performance?
6. **What are the limitations of the Quick Sort algorithm, and how do these limitations affect its practical use in certain situations?**
7. Suppose we are sorting an array of eight integers using quicksort, and we have just finished the first partitioning with the array looking like this:

2 5 1 7 9 12 11 10

Which statement is correct?

1. The pivot could be either the 7 or the 9
2. The pivot could be the 7, but it is not the 9
3. The pivot is not the 7, but it could be the 9
4. Neither the 7 nor the 9 is the pivot.
5. Explain best and worst case time complexity with inputs
6. Encourage students to look over the code to confirm their methodologies