1. What are the correct intermediate steps of the following data set when it is being sorted with the Merge sort?

$$56 \quad 39 \quad 35 \quad 42 \quad 15$$

2. What are the correct intermediate steps of the following data set when it is being sorted with the Quick sort?

> 56   39   35   42   15

3. The column on the left is the original input of strings to be sorted; the column on the right is the content at some intermediate step during one of the sorting algorithms listed below. Which sorting algorithm would match with this content?

	Original array	?
0	cyan	bole
1	cafe	bone
2	ruby	cafe
3	bole	cyan
4	flax	flax
5	bone	rose
6	rose	ruby
7	sage	sage
8	fawn	bark
9	leaf	buff
10	gold	fawn
11	jade	gold
12	lava	gray
13	bark	jade
14	gray	lava
15	buff	leaf
16	kobi	aqua
17	cyan	cyan
18	dust	dust
19	silk	kobi
20	palm	mint
21	sand	palm
22	aqua	sand
23	mint	silk

4. The column on the left is the original input of strings to be sorted or shuffled; the column on the right are the string in sorted order; the other columns are the contents at some intermediate step during one of the 8 algorithms listed below. Match up each algorithm by writing its number under the corresponding column. Use each number exactly once.

```
navy
                        blue    bark
plum    bark
                        coal    blue
coal    blue
                        corn    cafe
jade    cafe
                        gray    coal
blue    coal
                        jade    corn
pink    corn
                        lime    dusk
rose    dusk
                        mint    gray
gray    gray
                        navy    herb
teal    herb
                        pink    jade
ruby    jade
                        plum    leaf
mint    leaf
                        rose    lime
lime    lime
                        ruby    mint
silk    mint
                        silk    mist
corn    silk
                        teal    navy
bark    plum
                        bark    palm
wine    navy
                        wine    pine
dusk    wine
                        dusk    pink
leaf    pink
                        leaf    plum
herb    ruby
                        herb    rose
sage    rose
                        sage    ruby
cafe    sage
                        cafe    sage
mist    teal
                        mist    silk
pine    mist
                        pine    teal
palm    pine
                        palm    wine
----    pine
        palm    ----    ----
 0      ----    ----     1
```

2) Selection Sort   3)Insertion Sort   4)Merge Sort   5)Quick Sort

5. Which sorting algorithm will take least time when all elements of input array are identical? Consider typical implementations of sorting algorithms.

      a. Insertion Sort

      b. Quick Sort

      c. Merge Sort

      d. Selection Sort

6. Which of the following sorting algorithms has the lowest worst-case complexity?

      a. Merge Sort

      b. Insertion Sort

      c. Quick Sort

      d. Selection Sort

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?

      a. The pivot value could be either the 7 or the 9

      b. The pivot could be the 7, but it is not the 9

      c. The pivot is not the 7, but it could be the 9

      d. Neither the 7 not the 9 is the pivot