First Name Last Name

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Review: SORTING

1. What is the efficiency of the following sorting algorithms?

Insertion Sort _____ Bubble Sort _____

Selection Sort _____ Shell Sort _____

Quick Sort _____ Heap Sort _____

2. Below is given a version of the Quick Sort Algorithm. There are two improvements added to this algorithm. Choose one of them and briefly explain it.

```
void quickSort( int a[], int first, int last )
{
       int pivotLoc;
       if( first < last )
       {
             pivotLoc = partition( a, first, last );
             quickSort( a, first, pivotLoc - 1 );
             quickSort( a, pivotLoc + 1, last );
        }
}
```

3. An array contains the elements shown below. Using shell sort with increment k = 4, show the contents of the array after one pass. Sort Order: DESCENDING.

```
70, 40, 34, 16, 90, 22, 25, 5, 59, 70, 87, 11, 17, 71
```

Review: SORTING

4. A file of 1400 records that needs to be sorted is given. Assume that the record size and the memory available for our sort program allow a maximum sort array size for 300 records. Explain how the natural two-way merge sort works to sort the given file. Repeat the exercise using balanced two-way merge then poly-phase merge.

5. Explain how the merge algorithm works on the following two files. What is its efficiency?

```
FILE 1   10   30   50   60
FILE 2   20   22   24   26   28   40
```