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Data Structures PA4

Task 6 writeup

Some alterations to the original algorithms are needed.

If the original list contains repeats, the algorithm does not track number of repeats since they will essentially get overwritten. We will deal with this by making a structure called Item containing a value as well as number of repeats.

It does not deal with negative outputs separately, hence we will have to keep, a separate entity in our Item structure for number of negative repeats.

Essentially the structure will be

```
struct Item {
        long value;
        int size_negative;
        int size_positive;
}
```

with both sizes initially 0 and then incremented according to whether the value is negative or positive. The value stored will be the absolute value.

The resulting list will sorted but it will takes O(k) time, where k is the size of the new array, not the size of the list to be sorted. This is because we will have to iterate over this array to initialize it once and later to transport all the sorted elements back to the queen_of_all_sorts array.

While transferring the elements back, we will need to start filling from the right most value (highest values) filling the negative values from index 0, and positive values from maximum index (size of original array to be sorted).