

Mergesort

```
public static void mergesort(int[] list, int lo, int hi) {
    if(lo >= hi) return;

    mergesort(list, lo, (lo+hi)/2);
    mergesort(list, (lo+hi)/2 + 1, hi);
    merge(list, lo, (lo+hi)/2, hi);
}

public static void merge(int[] list, int lo, int mid, int hi) {
    int i = lo;
    int j = mid + 1;
    int[] temp = new int[list.length];
    int temp_ctr = lo;

    while(temp_ctr <= hi) {
        if(i > mid || (j <= hi && list[j] < list[i])) {
            temp[temp_ctr] = list[j];
            j++;
            temp_ctr++;
        }
        else {
            temp[temp_ctr] = list[i];
            i++;
            temp_ctr++;
        }
    }

    for(temp_ctr = lo; temp_ctr <= hi; temp_ctr++) {
        list[temp_ctr] = temp[temp_ctr];
    }
}
```