External sort

Problem: sort a big file that does not fit into your ram

Algorithm:

- split the big file into multiple small files whose size is fit into memory. let n be number of element in each small file, k be number of small file.
- sort each of small file. $\mathbb{O}(k * nlogn)$
- merge small files using heap
    - init an empty min heap
    - add all first element of all small files into heap
    - repeat: $\mathbb{O}(k * n)$
        - get the minimum element of heap and store it to the output file.
        - replace the heap root with the next element the small file from which the element is extracted. If this file is empty, remove the root heap.