**EXTERNAL MERGE SORT**

Suppose we have a file of 5GB data and we want to sort it, but the problem is we have only 1GB Ram. Here, the best sorting technique is External Merge sort

**STEP 1:**

Split 5GB of data into small files of same size using given formula:

No of files = = = 5

So we have five files of name:

File1 1GB

File2 1GB

File3 1GB

File4 1GB

File5 1GB

**STEP 2:**

Sort each file individually using any sorting algorithm and save to hard disk

File1 1GB 🡪 Ram 🡪 Sort 🡪 File1\_S

File2 1GB 🡪 Ram 🡪 Sort 🡪 File2\_S

File3 1GB 🡪 Ram 🡪 Sort 🡪 File3\_S

File4 1GB 🡪 Ram 🡪 Sort 🡪 File4\_S

File5 1GB 🡪 Ram 🡪 Sort 🡪 File5\_S

**STEP 3:**

1. Divide Ram into 3:1 means 750MB : 250MB
2. Use 750MB to store values of each sorted files
3. = = 150MB
4. Get 150MB of Each sorted files and save it into 750MB of RAM
5. Sort them in K-way merge
6. And store the result in 250MB
7. When storage of result = 250MB, write result in Disk as output file and erase that 250MB of RAM
8. Then, Get next 150MB of each sorted files
9. Repeat above 4 steps until all files are merge

In the end you get output files like:

Output1

Output2

Output3

…

…

Outputn

**STEP 4:**

Combine all the files sequentially and you get the large file of sorted values