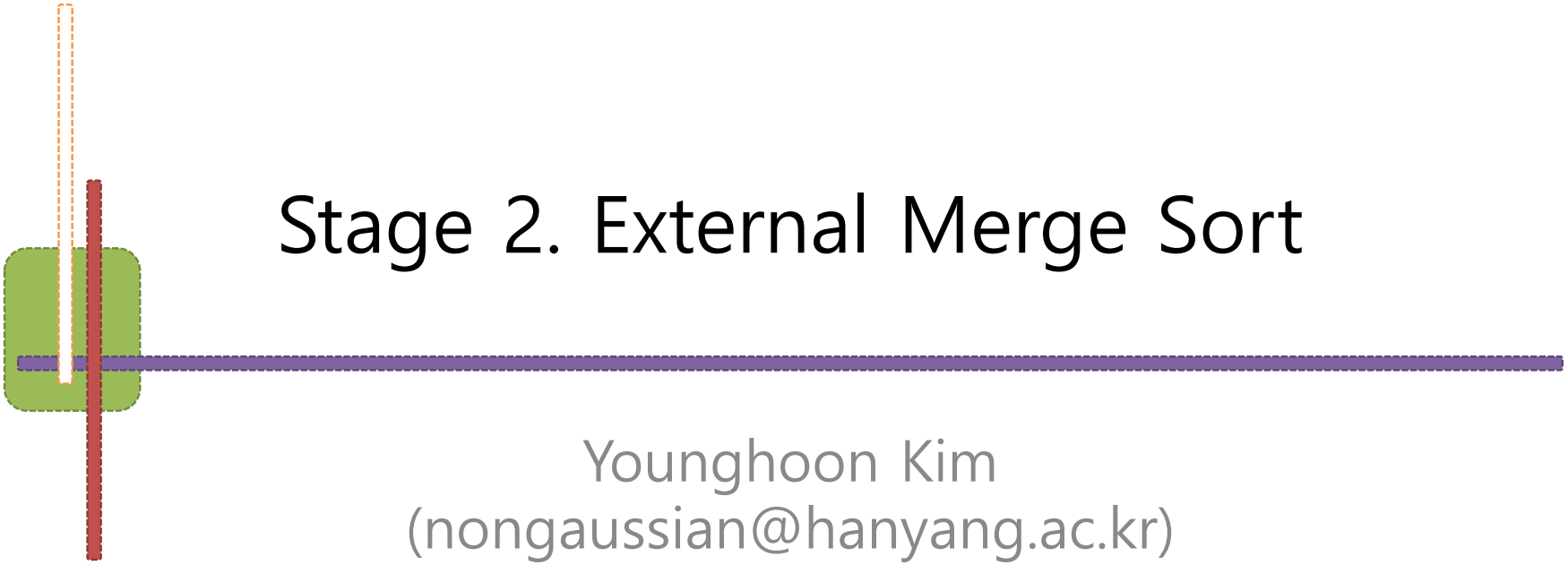

Stage 2. External Merge Sort

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Sample Code

```
import org.apache.commons.lang3.tuple.MutableTriple;

public void sort(String infile, String outfile, String tmpdir, int blocksize, int nblocks) throws IOException {
        1) initial phase
        ArrayList<MutableTriple<Integer, Integer, Integer>> dataArr = new ArrayList<>(nElement);
        ...

        2) n-way merge
         _externalMergeSort(tmpdir, outfile, 0);
}

private void _externalMergeSort(String tmpDir, String outputFile, int step) throws IOException {
         File[] fileArr = (new File(tmpDir + File.separator + String.valueOf(prevStep))).listFiles();
         if (fileArr.length <= nblocks - 1) {
                 for (File f : fileArr) {
                         DataInputStream dos = new ... (f.getAbsolutePath(), blocksize);
                 ...
        }
        else {
                 for (File f : fileArr) {
                         ...
                         cnt++;
                         if (cnt == nblocks - 1) {
                                 n_way_merge(...);
                 }
                 _externalMergeSort(tmpDir, outputFile, step+1);
}
```

Sample Code

```
public void n_way_merge(List<DataInputStream> files, String outputFile) throws IOException {
        PriorityQueue<DataManager> queue = new PriorityQueue<>
                                        (files.size(), new Comparator<DataManager>() {
                public int compare(DataManager o1, DataManager o2) {
                        return o1.tuple.compareTo(o2.tuple);
                }
        });
        while (queue.size() != 0) {
                DataManager dm = queue.poll();
                MutableTriple<Integer, Integer, Integer> tmp = dm.getTuple();
                …
        }
}
```