**package** Assignment7;

**import** java.io.BufferedReader;

**import** java.io.File;

**import** java.io.FileInputStream;

**import** java.io.IOException;

**import** java.io.InputStreamReader;

**import** java.util.ArrayList;

**import** java.util.Arrays;

**import** java.util.HashMap;

**import** java.util.Map.Entry;

**import** java.util.Set;

**import** java.util.TreeSet;

**public** **class** lyricAnalyserFinal {

**public** **static** **void** add(HashMap<String, ArrayList<Integer>> map, String lyricWord, **int** wordPosition) {

**if** (map.containsKey(lyricWord)) {

map.get(lyricWord).add(wordPosition);

} **else** {

ArrayList<Integer> temp = **new** ArrayList<>();

temp.add(wordPosition);

map.put(lyricWord, temp);

}

}

**public** **static** **void** displayWords(HashMap<String, ArrayList<Integer>> map) {

Set<String> sortedWords = **new** TreeSet<>();

sortedWords.addAll(map.keySet());

**for** (String s : sortedWords) {

String list = Arrays.*toString*(map.get(s).toArray()).replace("[", "").replace("]", "");

System.***out***.print("\n" + s + ": " + list);

}

}

**public** **static** **void** displayLyricsNew(HashMap<String, ArrayList<Integer>> map) {

**int** count = 0;

Set<Entry<String, ArrayList<Integer>>> entrySet = map.entrySet();

**for** (Entry<String, ArrayList<Integer>> entry : entrySet) {

count += entry.getValue().size();

}

String[] lyrics = **new** String[++count];

**for** (Entry<String, ArrayList<Integer>> entry : entrySet) {

**for** (**int** i : entry.getValue()) {

**if** (i < 0) {

lyrics[(-1 \* i)] = entry.getKey() + "\n";

**continue**;

}

lyrics[i] = entry.getKey() + " ";

}

}

**for** (String s : lyrics) {

System.***out***.print(s);

}

}

**public** **static** **void** displayLyrics(HashMap<String, ArrayList<Integer>> map) {

**int** count = 0;

**for** (String key : map.keySet()) { // calculating total words in lyrics

count += map.get(key).size();

}

String[] lyrics = **new** String[++count]; // creating the string array to

// store lyrics in order.

**for** (**int** i = 0; i < lyrics.length; i++) {

lyrics[i] = "";

}

**for** (String key : map.keySet()) { // adding lyrics to the lyrics array

// from map

**for** (**int** i : map.get(key)) {

**if** (i < 0) {

lyrics[(-1 \* i)] = key + "\n";

**continue**;

}

lyrics[i] = key + " ";

}

}

**for** (String s : lyrics) { // p rinting lyrics

System.***out***.print(s);

}

}

**public** **static** **int** count(HashMap<String, ArrayList<Integer>> map) {

**return** map.size();

}

**public** **static** String mostFrequentWord(HashMap<String, ArrayList<Integer>> map) {

String mostRepeatedWord = **null**;

**int** count = 0;

Set<Entry<String, ArrayList<Integer>>> entrySet = map.entrySet();

**for** (Entry<String, ArrayList<Integer>> entry : entrySet) {

**if** (entry.getValue().size() > count) {

mostRepeatedWord = entry.getKey();

count = entry.getValue().size();

}

}

**return** mostRepeatedWord;

}

**public** **static** **void** main(String[] args) **throws** IOException {

HashMap<String, ArrayList<Integer>> map = **new** HashMap<String, ArrayList<Integer>>();

**int** position = 1; // word position index start from 1

String pathname = "C:\\Users\\sandhya-pc\\Desktop\\test3.txt";

File f = **new** File(pathname);

BufferedReader br = **new** BufferedReader(**new** InputStreamReader(**new** FileInputStream(f)));

String line = "";

**while** (**true**) {

line = br.readLine();

**if** (line == **null** || line.length() == 0) {

**break**;

}

String[] arr = line.trim().split(" ");

**for** (**int** i = 0; i < arr.length; i++) {

**if** (i != arr.length - 1) {

*add*(map, arr[i].toUpperCase(), position++);

} **else** {

*add*(map, arr[i].toUpperCase(), (-1) \* position);

position++;

}

}

}

br.close();

*displayLyrics*(map);

*displayWords*(map);

System.***out***.println();

System.***out***.println("The number of unique words in the lyric is: " + *count*(map));

System.***out***.println();

System.***out***.println("Most frequent word: " + *mostFrequentWord*(map));

}

}