**package** Assignment7;

**import** java.io.\*;

**import** java.util.\*;

**public** **class** LyricAnalyser {

**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> al = **new** ArrayList<>();

al.add(wordPosition);

map.put(lyricWord, al);

}

}

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

ArrayList<String> alKeys = **new** ArrayList<String>(map.keySet());

Collections.*sort*(alKeys);

**for** (String str : alKeys) {

System.***out***.println(str + ": " + map.get(str).toString().substring(1, map.get(str).toString().length() - 1));

}

}

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

**int** counter = 0;

**for** (String str : map.keySet()) {

counter = counter + map.get(str).size();

}

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

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

lyrics[i] = " ";

}

**for** (String key : map.keySet()) {

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

**if** (i < 0) {

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

**continue**;

}

lyrics[i] = key + " ";

}

}

**for** (String s : 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) {

ArrayList<String> keys = **new** ArrayList<String>(map.keySet());

String result = "";

**int** max = Integer.***MIN\_VALUE***;

**for** (String str : keys) {

**if** (map.get(str).size() > max || (map.get(str).size() == max && str.compareTo(result) < 0)) {

result = str;

max = map.get(str).size();

}

}

**return** result;

}

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

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

**int** position = 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 lyrics is: " + *count*(map));

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

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

}

}