

COP 3330 Suggested Exercises for HashSet, HashMap

HashSet

1) Use a HashSet to solve the following Kattis problem: <https://open.kattis.com/problems/cd>

Note: to get an accepted status on this problem, you must use a BufferedReader object (and StringTokenizer) instead of a Scanner object. Research the syntax of BufferedReader and what you need to do get the appropriate code to compile. (Hint: One extra include and reporting that main could throw an Exception.)

2) Use a HashSet to solve the following problem: <https://open.kattis.com/problems/everywhere>

3) Read in the number of votes for class president and then read in the names for the votes. Print out all of the unique names that received at least one vote in sorted order. (Hint: Store the names in a set, then copy the names from the set to a list, then sort the list.)

HashMap

4) Take the voting example above and map each unique person receiving a vote to the number of votes they received. Then, print out a summary of the results, sorted in alphabetical order.

5) Write a program that uses a HashMap to track the values of variables in a simple program. Every line of the program must conform to one of these patterns:

```
variable = value
variable = variable + variable
variable = variable - variable
variable = variable * variable
variable = variable / variable
```

To make life easy, make the first line of input the number of lines in the program and of course, assume that all variables on the RHS have assigned values already. At the end of the program, print out each variable and its corresponding value.

```
7
apple = 7
orange = 3
banana = apple * orange
kiwi = banana - orange
jackfruit = 8
melon = kiwi / jackfruit
```

6) Imagine storing railways that connect cities. Each city has direct lines to several other cities. We could store this data in a HashMap<String, ArrayList<String> >, where each city is mapped to a list of the cities its connected to directly by a railway. Create your own input format, then store the input in the manner described above and test that you've done this correctly.