Program 1999T

(All Data Structures 1)

Your data file will have a bunch of wall eels and frown bunnies. The first number in the data file will tell you how many wall eels you have at the beginning of the data file. The rest of the data will all be frown bunnies. You are to create an array of correct length of wall eels and an ArrayList of frown bunnies.

Each wall eel will have a first name followed by a last name. The wall eel will then have 15 ints which should be put into a 3X5 grid. Each number tells the user how much the eel will eat during a given 3 week sequence, Monday through Friday. The data that follows will be a list of names, of all of the fish the eels have eaten. These names should be put into a linked list. Once you get to a -1 you know the names of the fish are done and the next eel is about to start.

Following the data for the eels is the data for all of the frown bunnies. Each bunny’s first piece of data is his name. The next piece of data tells you how many they have sold to. The following pieces of data is who they have sold rabbits feet to. You only have to keep track of who they have sold to so that data should be set up in a Set of Strings so that there are no duplicates. Following the customers will be the number of unique magical hats this bunny owns, each hat will have a magic unique number (that no other bunny uses for a hat) followed by a quality of the hat, therefore this data should be held in a Map.

There is a bit more data that is set up randomly. Each fish should also have a cost. The cost of the fish is between 1 and the length of the fish’s name. The list of fish for each eel should be kept under each eel as a circular linked list.

Each bunny should have a set of numbers set up for it. There should be 100 random numbers between 1 and 100000 set up into a binary tree so that they can be searched very easily.

Data Structure needed Array, ArrayList, Sets, Maps, Linked List, Circle Linked List, Binary Tree

Data Location **prog1999.txt**

For the Eels:

1. Which eel ate the most fish?
2. How much did it cost to feed all of the eels on the 2nd Tuesday?
3. If fish cost 1 on Monday, 2 on Tuesday … all the way to 5 on Friday, which eel costs the most to feed?
4. If fish cost 1 on Monday, 2 on Tuesday … all the way to 5 on Friday, which eel costs the most to feed on week1? Week2? Week3?
5. What is the name of the longest fish that each eel has eaten, and which eel ate the longest fish?
6. Did any of the eels eat a fish of the same name?
7. What day was the most expensive day to feed the eels? Monday, Tuesday, …

For the bunnies

1. Calculate the total number of unique individuals that the bunnies sold feet to.
2. Check the numbers in all of the bunny’s trees, total the largest and smallest number of each tree.
3. Calculate the total number of Magic Hats for all of the bunnies.
4. Calculate the bunny that has the most letters in all of its magic hats.
5. Which bunny has the single longest name for its magic hat.
6. Get rid of the bunny with the fewest number of magic hats.
7. The bunnies had a big sale but Jill and Pill were the only to show up and buy. Add Jill to each of the Sets of purchasers and Pill to all of the odd bunnies as a purchaser.
8. The first bunny just purchased a magic hat with a number of 100 which polymorphs and the last bunny bought a magic hat with a number of 101 which shrinks.
9. The second bunny lost his second magic hat.
10. Fred is not allowed to be a customer of any bunny any more. Delete Fred from the set of purchasers from all of the bunnies.
11. How many of the bunnies has Pill been a customer?