CST8130: Data Structures --- Assign #2- Router Simulator

Dynamically Allocated Array/Using Files/Exception Handling/Inheritance/Polymorphism

DUE: Wednesday October 21st by 10PM SHARP!

Problem Description:

In this assignment, you will modify a solution to Assignment 1. You may use your solution, or my posted one. You will make the RoutingTable data structure more efficient in two ways

a) Change the routingTable declaration in Router class to be an object of ArrayList. Note – this means you will delete the numEntries and maxEntries data methods in the Router class as you will no longer need them.

b)

c) Change the insert into the routing table so that the addresses are in numeric order from smallest to largest in the most efficient way possible. Once the routing table is ordered, modify your search to also make it as efficient as possible (Note – do NOT use Generic Collection methods yet).

NOTE: you will need to be able to compare two IPAddress objects and also two RoutingTableEntry objects and so you will need to add a method in each of these classes to do this. The isEqual method in IPAddress is a model for this process.

Sample Output for this file:

p 192 168 1 2 24 192 168 1 4 24 e0

d 192 168 1 2 24 192 168 1 4 24 123456778123

p 192 168 4 6 24 192 168 3 2 24 e1

p 192 168 4 6 24 192 168 3 2 24 e1

d 192 168 4 1 24 192 168 3 2 24 aaaaaa

p 192 168 3 8 24 11 0 4 2 8 s0

d 192 168 3 3 24 192 168 3 2 24 bbbbb

d 192 168 5 5 16 192 168 3 2 24 abcde

```
Enter number of entries maximum for
array: 2


Enter name of file to process:
c:\trafficpackets.txt
Adding entry to routing
table192.168.1.0\24
Sending packet out e0
192.168.1.0\24
Adding entry to routing
table192.168.4.0\24
Entry is already in the routing
table192.168.4.0\24
Sending packet out e1
192.168.4.0\24
Adding entry to routing
table192.168.3.0\24
Sending packet out s0
192.168.3.0\24
dropping packet....192.168.0.0\16

Routing table...

192.168.1.0\24 Port: e0
192.168.3.0\24 Port: s0
192.168.4.0\24 Port: e1
```

Submission:

You must submit to the assignment link in Blackboard by the due date and time a zip file (named LastnameFirstNameAssign1) containing:

- all source code – ie .java files (Note – I may choose to re-compile your program….so all code must be available to me) with headers (see my header in IPAddress class)
- all class files
- Your test plan that tests only the changes made in this program in either .docx or .xls format

Failure to provide any of the above will have an effect on your grade for this assignment.