CST8130: Data Structures --- Assign #1- Router Simulator

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

DUE: Wednesday January 25th -- by 10PM SHARP!

Problem Description:

In this assignment, we will develop a tool that we can use to keep track of activities (events) – a basic electronic planner of sorts. In order to bound the scope of the assignment, you are required to build a system that:

- will be able to add events from a file or from the keyboard, delete events and view events for a specific date or for seven days starting at a specific date.
- handle multiple kinds of events; specifically events could be school work that is due, meetings to attend, a shift at work, or a social activity.
- events will be stored in an array (set maximum size for now to be 1000).
- there can only be one event for a given date and time
- sorting, deleting and retrieving events *efficiently* in an array will be an Assignment 2 enhancement; for now, events will be stored in an array and do not need to be sorted. This means we will just search sequentially through the array.
- all events will contain a date (day, month, year), time (hour, minute), activity description (String)
    - meeting events will also contain a location (String - where the meeting will occur)
    - work events will also contain an (int) length of shift field
    - social events will contain no other information
    - school events will contain no other information
- All input entered from the keyboard and file must be fully edited (hint – including handled with exceptions). At no time can your program crash!
- I have released two classes that you can use in this assignment - a Date class (called OurDate) and a Time class (called OurTime). You should NOT change these classes and you may not need to use all the methods in these classes. (This is meant to help bound the scope of the assignment so that the amount of work is limited).

Sample Output: red is user input

```
Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 5


Enter name of file to process:
events.txt
You already have an activity for
that date and time...cannot be
entered

Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 2

Enter a date to display:
Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 1
Enter year: 2017
Your activities for 2017/2/1 are:
  2017/2/1 10:0 StaffMeeting atT307
  2017/2/1 11:0 CST8130Class
  2017/2/1 14:0 WorkShift for 1
  2017/2/1 9:0 Breakfast

Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 3

Enter a date to display:
Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 1
Enter year: 2017
Your activities for the week
starting 2017/2/1 are:
```

```
Your activities for 2017/2/1 are:
  2017/2/1 10:0 StaffMeeting atT307
  2017/2/1 11:0 CST8130Class
  2017/2/1 14:0 WorkShift for 1
  2017/2/1 9:0 Breakfast

Your activities for 2017/2/2 are:
  2017/2/2 18:0 CST8130Test
  2017/2/2 22:0 Party

Your activities for 2017/2/3 are:
  2017/2/3 16:0 CST8130LabDue

Your activities for 2017/2/4 are:
  2017/2/4 11:30 StaffMeeting at
T307

Your activities for 2017/2/5 are:
  2017/2/5 17:0 WorkShift for 3

Your activities for 2017/2/6 are:


Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 1

Enter the event type to add:
 1 for a meeting event
 2 for a school event
 3 for a work event
 4 for a social event  2

Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 3
Enter year: 2017

Enter hour (0-23): 10
Enter minute (0-59): 30

Enter event description:
CST8130StudyTime

Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 2

Enter a date to display:
Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 3
Enter year: 2017
Your activities for 2017/2/3 are:
  2017/2/3 16:0 CST8130LabDue
  2017/2/3 10:30 CST8130StudyTime

Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 4

Enter date and time of event to
delete:

Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 1
Enter year: 2017

Enter hour (0-23): 14
Enter minute (0-59): 0

Event deleted.

Enter 1 to add an event to planner
from keyboard;
2 to display events for a day;
3 to display events for a week;
4 to delete an event;
5 to add events to planner from a
file;
0 to quit: 2

Enter a date to display:
Enter month - between 1 and 12: 2
Enter day - between 1 and 31: 1
Enter year: 2017
Your activities for 2017/2/1 are:
  2017/2/1 10:0 StaffMeeting atT307
  2017/2/1 11:0 CST8130Class
  2017/2/1 9:0 Breakfast

Etc…
```

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)
- Your test plan in either .docx or .xls format

Failure to provide any of the above will have an effect on your grade for this assignment. Marking guide will be published shortly.

Hints:

This assignment needs to be tackled in a structured fashion in order for it to be finished quickly. Do not write more than 20-30 lines of code at a time without running your program. Start with opening and reading from the file to make sure that is working. Then work up in layers from there. Enjoy!!