

CSE1322L Assignment 3 - Fall 2024

Introduction:

These days, there are several different ways to get a weather forecast. You could use the oldest method available (looking outside and guessing), but you could also check any news channel on TV, dozens of internet websites, apps on your phone, or through some sort of widget on your computer. Besides the first method, all the other methods listed rely in part or in whole on measurements from one or more Weather Forecast Offices spread across the US, which feed their data to the [National Weather Service](#).

In this assignment, we will write a simplified version of this system, in part using classifications and metrics from the National Oceanic and Atmospheric Administration (e.g.: [Types of Weather Phenomena](#)), `enum`, `interface`, `enum`, `^` { `enum` }.

Note that this assignment deals with a data type which can be expanded at runtime called ArrayList in Java and List in C#. The assignment will only refer to it as ArrayList, but C# coders should be aware that they must use a List when the assignment asks for an arraylist.

Requirements

The features described below must be in your program.

A total of **eight** classes: the driver, WeatherEvent, Precipitation, Obscuration, Rain, Snow, Fog, and Particle.

WeatherEvent class, the superclass of all other classes (except the driver):

- Must be abstract
- Must have 4 fields:
 - A string `location`
 - A `enum` `type`
 - A `enum` `severity`
 - A `int` `nextId`
- It must only feature an overloaded constructor, which assigns location and active as appropriate, sets id with the value of nextId, and then increments nextId by 1.
- It must have a getter for all fields except nextId
- It must have a setter for location and active
-

Weather Event Location: {Location}
id: {id}
active: {active}
Visibility: Normal "

Rain class

- M^c@#^ 1 -ã|ã: æã[~ à^ &ã|^ã %![] Sã^+

This field must have a getter and a setter. Do not allow this field to be set at a value below 0.e1492 0 63()t 0


```

Weather Event Location: {Location}
id: {id}
active: {active}
visibility: {visibility}/8 mi
Particle type: {particleType}

```

OR

```

Weather Event Location: {Location}
id: {id}
active: {active}
visibility: Normal
Particle type: {particleType}

```

In the Driver:

- o Create and Arraylist of WeatherEvents
- o In a loop, prompt the user for the following options:
 - Add weather event:** Prompt the user for what type of WeatherEvent they wish to create (Rain, Snow, Fog, Particle), then prompt them for the necessary information to create said event, adding it to the arraylist. Print exist.
 - Update location:** Prompt the user for the ID of a WeatherEvent. If said ID exists, prompt the user for the new location of said WeatherEvent and update it. Otherwise, print an error message that no such WeatherEvent exists.
 - Update active:** Prompt the user for the ID of a WeatherEvent. If said ID exists, invert the activity status of that weather event (from true to false and vice-versa). Otherwise, print an error message that no such WeatherEvent exists.
 - View all events:** Calls the toString() of all WeatherEvents in the arraylist.
 - Quit:** Terminate the program.

Considerations

Remember that you will get partial credit for partial work. Try to deliu5.04i3

Remember that a subclass inherits all the public members of its superclass. As such, even Rain inherits the getID() method from WeatherEvent because:

- o Rain is a subclass of WeatherEvent (which does have a getID())
- o getID() is a public method in WeatherEvent

You may add any other helper methods you believe are necessary, but they do not count towards your grade.

Example: [User input in red]

[Weather Tracking System]

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 6

Invalid option!

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 1

1. Rain
2. Snow
3. Fog
4. Particle

1. Rain
2. Snow
3. Fog
4. Particle

What type of weather event is being added? 2

Where is the event happening? Cobb

What is the rate of fall? (in/h) 1.7

What is the temperature? (F) 50

Snow event added

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 1

1. Rain
2. Snow
3. Fog
4. Particle

What type of weather event is being added? 3

Where is the event happening? Douglas

What is the visibility? (1/8 mi) 0

Is the fog freezing? (y/n) y

Fog event added (r) () (e) (v) (e) (n) (t) 32.23 39.83 T7Tm1 0 0n Tm0 g0 G[(F)3(o[(F)3(o[(

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 4

Weather Event Location: Clayton
id: 0
Active: true
Rate of fall: 0.60 in/h (Medium)

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 3

Enter id of weather event: 3
Event set to "inactive"

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 2

Enter id of weather event: 2
Enter the new location of the weather event (currently "Douglas"): Floyd
Location updated

1. Add weather event
2. Update location

Visibility: 1/8 mi
ALERT! FREEZING FOG!

Weather Event Location: Hawaii
id: 3
Active: false
Visibility: Normal
Particle type: Other

1. Add weather event
2. Update location
3. Update active
4. View all events
5. Quit

Enter your option: 5
Shutting off...

Submitting your answer:

Please follow the posted submission guidelines here:

<https://ccse.kennesaw.edu/fye/submissionguidelines.php>