CSCI-2467 Lab 5 – Water Tank Class

Background

You will create a Java class that simulates a water tank. The water tank can hold volumes of water (measured in gallons) that range from 0 (empty) up to a maximum. If more than the maximum capacity is added to the water tank, an overflow valve causes the excess to be dumped into the sewer system.

Assignment

The class will be named WaterTank. The class attributes will consist of two int fields – current and maxCapacity. The fields must be private. The current field represents the current number of gallons of water in the tank. The maxCapacity field represents the maximum number of gallons of water that the tank can hold.

The class will contain the following methods:

Constructor – the constructor will initialize the two fields. If current is greater than maxCapacity, it will be set to maxCapacity.

Getters – there will be a getter for each field.

Setters – no setters will be defined for this class

void add(int volume) – add volume gallons to the tank. If the current volume exceeds maxCapacity, it will be set to maxCapacity.

void drain(int volume) – try to remove volume gallons from the tank. If resulting current volume is less than zero, set it to zero.

void print() – prints the current volume of the tank (in gallons)

Now create a Main class with a main method to test the WaterTank class. Add the following code to the main method.

1) Create an instance of WaterTank, named tank with a maximum capacity of 300 gallons and a current volume of 350 gallons (your constructor should handle this error condition).
2) Print the current volume of the tank
3) Add 100 gallons
4) Drain 200 gallons
5) Print the current volume of the tank
6) Add 50 gallons
7) Drain 200 gallons
8) Print the current volume of the tank
9) Drain 50 gallons
10) Add 275 gallons
11) Drain 142 gallons
12) Print the current volume of the tank

Turning in Your Assignment

Once you've completed and thoroughly tested your assignment, you are ready to submit it. Zip your IntelliJ project folder for this lab and upload the zip file to Blackboard for grading.

Students who submit projects that do not compile will receive a zero for the lab.

Example Output

```
The tank volume is 300 gallons
The tank volume is 100 gallons
The tank volume is 0 gallons
The tank volume is 133 gallons

Process finished with exit code 0
```