Year 11 Computer Science

Topic 6 - Classes and Objects

Tutorial - *ZombiePlant*

Your job is to create **one class** called ***ZombiePlant***.
You should pass all of the tests in the **ZombiePlantTester** class (provided).

This question involves the implementation of a zombie plant treatment system that is represented by the ZombiePlant class. A ZombiePlant object is created with parameters that specify the maximum potency for a successful treatment and the initial number of successful treatments required to cure the plant.

The ZombiePlant class provides a constructor and the following methods.

- **treatmentsNeeded**, which returns the number of successful treatments required to cure the plant.
- **isDangerous**, which returns true if the plant requires treatment, false otherwise
- **treat**, which administers a treatment with the specified potency

The following table contains a sample code execution sequence and the corresponding results.

Statements and Expressions	Value Returned (blank if no value)	Comment
ZombiePlant plant = new ZombiePlant(10, 3);		The plant requires treatments with a potency <= 10. The plant initially needs 3 successful treatments to be cured.
plant.treatmentsNeeded();	3	The plant has not yet been treated, so it still needs 3 treatments to be cured.
plant.isDangerous();	true	The plant still needs at least 1 treatment to be cured, so it is dangerous.
plant.treat(7);		The treatment potency is <- 10, so the treatment is successful
plant.treatmentsNeeded();	2	The plant now needs 2 successful treatments to be cured.
plant.treat(11);		The treatment potency is not <= 10, so the treatment is not successful.
plant.treatmentsNeeded();	3	The failed treatment increased the number of successful treatments needed for the plant to be cured by 1.

plant.treat(10);		The treatment potency is <= 10, so the treatment is successful.
plant.treatmentsNeeded();	2	The plant now needs 2 successful treatments to be cured.
plant.isDangerous();	true	The plant still needs at least 1 treatment to be cured, so it is dangerous.
plant.treat(8);		The treatment potency is <= 10, so the treatment is successful.
plant.treat(4);		The treatment potency is <= 10, so the treatment is successful.
plant.treatmentsNeeded();	0	The successful treatments reduced the number of treatments needed to 0.
plant.isDangerous();	false	The plant has been cured. It is no longer dangerous.
plant.treat(4);		Additional treatments with a potency <= 10 have no effect.
plant.treatmentsNeeded();	0	The additional treatment with a potency <= 10 had no effect.
plant.isDangerous();	false	The plant remains cured.