Programming Technology 1st assignment

SECOND TASK

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Task Description

There is a planet, where different kind of plants are living. All the plants are using nutrients to live. If a plant runs out of its nutrients, it dies. Each day one radiation type can occur from the followings: alpha, delta, or no radiation. Radiations affect the plants differently based on their types. The reaction of a plant to a given radiation consists of the following: it changes its nutrient level, and affects the radiation of the next day. The radiation of the next day:

a. alpha, if the need for alpha radiation is 3 or more greater than for the delta radiation

b. delta, if the need for delta radiation is 3 or more greater than for the alpha radiation

c. no radiation, otherwise.

There is no radiation on the first day…

Simulate the behaviors of the plants, and print out the radiation of the day and the properties of the plants on each day.

Properties of the plants: name (string), nutrients (integer), living (boolean). The types of the plants in the simulation: puffs, deltatree, parabush.

On a day of the the simulation the living plant first changes its nutrients, then if it is still alive, it can affect the radiation of the next day.

	nutrients (N)			radiation need on next day			dies
	alpha	delta	no radiation	alpha	delta	no radiation	
Puffs	+2	-2	-1	10-N			10<N
Deltatree	-3	+4	-1		+4, if N < 5 +1, if 5 ≤ N ≤ 10		
Parabush	+1	+1	-1				

Read the data of the simulation from a text file. The first line contains the number (n) of the plants. The following n lines contain the information about the plants: name, type, initial nutrient level. Type is represented by one character: p - Puffs, d - Deltatree, b - Parabush. The last line of the file defines the number of the days you have to simulate.

The program should ask for the name of the file, and it has to print out the name of the survivors (we can assume that the file is existing and its format is valid).
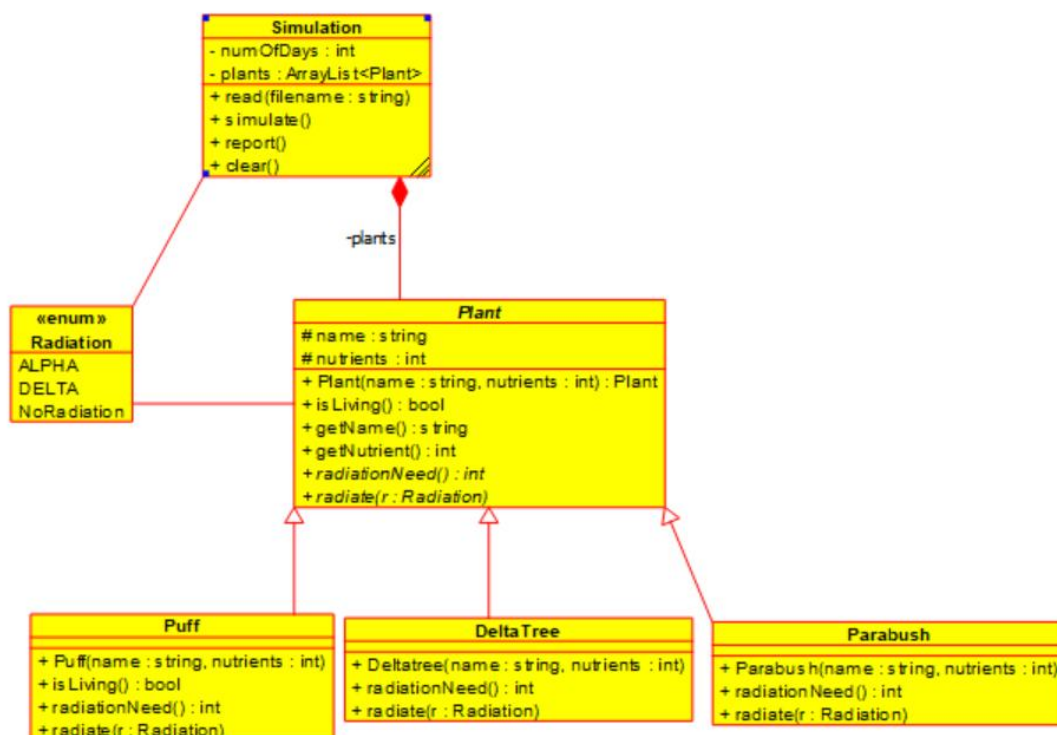
A possible file content:

4

Piggy p 7

Slender d 5

Dumpy b 4

Willowy d 3

10

Tests

data.txt (Sample input of task. Many plants)

Survivor plant's name Piggy its nutrient is 1
Survivor plant's name Slender its nutrient is 1
Survivor plant's name Dumpy its nutrient is 2

test1.txt (Many plants where all die at the end)

There is no survivor plant.

test2.txt (Only puffs type plants)

Survivor plant's name Piggy its nutrient is 6
Survivor plant's name Laura its nutrient is 8

test3.txt (Number of days for simulation is zero)

Survivor plant's name Piggy its nutrient is 5
Survivor plant's name Slender its nutrient is 7

test4.txt (Only deltatree type plants)

Survivor plant's name Spongeb its nutrient is 11
Survivor plant's name Slender its nutrient is 4

test5.txt (Only parabush type plants)

Survivor plant's name Dumpy its nutrient is 10