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/*

HENG LOW WEE
U096901R
Problem Set 4 Problem 1

NOTE:
To run the problem, the equation needs to be included in this file first
Go to ----->
Equation will be executed on 'consult'

I have set the size to be reduced according to the level
so the image wouldn't be too big to be viewed in the window

Level, K, is assumed to be >= 1

Test Case : fractal(g = (g;left(45);g;right(90);g;left(45);g),3,30).

*/

/*fractal(_=_, 0, L) :-
    write('forward('), write(L), writeln(')'),
    !.*/

fractal(X=(Expr),K,L) :-
    fractal(X, Expr, Expr, K, L),
    !.

fractal(_, _, _, 0, L) :-
    write('forward('), write(L), writeln(')'),
    !.

fractal(X, X, Expr, K, L) :-
    K1 is K-1,
    L1 is L*0.85^(K1),                  % this line is reduce size of image
    fractal(X, Expr, Expr, K1, L1),     % use reduced size
    %fractal(X, Expr, Expr, K1, L),     % use actual size
    !.

fractal(_, left(Angle), _, _, _) :-
    write('left('), write(Angle), writeln(')'),
    !.

fractal(_, right(Angle), _, _, _) :-
    write('right('), write(Angle), writeln(')'),
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    !.

fractal(X, Left;Right, Expr, K, L) :-
    fractal(X, Left, Expr, K, L),
    fractal(X, Right, Expr, K, L),
    !.

:- tell('output.py'),
    writeln('from turtle import *'),
    writeln('import time'),
    writeln('Screen().setworldcoordinates(-200,-500, 1500, 1000)'),
    writeln('delay(0)'),
    % -----> ENTER EQUATION HERE
    fractal(g = (g;left(45);g;right(90);g;left(45);g),3,30),
    % After moving so much, the turtle is tired and has fallen asleep
    writeln('time.sleep(15)'),
    told,
    !.
```