Practice Designing a Class

CSC140 Foundations of Computer Science

26 February 2020

Use turtle graphics to write a program that draws a picture that will resemble a sponge or a raft of bubbles.

1. Begin by designing a class that models a circle. Your class will include...

   - a constructor. The constructor will have at least 3 parameters:
     - the x coordinate of the circle's center
     - the y coordinate of the circle's center
     - the radius of the circle

     Other optional parameters might include the color of the circle's interior, the color of the circle's perimeter, and/or the thickness of the circle's perimeter.

   - a method that determines whether or not this circle intersects another circle. This method will have a single parameter. That parameter will be a reference to another circle. This method will return True or False to its caller.

   - a method that draws the circle. This method's single parameter will be an instance of the Turtle class.

   - a method that produces a printable representation of a circle.

2. Use the Circle class to create a list of non-intersecting circles with random sizes and locations.

   - create an empty list and then repeatedly...
     - create a circle whose center is at a random point. You might also choose to assign a random value to the radius.
     - determine if the new circle that are already in the list
     - add the circle to the list only if it does not intersect any of the circles in the list

   - Define your own rule for stopping. You might...
     - stop after making N attempts to add a circle to the list (where N is a constant that you have defined)

- stop when N successive attempts to create a non-intersecting circle fails (because the picture is too crowded with circles)
- you might reduce the size of the circles as the program progresses in an effort to fit more circles into the picture

- Draw all of the circles in the list.