CSE 3302/5307 Lab Assignment 3 - corrected

Due May 5, 2015

Goals:

Understanding of JavaScript prototypal inheritance.

Requirements:

1. Implement a class hierarchy (using `Object.create()`) representing

   a. (1) Simple, convex polygons as a list of counter-clockwise points (last point wraps around to first point).
   b. (2) Rectilinear rectangles as four values: lowX, highX, lowY, highY.
   c. (3) Rectilinear squares as the coordinates of the leftmost lowest point and the length of a side.
   d. (4) A triangle with three counter-clockwise points.
   e. (5) Regular polygon with k counter-clockwise points.

   and including methods to construct an instance, to compute the area, to indicate whether a provided point is inside (including on the border) of a region, and ***to indicate whether one object is contained in another***.

2. The input is to be taken from an html textarea (in response to a button click) and the output written to an html textarea:

   a. A line indicating the number of objects that follow, one object per line. References to the objects should be placed in a 0-based array.

      1. The number 1, the number of counter-clockwise points, and then pairs of x/y coordinates.
      2. The number 2, followed by the four bounding values.
      3. The number 3, followed by an x/y pair for the leftmost lowest point and then the length of both sides.
      4. The number 4, followed by three x/y pairs for the three counter-clockwise points.
      5. The number 5, followed by the number of sides and then x/y pairs for the first two points. The remaining points will be determined by taking left turns.

   b. A line indicating the number of command lines that follow. The command lines may be formatted as:

      1. The number 1 and an object's subscript to indicate that the area should be computed.
      2. The number 2, an object's subscript, and an x/y pair to be tested for being inside.
      3. The number 3 and one of the ~~four~~ five values above for retrieving the number of instances in that class. (a square is a rectangle, while rectangles and triangles are simple polygons; ***a regular polygon is a simple polygon***)
      4. The number 4 and an object's subscript for retrieving the bounding box, a rectilinear rectangle.
      5. The number 5 and two objects' subscripts i and j for testing whether object i is contained in object j. Note that all objects are convex.

3. Submit your zipped `.html/.js` files on Blackboard by 3:15 p.m. on May 5.

Getting Started:

1. `http://ranger.uta.edu/~weems/NOTES3302/LAB4FALL14/` contains the baseline code/lab assignment from Fall 2014 - `lab4.basic.html` and `lab4.basic.js`. ***Differences from that assignment are highlighted above.***

2. All input values will be provided as strings corresponding to integers. Conventional cartesian coordinates, not window coordinates.

3. If a polygon is convex, then any three consecutive points will make a left turn.

4. If invalid input is detected, give an error message alert and stop.

5. `http://ranger.uta.edu/~weems/NOTES5311/notes17.pdf` has basic information regarding geometry.