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Computer Science 10

Professor Bailey-Kellogg

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Problem Set 2: Discussion

**Quadtree GUI Tests**

The first test that we ran in Quadtree GUI was to draw a collection of points in order to make sure that all of the lines were drawn in the right quadrants of each point, as well as to check that the colors were changing based on the generation of the point drawn. This was done using the “a” key method to add new points. We then switched over to the query method, “q”, to make sure that the point that we selected turned black so long as the point, and the mouse’s tracking circle overlapped. After clicking on an individual point, we would click off the point into an empty quadrant to make sure that the point went back to its normal color. After assuring that the method worked with an individual point, we added in more points in all of the quadrants and repeated the test on an individual point in order to make sure that when querying, only the points that intersected the mouse’s tracking circle were turned black. We completed the querying with a large number of points for the case where only one point intersected the tracking circle and also when the tracking circle encompassed a group of points. Finally, we checked to make sure that the colors changed back to rainbow after we clicked on another set of points or on an empty quadrant.

**Collision GUI Tests**

The first test we ran was making sure that we could draw agents individually and random. This meant adding a single wanderer when the “w” key was pressed and a bouncer when the “b” key was pressed. Then we tested that a group of random agents was added, as soon as the “r” key was pressed. Before testing the colliding method, we also ensured that the “f” and “s” keys could toggle the frame speed. To test the collision method, we first added only two points to the window, with the color collision mechanism in pace. We waited for them to collide and saw that they turned red, while they touched each other and then went back to black. After making sure that the color version worked, we tested the deletion method by adding roughly ten points to the region and making sure that the two colliders deleted themselves, as soon as they hit each other. We double-checked that they didn’t delete themselves when they didn’t collide with another agent. We repeated both the color test and the deletion test many times, adding more and more agents to the region with each repetition.