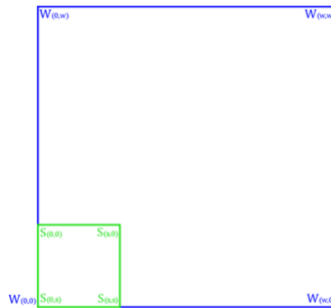


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Solo Project

Note: The coordinate system of this program is same as the one mentioned in the Piazza post@391. Also as shown below, the Quad Tree area is in green.



Summary

All requirements from spec is completed. This program will execute all commands in the input.txt file according to the specification, then enters user control mode. It will automatically put user in INSERT mode first, after than user can press key 'i', 'r', or 'c' to enter corresponding mode. User can turn on/off animation anytime by press key 'a'. Once all commands are finished user can press key "esc" to produce a output.txt log file. You might accidentally turn off the mode by press the same key twice while in the mode, press it one more time to turn it back on. In addition, deletion is not implemented and will be ignored.

For user control mode, all user has to do is clicking points within the Quad Tree. User does NOT need to type in command as in input.txt file. The output will also contain user actions, but you will see a clear line that separates the command from input.txt with command by user actions.

Explanation of "insert" "report" "count" command in user control mode

User needs to press key 'i' to switch to **insert mode**. User can insert a new point to the Quad Tree by clicking on the canvas. The program will show the path of inserting the new point both by printing path of all nodes visited on the console. If animation is turn on, the new point will be highlighted in orange color and all the node visited will be highlighted in blue. Inserting same point or point outside of Quad Tree will be ignored and prompt with an error message.

User needs to press key 'r' to switch to **report mode**. The first point user clicks will be the **lower LF(LF)** corner of the query region, the second point user clicks will be the **upper right(UR)** corner of the query region. The program will print out all the node visited and points inside the region on the console. If animation is turned on, all points inside the report region will be highlighted in orange color and all the node visited will be highlighted in blue.

User needs to press key 'c' to switch to **count mode**. Same as in report mode, the count mode will print out addition information that indicates the number of points is inside the report region.

Note: Clicking points not following the LL, UR order will lead to undefined behavior.

Credit: the starter code for this project is written by Steven Eiselen