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**Multi-client issues + synchronization**

One of the first issues that comes to mind when having multiple clients on a drawing application such as this is “what happens when several people try to move a shape at the same time?”. The synchronization helps with this as it would prevent two move requests from getting sent simultaneously, so you might end up with just a jittery shape if two users are trying to move it in opposite directions.

A different problem that could arise between two threads or more threads is if one client is deleting a shape while the other is moving it. If the user moving the shape is interrupted, and then the shape is then deleted, then the other user may end up trying to move a shape that doesn’t exist and get a NullPointer exception. When we tested this, this is exactly what ended up happening. We then added a check to make sure the shape != null before moving it and before drawing it.

**Extra Credit**

**You can do all of the following through the GUI:**

Added a “front” button that brings a shape to the front of the canvas if some of it is hidden by having another shape on top of it.

Added a “delete all” button that deletes all shapes on the screen

Added a slider to allow you to change the stroke size of drawing a segment and a freehand. You can have whatever pixel thickness you want from 1-10. (our personal favorite).

The slider button is demonstrated in the screenshot with the numbers 1-10 shown on the bottom.