The game I was designing was honestly not a particularly fancy or complex game in the sense that it was basic 2d graphics with pretty simple geometric shapes. That said, choosing to do the project in an engine as basic Tkinter is what made this project difficult and more complex. Whereas other engines might have built in collision checking, I had to write manual collision detection methods which range from pretty easy for circle-circle collision to more complex like circle-line segment collision. Furthermore, with Tkinterss really basic shape drawing abilities even drawing rotated rectangles ended up being more complex than originially expected.

Another major problem that I was tackling was multiplayer and actually learned a lot in the implementation of it. I learned how to create threads and handle multiple things at once and use a new data structure in Queues to communicate among them.

While coding the collaborative maze building mode of my game, I implemented live editing of the mazes. I even was able to create code where you could see live the position of other people’s cursor to make for a true live editing experience but found that you transmitting constant mouse motion data barely works with just 2 players and becomes clear that you hit the limit at the speed which python can run through items on the Queue when you try to have more than 2 people transmit mouse motion.

While my gameplay itself is not particularly unique outside the level building feature, there are many different variations of this game that use a variety of controls and user interfaces. I looked around and played with many games and I found that the mouse input for our laptop heavy world (in that majority of mouse input is through trackpad) is not ideal for gameplay in the slightest. Most versions that use something more than a keyboard are either only really playable with an external mouse or have alternative inputs like Wii’s Wiimote. So the immediate decision was for me to use keyboard only input, which means that the only way to aim is to face the direction you want to shoot. Even for movement there are a few control schemes, but I chose one that while is more difficult to initially get used to, I think offers a more interesting game experience. This is where instead of arrow keys solely dictating motion, up and down act as forward and backwards while left and right are rotate. The spacebar is most intuitively reserved for shooting. I also spent a considerable amount of time tinkering with movement speeds and other properties like max bounces off walls before a bullet disappears to make gameplay feel fast paced but not impossibly difficult.