For our project, we plan on creating a farming simulator where the user is able to plant and interact with crops in our virtual world. We feel as though this concept makes for a great VR application because atmosphere and immersion is one of the most important aspects in creating a realistic simulation, and VR is one of the best ways to increase immersion. This simulation will be fairly simple, as we are only planning on having a few types of plants available to grow. Those plants will be wheat, flowers, and corn. The user will need to interact with these plants in order to help them grow. For instance, a player will first need to grab a bag of seeds for the plant that they will want to grow, and then walk over to the plot of dirt that they would like to grow this plant at. After they do that, the user will then hold the bag of dirt as they use the trigger to interact with the ground, and that will plant the seed in the ground. From there, the player will need to grab a watering can and water the seed. Following that, we will have a very sped-up growth cycle—we are planning around a minute for the full cycle—the user then will be able to pick the crop. If this is wheat, we plan on adding in a scythe to cut down the wheat. For corn, we plan on having the user just grab the corn from the stalk and then use a pulling-motion to take off the husk of the corn. As for flowers, these are the most simplistic, and we are just allowing the user to pluck the flowers from the grown. After the final action has been taken, the ground will revert back to a state where the player can plant another crop.

We plan on having the user be able to travel by physically walking around, and making a fairly small map in order to compensate for real-world size constrains of the room that the VR headset is being used in. In case the dimensions don't match up with the real world, we also plan on implementing joystick movements with the controller. We chose not to use teleportation but rather a smooth walking motion in order to reinforce the calm and immersive atmosphere of our simulation. For rotation, we also plan on implementing both user-driver rotation (matching the user's rotation in real life) as well as joystick snap rotations that have a small transition phase. We chose snap rotation with a transition over smooth rotation mainly from personal experience with smooth rotation causing motion sickness in VR. Since the goal of this project is to create a calm and relaxing simulator, motion sickness is something we want to greatly avoid in our virtual world, even if it means sacrificing a bit of "realism" with the rotation. Since we still have user-controller rotation, that adds back the realistic element if users desire a more realistic setting.

For selecting objects, we are wanting to have the user move their hand next to/on the object and hold the side-button on the Oculus quest controllers. We decided that this would be more realistic than having a raycasting selection method, and will allow the user to engage more with our virtual world this way.

The following page has a very simple drawing of what we are envisioning our virtual world to look like.