Project Proposal: Rock Music

For my final project, I want to create a program that creates geodes according to a song. This will involve a round, hollow object that grows crystals inward, with growth speed, color, and shape all determined by music.

Details:

User interaction-I want the user to be able to press space at any time, at which point the music will continue, but an animated hammer will come down and crack open the geode, which will stop growing at that point. I also want to use peasycam to navigate, so that the user can change the view to inside the geode before it is cracked.

Sound-I will be using the minim library for all sound functions. I will be using beat detector so that the whole geode will pulse white on each beat, and functions like hi-hat and bass detectors to place one crystal at a time, with shape dependent on the type of sound. There will be a cap on total number of crystals so the visual stays somewhat clean. The frequencies will determine crystal color by taking the average frequency at the time of placement.

Visual-

I will need to create several varieties of crystal shape, probably in blender (although I'm hoping I can use tinkercad because I'm more familiar with it). Each of these general shapes will be assigned to a type of sound. Lower sound crystals will grow more slowly, and higher more quickly. For the sake of definition, I can either keep outlines on my shapes or add a lighting element.

Challenges:

1.I am not great at using lighting. I will probably need a point light within the geode and ambient light outside of it.

2. Animating the hammer should not be too difficult, but I have no idea how to make the two halves of the geode split, have the shape be amalgamated into those two objects, and then have physics act on them so they wobble to the side. I might have to animate the whole thing.

3. I am unsure how to detect if two shapes intersect, which would be useful if I do not want the crystals to grow outside the geode.