Random Walk
Construction Plan

Currently, I am constructing a model of a random walk within a region with other static objects. Below, you will find a plan of how I will proceed with constructing the model.

Version 1 In the initial commit, a model was built to describe a particle beginning at a random location within a region. At each time step, a random direction is selected to describe the direction the particle will take.

Version 2 In Version 1, the particle was not constrained to remain in the region, which is a physically unrealistic system. This version removes this issue.

Version 3 The previous versions simply displayed the coordinates of the particle at each point in time. This version will provide an animation to illustrate the motion of the particle.

Version 4 In this version, the model becomes more complicated. I will add an object to the region. If at any time the particle makes contact with the object, it will stick and the program will terminate.

Version 5 This version will extend the number of dimensions to 3, and will add in the ability for the user to adjust the number of particles in the region.

Version 6 In Version 5, the capability to adjust the number of particles will have been added to the program. However, it is possible in Version 5 for multiple particles to inhabit the same point of space, a physically unrealistic phenomenon. In order to correct this, the possible directions for the particles must be adjusted to allow a full range of motion. Furthermore, an algorithm will be incorporated in to dictate the collisions of the particles.

Version 7 This version will deal with non-parallelepiped regions. I will begin by studying the class of all convex, closed, and continuously differentiable surfaces. I am unsure, but my intuition tells me that all such surfaces are topologically equivalent. Thus, any such surface should be able to be created by morphing a sphere.