CS380 Computer Graphics

Assignment #1

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1. **Background with color gradient**
   In the function named “buildBackground”, vertex data of two triangles are added to a mesh. drawMode is set to gl.TRIANGLES, so that the two triangles form a square in the background. VertexColorShader is used to color the square in gradient.
2. **2+ types of fractal-like natural objects**
   - Stellar Corona
     Initially, same-sized thin rectangular bars are created at the same time. Each bar go through rotations along the z-axis by rotate function. Using a recursive function, the idea was to make two branches out of a single bar using rotations. However, my function instead created a sunshine-like shape. I do not think this shape falls into “fractal”, nonetheless it looks good.
   - Starfall
     Stars from lab 2 are used to create “starfall”, which is just like snowfall but with stars.
3. **Framerate-independent natural animation**
   Starfall or Snowfall. The function named “buildStar” generates a star at origin using gl.TRIANGLE_FAN. Then, multiple stars are generated at random positions using Math.random() function and vec3.set(). The randomly generated stars are also generated outside the viewport. The animation changes the y-position of each star by multiples of “dt”, so that the animation is framerate-independent. Also, the stars spin and fall like snowfall.
4. **Creativity**
   At first I wanted to make a fractal tree, but it turned out that it was more difficult than I thought. However, one of the by-product of my experiments was radiant lights resembling that of the sun’s corona. I thought it looked very pretty and decided to include that in the assignment. I do not know if this works as a natural fractal shape, but it is procedurally generated.