For my topic, I was inspired by the natural phenomena of lightning. How lightning works in real life is that a strong electric current is created between a charged cloud and the ground. Lightning starts out as a trail of electrons travelling from the cloud to the ground, branching off at various points along the way. Then, once the trail reaches the ground, a connection is formed and a large amount of electrons rapidly follow the trail back up to the cloud. This second part of the process creates a sudden, bright flash of light, which is what we perceive as the actual lightning strike. This slow motion video of lighting helps visualize this process: [https://www.youtube.com/watch?v=dukkO7c2eUE].

I think there are two possible ways I could use to create a lightning effect in Unity. The first method would be to use a particle system to send a particle down to the ground. This

particle would leave a trail of light behind it and would create more branching particles at random points. The path of these particles would be generated using a noise function to emulate the randomness of lightning in nature. Once a particle collides with the ground, I could either send a large amount of particles upward along the path or use the trail already left behind by the particle and intensify it using a script or shader. The second method would be to create a procedural mesh between the cloud and the ground. This would also be done using a noise function to create a random path with branches along the way. This mesh could then be textured using a shader and the intensity could be increased as needed. Both of these methods could also be supplemented using an actual Unity light, to aid in creating the bright flash of light accompanying the lightning strike.