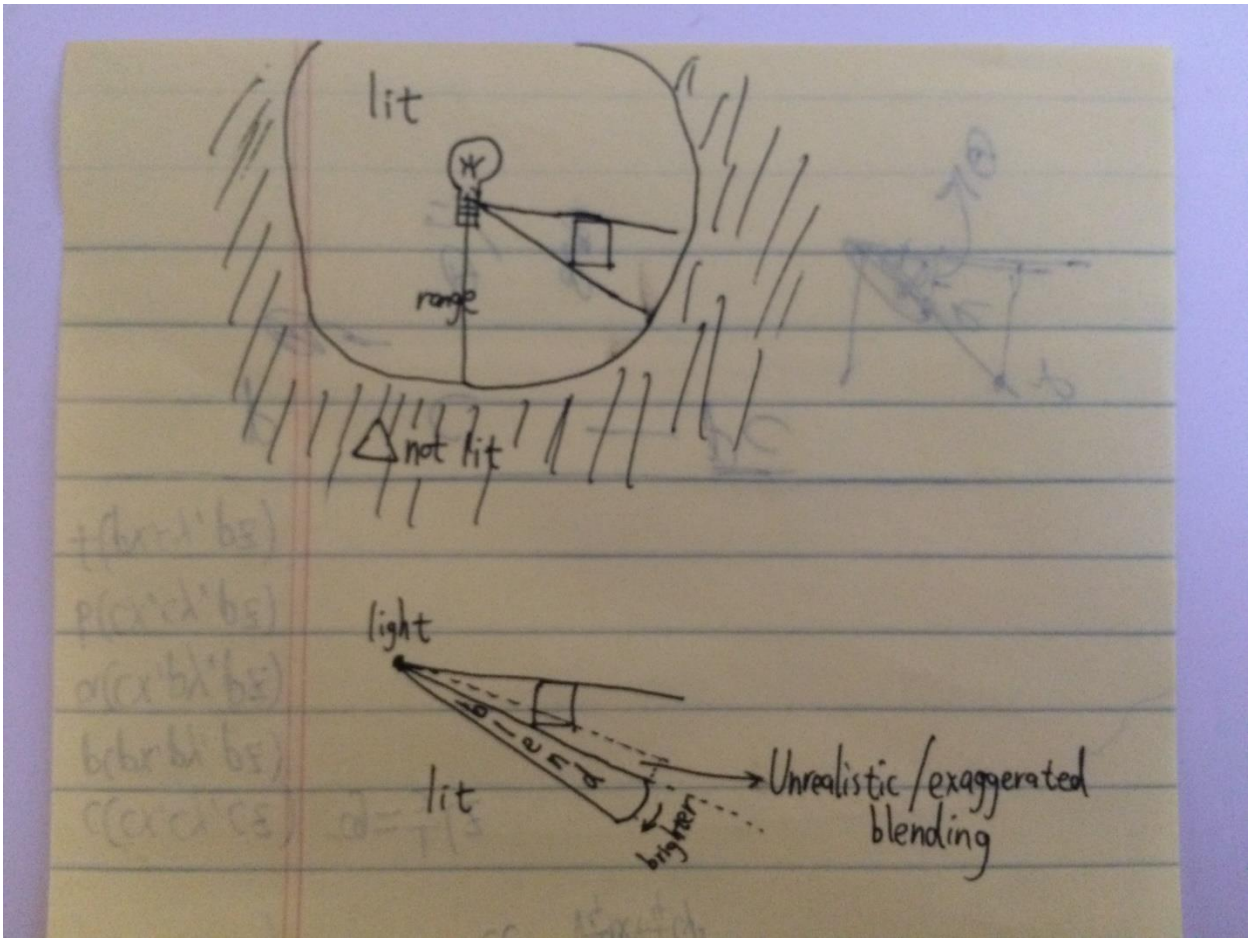
Homework 3C – Ran Tao

For the final project, my teammates will be Jonathan, Justin, and Jared. We will be working on the shadows of our 170s project, Bookend. You can let me know whether it will qualify for our CMPM 163 final project or not.

We would like to implement soft shadow in the game. I imagine that it can be accomplished by casting a ray from the point light in the scene, in all the directions. By either hitting or not hitting, these rays can return the result, that describes which areas are exposed to this light, which are not. Now we need to give this light a value of intensity, or a range which represents the furthest it can light. Any area that is beyond this range should be excluded from further calculation. Within this range, the effect or contribution of this light should get weaker, if it's further away from the light. A quadratic fall-off should be close to realistic.

We can start to conceptualize from 2D. This link shows a desired result: https://www.shadertoy.com/view/4dfXDn. This picture shows the concept:



At the edge of the shadow, we can blend color to achieve soft shadow. The edge of the shadow should be colored black. As we move on to the pixels that are in the “lit” area, we don’t immediately color them white. Instead, we gradually give them brighter and brighter colors, to do the blending. Realistically, I don’t think the areas that are not visible to the light should be given a lit color, or be included in the blending. But if we want to exaggerate the soft-shadow, we can extend the blending to these areas too. An important thing to remember is that we need to do the fall-off in the blending area too.