Final Project Proposal

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CSS 450 - Prof. Kelvin Sung

For our final project, we will be creating a 2d simulator of the solar system. We chose this project because we believe it will be good to demonstrate what we have learned in this course, and is an overall interesting topic. We will use image files for the planets. Each planet will revolve around the sun, and it's own center. We got inspired about the idea after seeing this example: https://mdn.mozillademos.org/en-US/docs/Web/API/Canvas_API/Tutorial/Basic_animations$samples/An_animated_solar_system

Here is a list of the different functionality we want to include in this project:

- A full screen canvas with two viewports
    - One main one which will show the entirety of the solar system
    - One smaller one which will be used to zoom closer to one planet (like a magnifying glass).
- User manipulation
    - The user can click on any of the planets and the smaller viewport will appear to show it in zoom mode.
    - Clicking on the sun will stop/restart animation.
        - If planets are stopped, users can revolve earth around the sun manually, and see the reflection on other planets as well.
- We will add a slider which the user can slide to increase/decrease the force of the sun's gravity (i.e. change sun's mass) which will bring the planets closer to the sun or push them further away.

We plan to have the solar system with its animation in place before the progress demo deadline (2016/11/29). This includes having all of the planets and sun rendered on the canvas, add animation for revolving and rotating. If we have more time before the first demo after completing all of these things, we will also implement the moon for earth.

All other functionality for user manipulation, including second view port (magnifier), the sun's mass value slider, manual revolving will be completed before the final presentation deadline (2016/12/15).

Here's a glance of how we want to cover technical details for our project.

- Sun will be one scene node.
- Planets will be children of Sun's scene node.
- Moon will be child of Earth's scene node.
- User will be able to manipulate rotation & scale transform, also will be able to move second view port.

Here is a simple sketch of what we're planning to build.