CSE40166/60166 — Computer Graphics
Class Project

The purpose of the class project is to allow you to design and implement a WebGL program that utilizes what you have learned throughout the semester. The project will count **25%** to your final grade. The point breakdown is as follows: project presentation **5%**, project report **5%**, implementation **15%**.

The amount of work you spend on the project implementation (not including presentation and report) should be similar to the amount of work you spend on an assignment. But for the project, upon the approval by the instructor, you have the full control on what to do and how you want to do it. We expect that the project you complete will integrate techniques learned throughout this semester.

According to the syllabus, all projects will be presented in class at the end of the semester. Undergraduate students are encouraged to work in pairs. Graduate students will work individually. Class projects will be proposed by you and approved by the instructor.

Proposal due 11/4/2015 11:59pm. Submit a "project-proposal.txt" file to your box.com submission folder, describing your final project idea. If two undergraduate students choose to work on a group project, please list the team members and point out job partitioning. The proposal should include the following information:

- What is your project about?
- What are the main functions you will implement? If you are on a two-person team, who will be the lead developer of which function?
- How will a user run your program (animation, mouse, keyboard, and widget control for interaction, etc.)?
- Any technical challenges you expect to encounter?
- What is the most difficult part of the project based on what you have known so far?

The instructor will give you feedback. Once you project proposal is approved by the instructor, you can start to implement your project.

In-class project presentation 12/4, 12/7, and 12/9. The evaluation of your final project presentation will follow the following guideline (**5% of your final grade**):

- (20 pts) How well you prepare (time control, slides, etc.)?
- (25 pts) How clearly you present your project idea?
- (25 pts) How effectively you demo your project?
- (20 pts) How well you complete your initial project goal?
- (10 pts) How well you answer questions, if any?

Project and report due 12/15/2015 11:59pm. Please zip or tar your code and the auxiliary files (if any, such as the ones in the "Common" folder as used in class), along with a report file into "project.zip" or "project.tar.gz". Submit this single package to your box.com submission directory.

Since this is a customized project, instead of submitting a README file, please submit a report ("report.doc" or "report.pdf") including the following (**5% of your final grade**):

- (15 pts) What is your project about (revised from your proposal)?
- (20 pts) What are the main functions you implemented (also describe task partition if you do a group project)?
- (15 pts) How to run your program (animation, mouse, keyboard, and widget control for interaction, etc.)?
- (15 pts) Screenshots of your program results with explanation.
- (20 pts) Any technical challenges worth mentioning and how you solved them?
- (15 pts) Anything you learned from this project?

There is no page limit for your report, but please be concise and to the point when you write your report.

The grading of your final project will follow the following guideline (**15% of your final grade**):

- (15 pts) Creativity of your project idea
- (25 pts) Technical difficulty
- (15 pts) Implementation efficiency
- (20 pts) Comprehensiveness of techniques applied
- (25 pts) Result effectiveness (e.g., attractiveness, interactivity)

If your project and report are in very high quality, bonus points may be given upon the approval of the instructor and the TAs. The bonus points will not exceed **10% of your class project grade** (i.e., you would earn up to 110% for your class project).

Here are some of the project ideas that would make a great one:

- Implement a nice-looking clock with a plate and three hands for hours, minutes and seconds. Allow users to fast forward the clock (e.g., 2x, 3x the normal speed).
- Extend the orrery you did in your assignment to include 3D texture for planets. Add lighting. Tilt the orbits of planets to be more realistic.
- Write the Tetris game or the Space Invaders game.
- Set up a meaningful 3D scene with interesting models, lighting and texturing. Enable interaction with objects.