

CS 174A — Introduction to Computer Graphics: Assignment 2

Let your imagination and creativity fly! Due: End of Friday May 13th

Weight: 15 %

Maximum points: 37

Note: The class will screen all the animations and hold a vote on the best animations and games! The top ones will receive a substantial bonus in the course.

Collaboration: None. If you discuss this assignment with others you should submit their names along with the assignment material.

Start working on this assignment early. You will not have time to do a satisfactory job at the last minute.

Write a program that displays an animated scene. Your scene should include a combination of hierarchical objects that move around. Required elements:

- [4 points] Show at least one two-level hierarchical object (e.g., a human arm)
- [4 points] Demonstrate the camera tracking a moving object using *lookAt()*.
- [6 points] Design polygonal objects of your own. You must provide positions, normals, and texture coordinates directly, by extending the Shape class.
- [2 points] For one of your custom polygonal objects, show at least one flat-shaded seam (a discontinuous edge) and light it with the Phong reflection model.
- [2 points] Texture one of your custom polygonal objects procedurally or by mapping an image.
- [2 points] Real-time speed. Make sure that your animation runs at the same speed regardless of the machine your program runs on; i.e., one simulated second corresponds roughly to one real second.
- [2 points] Display the frame rate of your program on the graphics window.
- [2 points] Make and submit a movie of your animation (length 90 sec or less) using your favorite screen recording application (e.g., camstudio/quicktime). If your program is interactive, submit a video of it being used. You can add subtitles. Make sure you encode your movie to within 100MB and observe the 90s limit.
- [4 points] Creativity (story, aesthetic style, etc).
- [4 points] Complexity. Are the underlying mechanics that make it work impressive?
- [5 points] Overall quality: Fluidity of object and camera motion, attention to detail in scene construction and texturing, etc.

Special instructions:

- Your video must be only of what your program executable can output given certain user inputs. The video should not be edited.
- Note that creativity and quality amount to 9 points. You will not get a perfect score if your scene is complex, but not creative.
- You must use only the provided template code for making graphics calls; but, you can modify it as you see fit.
- You must do the assignment from scratch. Using outside help or any piece of code from any previous offerings of the course will be considered plagiarism.
- You can see examples of animations made for previous offerings of this course at:
<http://www.cs.ucla.edu/~dt/courses/CS174A/animations/>
and http://web.cs.ucla.edu/~garett/cs174a_projects2/ and
http://web.cs.ucla.edu/~garett/cs174a_projects3/

Submission guidelines:

- Submit your movie with the name `<uid>.ext`, where `<uid>` denotes your 9 digit bruin ID, `ext` can be any common video format such as `mp4` and `mpg`.
- Submit all the files required to build and run your project in a single archive named `<uid_language>.zip` (e.g., `802870392_javascript.zip`). Please keep precisely the same folder structure as the template but avoid submitting any large auto-generated intermediate files.
- If you use texture mapping in your project, submit all the images within `<uid_os>.zip` in the location required by your program. They should not have to be moved in order for your program to run correctly.
- Include in the top level of your `<uid_language>.zip` archive a `README.TXT` file that summarizes your animation, identifies the hierarchical, polygonal, and texture mapped objects, and explains anything else that might be helpful to know in grading your project.