

Assignment 1: Problem Solving Task A

Due: Friday, 16th September 2016, 11:50pm

Group of 2 people (1 or 3 people teams need the unit coordinator's approval).

Objects, Simple Movement and Interaction

For full marks in this submission you need to complete all five of the tasks below. In addition to the functionality for each task, you need to submit a **Statement of Completion** that documents: the tasks you complete, how to use your software and screenshots that provide examples of your execution of the code.

Your code should be able to be executed at least in two modern browsers (Safari/Firefox/Chrome/IE).

Task 1 for 50%

1. Complete all tutorial and practical questions of Week2-7. Organise the questions and answers in the order of weeks. Provide one or two typical screen-outputs for each coding question.
2. Create a graphical object composed of more than 30 triangles using Blender and save the object to a file (for example, to a Wavefront obj file).
3. Write JavaScript code to read the object from file, storing the vertices and vertex indices into two arrays (you can name it as ObjLoader).
4. Write JavaScript code that makes calls to WebGL functions e.g. `gl.DrawArrays` to display the object.
5. Write JavaScript code that continually rotates the object and translates from side to side between two points.

Task 2 for 65%

1. Complete Task 1
2. Add JavaScript code to duplicate your spinning and bouncing object so that two are spinning and bouncing at different rates.

Task 3 for 75%

1. Complete Tasks 1 and 2
2. Add JavaScript code to enable input to your program with a mouse. Left clicking in the vicinity of an object should speed up bouncing (to some maximum speed) and right clicking should slow bouncing (until it stops). Alternatively you can use keydown or button click events to implement this function.
3. The objects should change colours depending on their position between the two bounce points. The same position between the two bounce points should produce the same coloured object.

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Task 4 for 85%

1. Complete Tasks 1, 2 and 3
2. Add four small 3D objects, one at each location where your objects bounce (ie. reverse translation direction)
3. Add functionality that allows these objects to be dragged vertically with the mouse. Your object should still bounce horizontally but at a new location.

Task 5 for 100%

Unit: INB381 Modelling and Animation Techniques

1. Add an additional feature and argue for its inclusion in your **Statement of Completion**.
2. Implement your feature.

What and How to submit

Your submission is to be uploaded to INB381 central server: fastapps04.qut.edu.au. The manual/instruction for accessing this server is listed in Week4 teaching materials on the BlackBoard site of this unit.

The files to include in the submission are:

1. A statement of completeness including an indication of how to run your program, program design (what your shaders do etc) and some screenshots in Word or PDF format,
2. A copy of your source code,
3. A copy of any input files that are required by your program.
4. A brief Statement of Contribution from the team members (you are expected to make roughly equal contributions)
5. (Preferable): a video demonstrating the major functions of your application.

Suggestions

- Don't forget to triangulate your model (eg. **Control t** in edit mode in Blender)
- Just use the default orthographic projection, so keep your x, y and z values for your model in the range [-1, 1].