In-Lab 03

First Semester 2015 Sharat

CS 251: In-Lab 03: [Code Warrior] Box2D: August 10 In the lab

Overview

The purpose of this task is to improve your coding experience building upon on what you did in CS101 and CS154. In particular, we will take a industry-robust piece of software, learn how to build a library using the command line, and understand some parts of the source code. Later on you will use this software to create your course project.

Tasks

1. (Action needed) Set up the files you submitted in the final submission of Lab02 so that they can be accessed using `http://www.cse.iitb.ac.in/~yourname`. In brief, you need to set up your public_html directory on `mars.cse.iitb.ac.in` for this to work. Comment on your experience in the Moodle quiz by answering the following in one line. (Go to the Moodle quiz):

   (a) What permissions are set for files? Use a binary number to answer.

   (b) What permissions are set for directories? Use a binary number to answer.

   (c) What is opt-in vs opt-out on the web? Hint `??.txt`

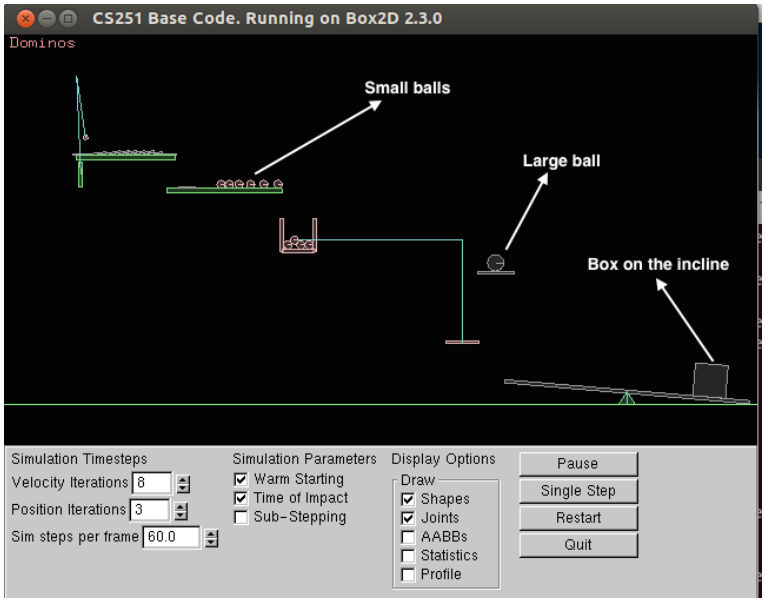
   (d) How does a challenge-response system works in protecting the web page?

   [20 Marks]

2. (Nothing to submit on Moodle) Download the pre-packaged Box2D code from the lab03 assignment directory.

   [0 Marks]

3. (Nothing to submit on Moodle) Follow the instructions in `Instructions.txt` carefully. I cannot overemphasize this part: "carefully". At the end of this you should be able to get this picture
   [0 Marks]



4. (Action needed). Show "your" TA the working action of your setup. Go to the Moodle quiz, and get your TA to write his or her name with their favourite fruit. By placing their names, the TAs are certifying that they have verified that you have got Box2D running, and you have got the given simulation going.

   Also write in the quiz the answer to this question: Does the square box on the extreme right stay on the see-saw as $t \to \infty$? (Write the answer to the above question in complete sentence. Don't just write Yes or No).

   [10 Marks]

5. (No submission) Observe that there are many GUI settings in the lower part of the simulation window. Experiment with these controls. Write (in one complete sentence) in the quiz, your observations on changing the values of the following settings (keeping the other settings to the default original values.)

   (a) Sim steps per frame: What happens when you increase this?
   [10 Marks]

   (b) Velocity iterations: What happens when you decrease this?
   [10 Marks]

6. (Action needed) There are also display options in the settings for Shapes, Joints, and AABBs. Play with these and write in the quiz what each of them is. Write in one sentence each.

   (a) Shapes

   (b) Joints

   (c) AABB

   [15 Marks]

7. (No submission). Observe that the simulation succeeds in "flipping" the square box on the right in the air. However, the simulation takes too much time. Record the time taken to the nearest second. Using the GUI controls change the settings so that the "flip" happens approximately 50% sooner. Also play with other settings and record your observations.

8. (Action needed). How much time did the flip take at the start? And later? What settings did you change to make this happen? Write this down in the Moodle quiz.

   [15 Marks]

9. (No submission). Observe that the large ball slides down the incline after tipping it. Can you make the larger ball not fall off the incline? Make "minimal" changes to achieve this. (We will interpret "minimal" in a lenient fashion.)

   [0 Marks]

10. (Action needed). On Moodle, write down the changes you made in the previous task. You can copy paste the relevant code, but have two sections: "Before" and "After".

    [30 Marks]

How we will grade you

The number of points per task appears below (A task not mentioned below carries 0 points)

- Task 1: 20
- Task 4: 10
- Task 5(a): 10
- Task 5(b): 10
- Task 6: 15
- Task 8: 30
- TAsk 10: 30