

Assignment 04: The Fisica physics library

Due date: Wednesday, 11 February, 12:00pm

In this assignment you will take a basic sketch that sets up a Fisica-based physical simulation, and add some objects to it to make it into something resembling *Angry Birds*.

Question 1: Prof Drop

Download and run the starter code in `A04.zip`. You will discover that it implements a simple game-like environment. A certain CS professor sits on the ground on the right side of the screen, meditating peacefully. You can disturb his meditation by manipulating him directly. You can also use the “cannon”, the blue square on the left of the sketch window. The cannon behaves a bit like the ball in the Mini Putt game from Lab 03: you can click on it and drag, designating the direction and speed of a projectile that will be launched when you release the mouse button.

Like any guru, the professor should not simply be sitting in isolation on the ground. He would really benefit from some fancy architecture that reflects his stature. Your job is to create a tower, temple, mountain, or other suitably impressive structure, and place the professor at the peak.

This assignment is open-ended: you can design any structure you want. There are just a few minimum requirements for what you must include:

- Your structure must be composed of at least ten new bodies.
- You must use at least two different sizes of rectangle (objects of type `FBox`) and at least one circle (an object of type `FCircle`). You’re welcome to use other primitives, most obviously `FPolys`.
- The structure must have at least three “levels”. We’ll say that a body sitting directly on the floor is at Level 1. A body resting on a Level 1 body (without also touching the floor) is at Level 2. A body resting on a Level 2 body is at Level 3. You must have at least one body at Level 3.
- You must use at least one for loop to place objects. That means you’ll need some repeated structure like a row of columns, or a stack of bricks, etc.
- You must change the initial position of the professor so that he’s sitting on the structure. He must be at least Level 3 as defined above. He doesn’t have to be at the very peak of the structure: he can have other bodies on top of him and around him.
- The initial structure and professor must start out in a stable configuration. That is, objects shouldn’t move very much when you start the sketch: they should already be at rest.
- You *must not* create more than one professor object each time the world is built. As in Highlander, *there can be only one*.

- The entire structure must fit in the sketch window, without obstructing the cannon. The best option is to fit your structure inside a square region of the sketch running from (200, 0) to (800, 600).

The starter code handles everything for you except for the structure. The only place you are required to add code is in the function `resetWorld()`. Feel free to experiment with other additions to the game. We may award bonus marks for especially inventive new code, as well as for fun or interesting structures.

What to submit: On LEARN, you should submit a single sketch entitled A04. Submit the entire sketch folder.