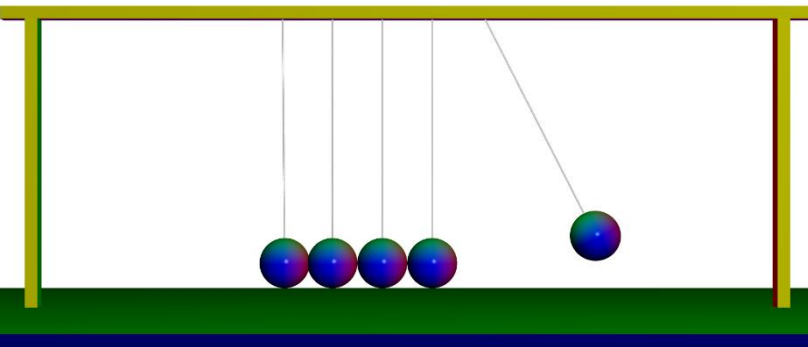


# Assignment 1: Lights, camera, and lots of action

## Introduction

My assignment consists of a pendulum swing set with five spheres, five cylinders acting as the cables for the pendulums. These were created using the *Sphere* and *Cylinder* class provided to us. The frame holding the pendulums is made up of 3 instances of the *Cube* class (again, the one provided to us) and the base (or floor) of the scene is made up of rectangle which was made from scratch inside the *main.cpp*. The lighting is just basic Phong lighting with diffusion, specular and ambient lighting. This application also has different camera positions which you can switch in- between with key C. The first (default) position is the one you see in the picture bellow, just a position from the front; the second position is one from the top, and the third is side angle looking down from above.



## Instructions

ESC:	to exit
"W"	to move camera positively on the z axis
"S"	to move camera negatively on the z axis
"D"	to move camera positively on the x axis
"A"	to move camera negatively on the x axis
SPACE	to move camera positively on the y axis
LEFT CTRL	to move camera negatively on the y axis
RIGHT ARROW	to increment the look angle to the right
LEFT ARROW	to increment the look angle to the left
UP ARROW	to increment the look angle to the up
DOWN ARROW	to increment the look angle to the down
"="	to speed up the animation
"_"	to slow down the animation
"C"	to change the position of the camera
","	to change the drawing mode

## Negatives

The code which I have written is not personally up to my standard of quality at all. When I started, I was following all of my best practices; things such as separate functions where they are needed, standardized casing, standardized commenting, etc. However, over time as the deadline got closer and closer I had to start sacrificing those practices in order to get this project working. Some of the variables are using camel casing and some are not. This project also does not follow a standardized pattern of documentation in some places. With more time this would not be the case.

To go along with the previous theme, this gripe of mine is also about the quality. All the code written is inside the *main.cpp*. Ideally, I would like to abstract the code in different classes (or libraries). For example, one for camera positions and movement; another file for drawing the pendulum swing itself; another for my creating my custom rectangle and even a separate header file for storing constants and other settings such as animation speed and camera movement speed.

Something which I also wanted to get working but did not get the time to was the camera movement, at the moment it just increments/decrements the  $(x,y,z)$  values of the position adjusting for the movement in the coordinates it's looking at. However, my plan was to program it so it is able to move the camera forward in the forward direction, weather the camera is looking along the  $-x$ , the  $+y$ , etc.

## Positives

I have effectively made settings variables with constants and other global variables. Things such as animation speed, number of spheres, cables are all variables which can be modified to fix a bug or expand on the program.

## My thoughts

I personally really struggled with this assignment (this isn't a complaint), not because the material was not clear but because of some external circumstances I was left 2 weeks behind the material and only caught up with the labs and materials 1 week prior to this deadline and had to start this assignment from scratch on the Monday before the deadline due to some (logical) problems with my previous idea. This assignment was actually a really good learning experience for me and overall, in the end I did enjoy it even though I do not usually like graphics (or gui/frontend) related programming. Now I am looking forward to starting the final assignment, maybe I will try and continue with the previous idea which I had.