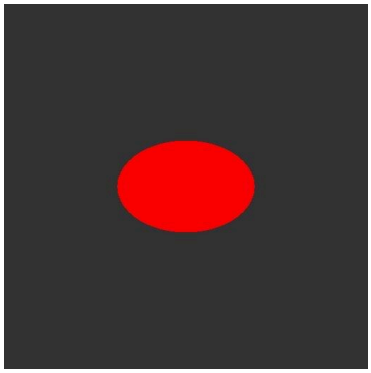
Assignment 1a - Sam Martin (MART6353)

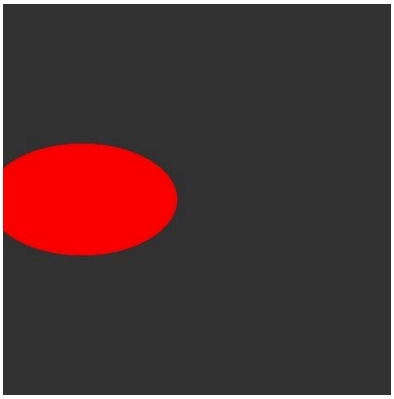
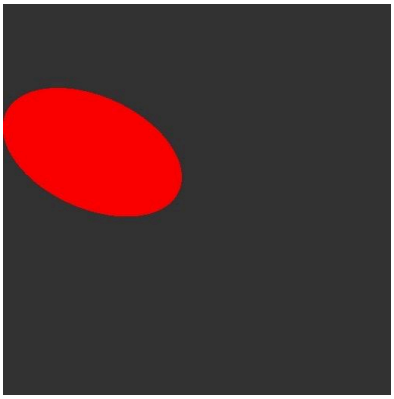
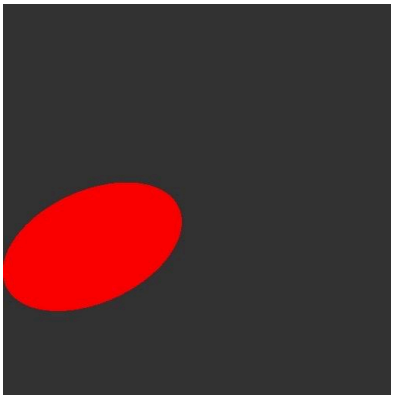
Note about compiling: I've made a Makefile that can be used to compile the program. If you have multiple inputs you would like to run at the same time, you can configure the config.default.mk file, specifying the number of inputs and their titles (must be in the form "<input><number>.<extension>"). Then just run `make test` to run those inputs.

How does the apparent rotation of the scene with respect to the viewpoint change with changes in the direction of the 'up' vector?

The viewpoint is rotated around the up direction. For example, if the up direction is tilted towards the object, the object will travel up and to a side of the image with rotation, while if it is tilted away from the object, the object will appear to travel down and to the side of the image with rotation.

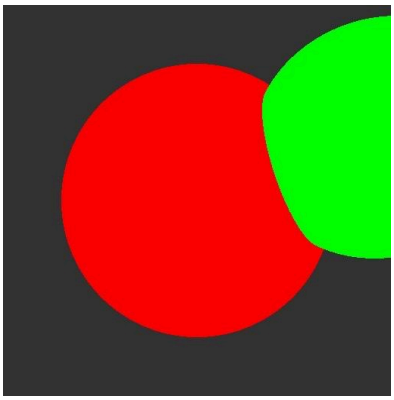
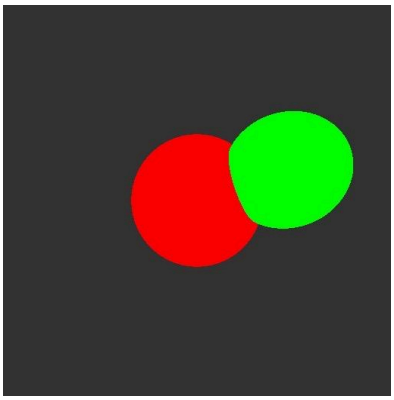
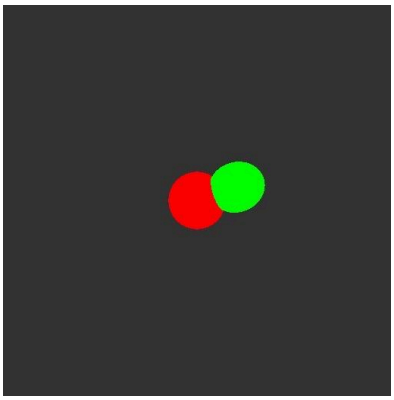
Original Image for all three:



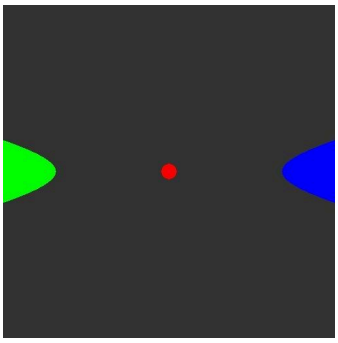
No Tilt	Toward Object Tilt	Away From Object Tilt
		

How do changes in the field of view settings affect the appearance of the scene in your rendered image?

This will change how zoomed in the picture appears. A smaller field of view will make the objects in the scene appear larger, while a wide field of view will make them appear smaller or farther away. A larger field of view will also make objects farther away appear smaller in comparison to objects that are closer, while a smaller field of view will make objects appear to be closer to the same size.

60 hfov	100 hfov	140 hfov
		

How can the viewing parameters (e.g. the camera location, field of view settings, …) be adjusted to achieve a less exaggerated vs more exaggerated amount of apparent perspective distortion in your image?

This is mostly controlled by field of view and will only affect things on the edge of the screen, stretching them into the frame. The following example shows three spheres, one directly to the left, one directly to the right, and one directly in the center. You can see how the spheres on the sides warp towards the center of the image. A small fov will remove this effect.

160 hfov