

COMPUTER SYSTEMS RESEARCH

Code Writeup of your program, example report form 2008-2009

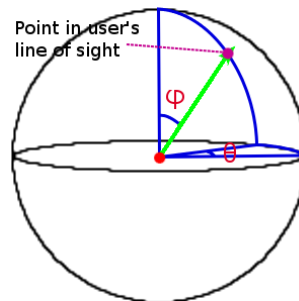
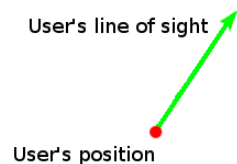
1. Your name: Zachary Greer, Period: 5
2. Date of this version of your program: 10.29.08
3. Project title: Exploring a 3-D World
4. Describe how your program runs as of this version. Include

-- files that may be needed

basic3D (compiled C program), and OpenGL

-- algorithms, specific procedures or methods you wrote

I use spherical coordinates to determine the direction in which the player is looking. OpenGL asks for a vector to the point you want to look at in Cartesian coordinates. To achieve this, I store a phi and a theta for the player, as this is the most intuitive way to describe how you look around.



With the radius equal to 1, this format can easily describe a point to look at. In (x,y,z) format, the point is (x_position_of_player + cos(theta)*cos(phi), y_position_of_player + sin(theta)*cos(phi), z_position_of_player + sin(phi)).

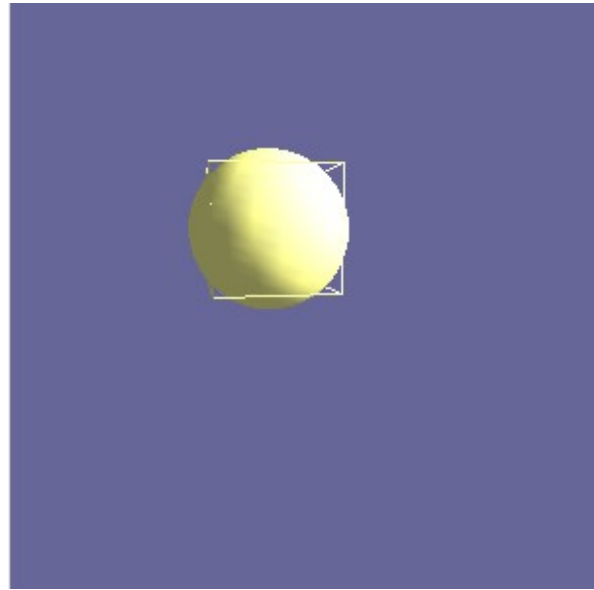
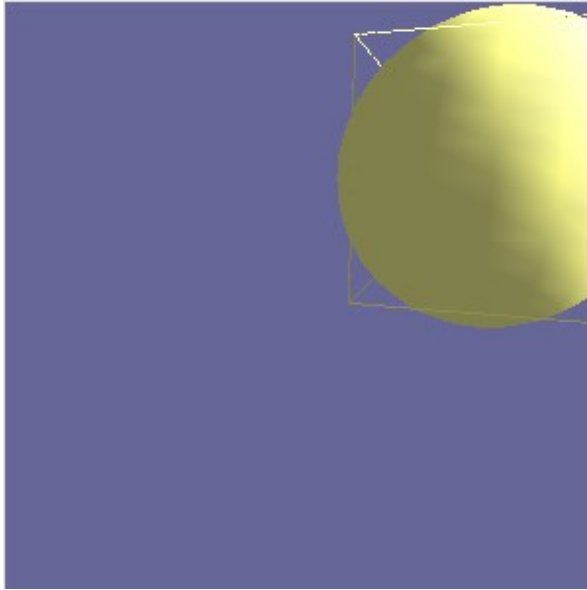
The reason this is so useful is that it translates easily to the mouse. If the mouse moves right, increment theta. If it moves left, decrement theta. If it moves up, decrement phi. Down, increment phi.

The other use of this system is that for moving, to obtain an <x,y> unit vector in the direction you want to travel, you just take <cos(theta), sin(theta)>.

-- kinds of input your program uses

I take keyboard input and mouse input. The up, down, left and right keys control your movement relative to the way you are facing. The mouse looks around in one spot by changing phi and theta (see above).

-- screenshots, what kinds of output does your program have



-- does your program handle errors, or does it crash on errors of input?

It is currently impossible to crash my program from within it.

-- summarize the basic analysis this version of your program is doing

This version of my program creates two basic shapes (a sphere and a wire cube) in a world. It then allows you to freely look around and move on a plane using the mouse and the keyboard.

and

5. What do you expect to work on next quarter, in relation to the goal of your project for the year?

I expect to get my program loading surfaces and allow the player to move realistically on the surface next. I then want to employ the MPI (message passing interface) to start networking. Minimal graphics will be required for this, but I would like to employ a system whereby more advanced models could be loaded.

As far as next quarter, I wish to achieve the first of these goals: Load surfaces and perform realistic movement on those surfaces.