Interactive program to adjust frustum, near, and far clipping planes.

Interactive frustum program

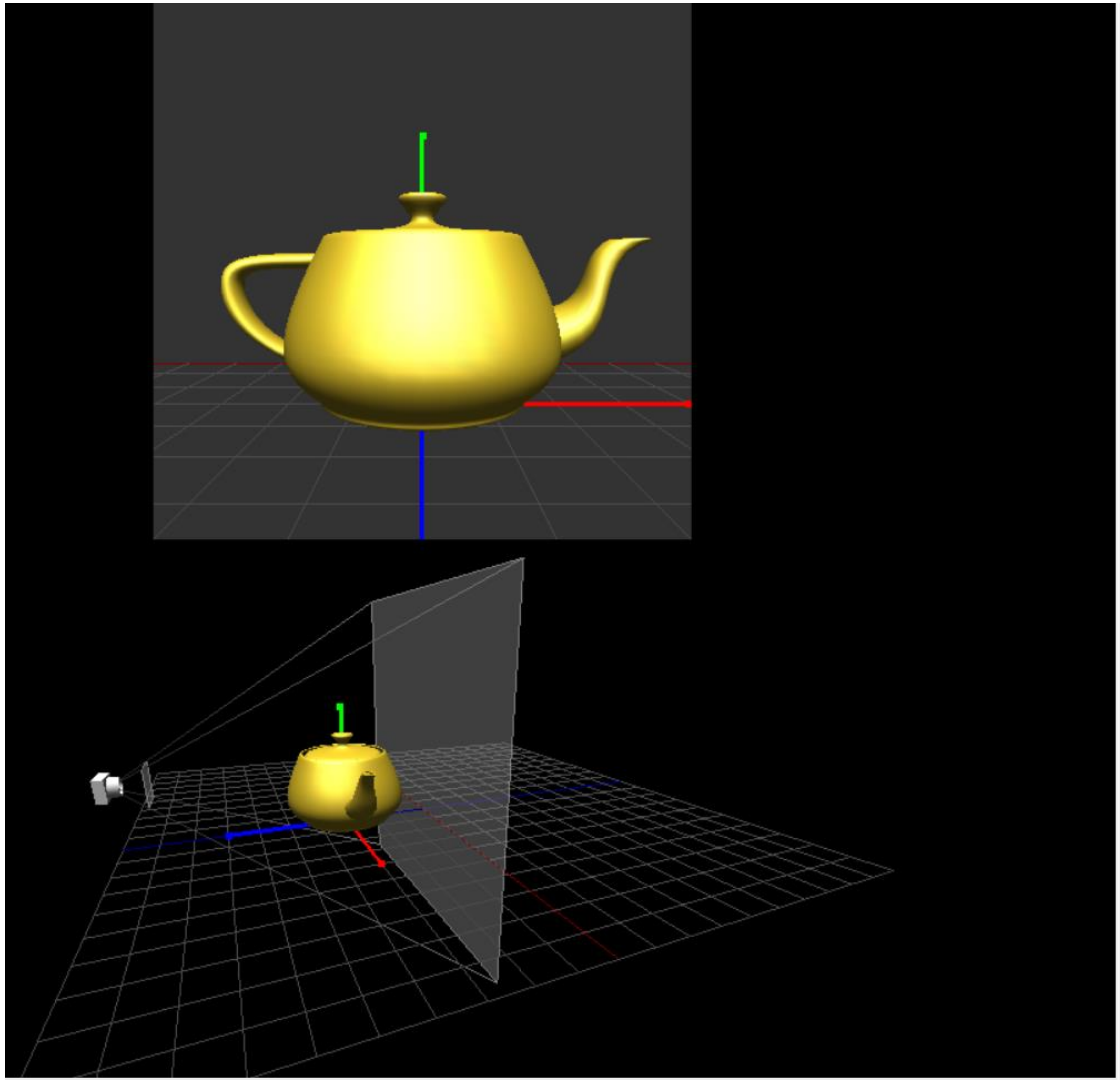
Interactive program to adjust near and far clipping planes:

http://www.songho.ca/opengl/files/matrixModelView.zip

Note: This program will only run under Microsoft's Windows operating system. It uses a combination of OpenGL as well as Windows API. However, you can still read the code.

The "take away" from reading the code: Linear transformations are used to adjust camera view when near or far clipping planes are adjusted. This is how we compute the view from the camera!

Interactive frustum program: screenshot



View (Camera)

Position X 0 Y 2 Z 10

Pitch (X) 0

Heading (Y) 0

Roll (Z) 0

Reset

OpenGL Functions

```
glRotatef(-0, 0, 0, 1);
glRotatef(-0, 0, 1, 0);
glRotatef(-0, 1, 0, 0);
glTranslatef(-0, -2, -10);
```

Model

Position X 0 Y 0 Z 3

Rotation X 0 Y 0 Z 0

Reset

OpenGL Functions

```
glTranslatef(0, 0, 3);
glRotatef(0, 1, 0, 0);
glRotatef(0, 0, 1, 0);
glRotatef(0, 0, 0, 1);
```

ModelView Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-7.00
0.00	0.00	0.00	1.00

=

View Matrix

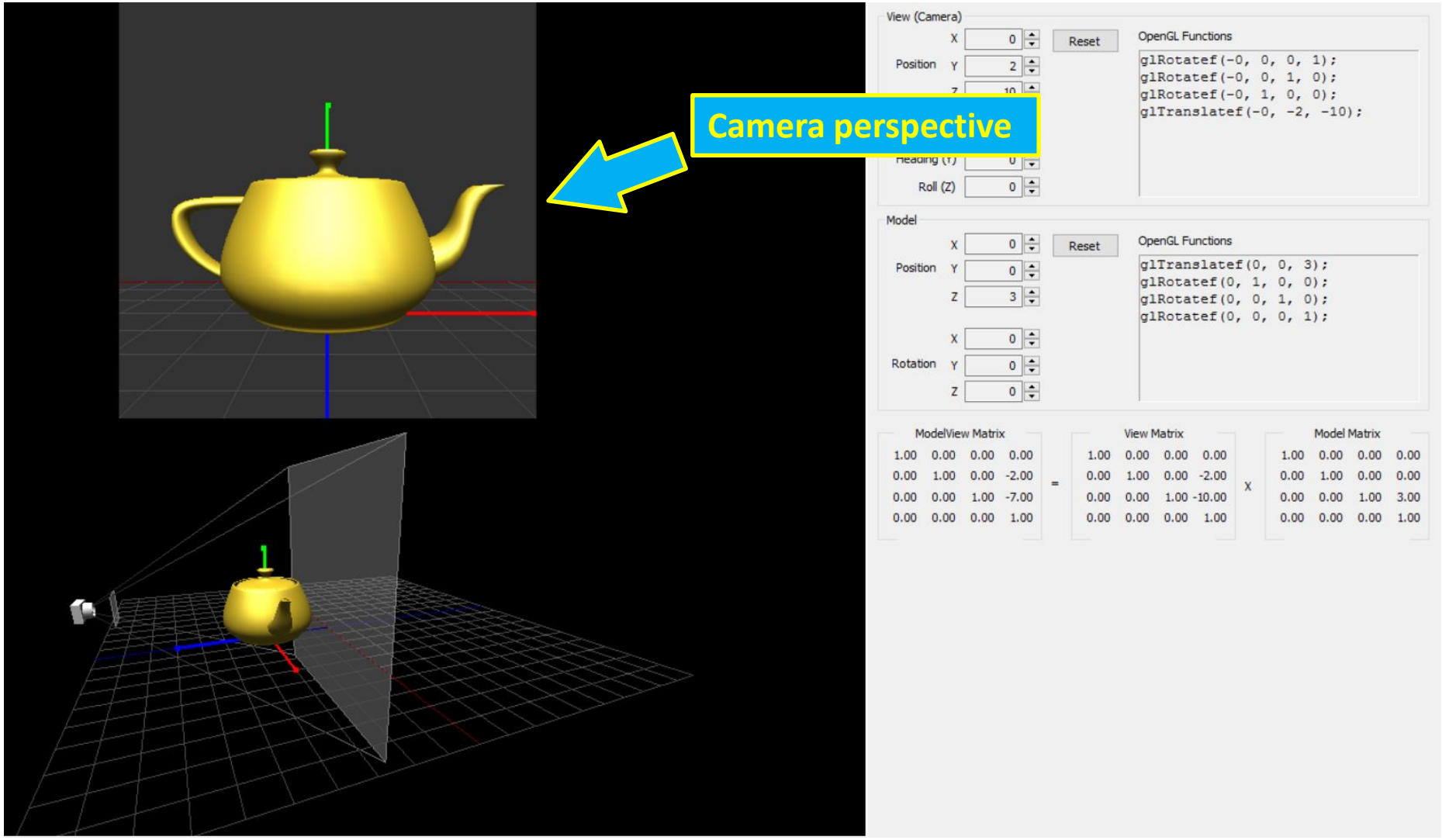
1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-10.00
0.00	0.00	0.00	1.00

X

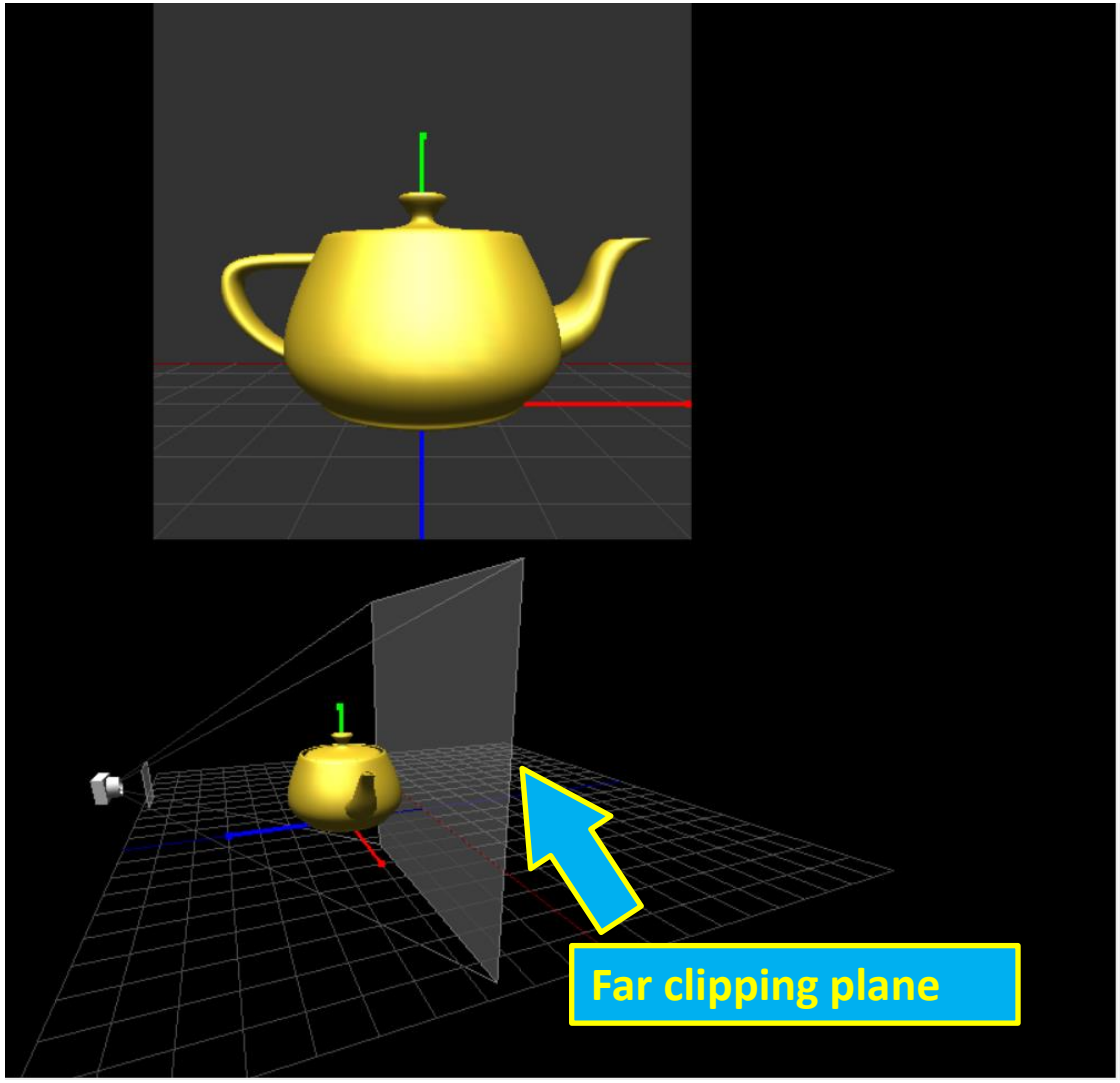
Model Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	0.00
0.00	0.00	1.00	3.00
0.00	0.00	0.00	1.00

Interactive frustum program: screenshot



Interactive frustum program: screenshot



View (Camera)

Position	X	0	Reset
	Y	2	
	Z	10	
Pitch (X)		0	
Heading (Y)		0	
Roll (Z)		0	

OpenGL Functions

```
glRotatef(-0, 0, 0, 1);
glRotatef(-0, 0, 1, 0);
glRotatef(-0, 1, 0, 0);
glTranslatef(-0, -2, -10);
```

Model

Position	X	0	Reset
	Y	0	
	Z	3	
Rotation	X	0	
	Y	0	
	Z	0	

OpenGL Functions

```
glTranslatef(0, 0, 3);
glRotatef(0, 1, 0, 0);
glRotatef(0, 0, 1, 0);
glRotatef(0, 0, 0, 1);
```

ModelView Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-7.00
0.00	0.00	0.00	1.00

=

View Matrix

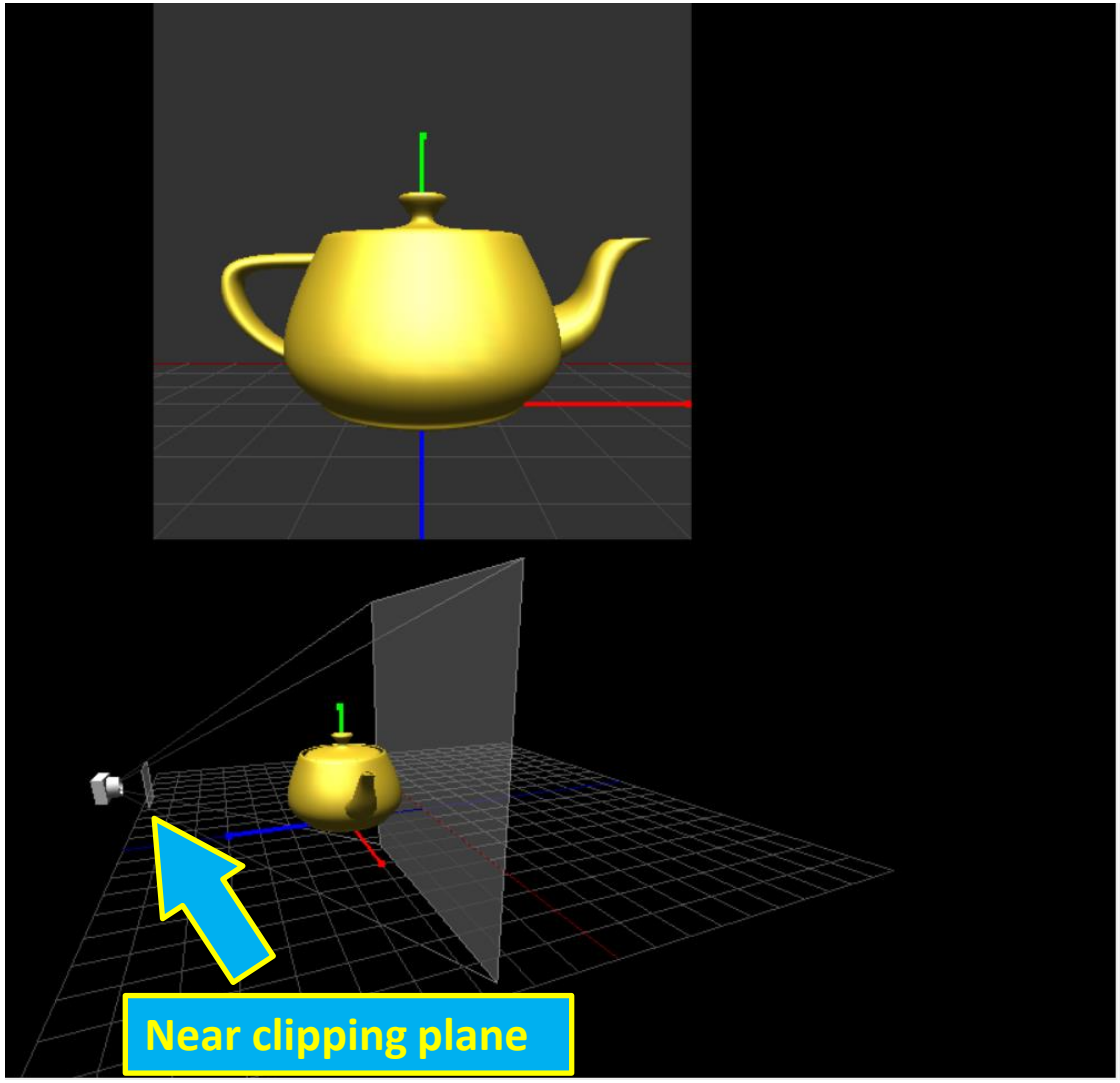
1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-10.00
0.00	0.00	0.00	1.00

X

Model Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	0.00
0.00	0.00	1.00	3.00
0.00	0.00	0.00	1.00

Interactive frustum program: screenshot



View (Camera)

Position	X	0
	Y	2
	Z	10
Pitch (X)		0
Heading (Y)		0
Roll (Z)		0

Reset

OpenGL Functions

```
glRotatef(-0, 0, 0, 1);
glRotatef(-0, 0, 1, 0);
glRotatef(-0, 1, 0, 0);
glTranslatef(-0, -2, -10);
```

Model

Position	X	0
	Y	0
	Z	3
Rotation	X	0
	Y	0
	Z	0

Reset

OpenGL Functions

```
glTranslatef(0, 0, 3);
glRotatef(0, 1, 0, 0);
glRotatef(0, 0, 1, 0);
glRotatef(0, 0, 0, 1);
```

ModelView Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-7.00
0.00	0.00	0.00	1.00

=

View Matrix

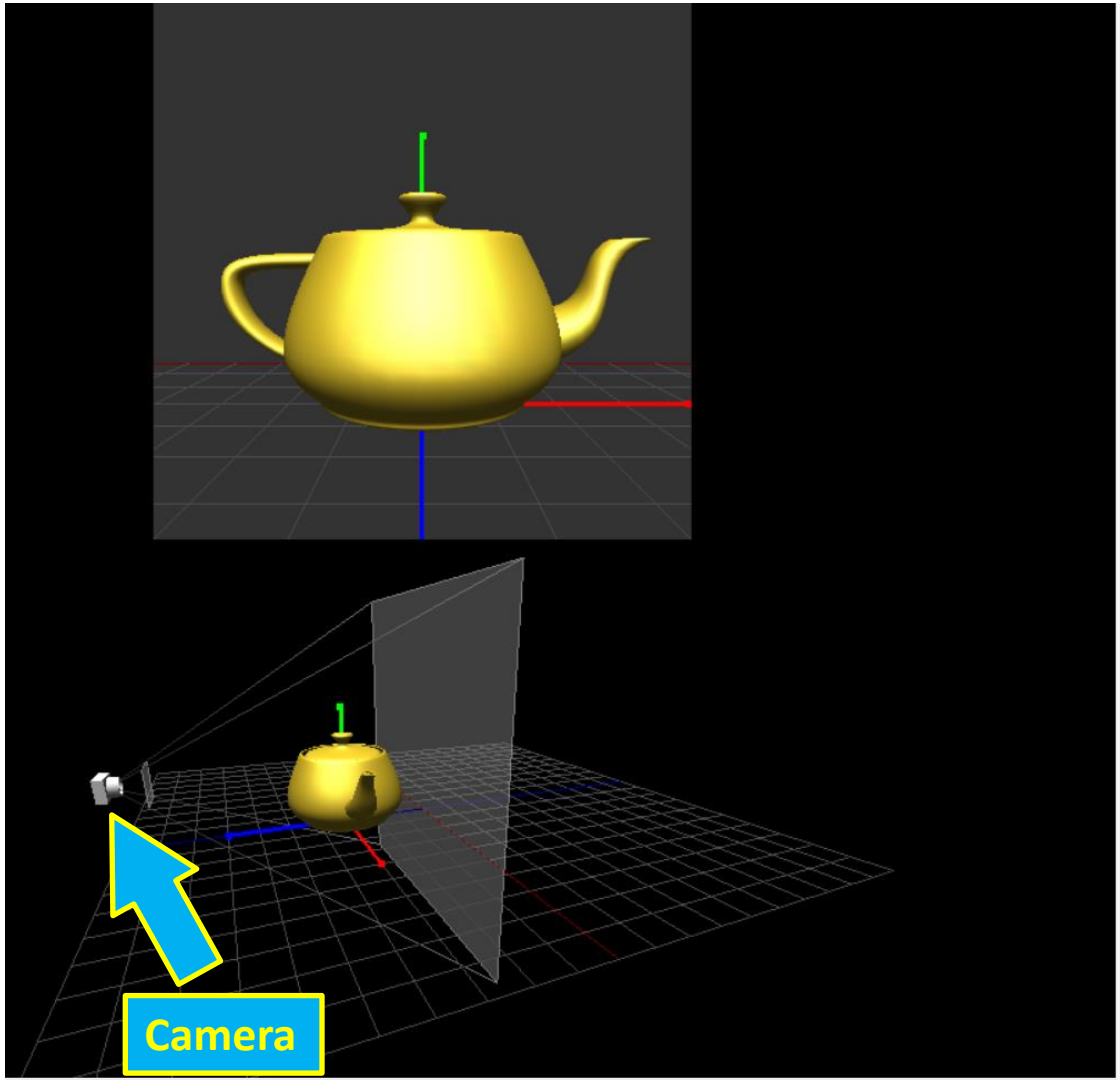
1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-10.00
0.00	0.00	0.00	1.00

X

Model Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	0.00
0.00	0.00	1.00	3.00
0.00	0.00	0.00	1.00

Interactive frustum program: screenshot



View (Camera)

Position	X	0	Reset
	Y	2	
	Z	10	
Pitch (X)		0	
Heading (Y)		0	
Roll (Z)		0	

OpenGL Functions

```
glRotatef(-0, 0, 0, 1);
glRotatef(-0, 0, 1, 0);
glRotatef(-0, 1, 0, 0);
glTranslatef(-0, -2, -10);
```

Model

Position	X	0	Reset
	Y	0	
	Z	3	
Rotation	X	0	
	Y	0	
	Z	0	

OpenGL Functions

```
glTranslatef(0, 0, 3);
glRotatef(0, 1, 0, 0);
glRotatef(0, 0, 1, 0);
glRotatef(0, 0, 0, 1);
```

ModelView Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-7.00
0.00	0.00	0.00	1.00

=

View Matrix

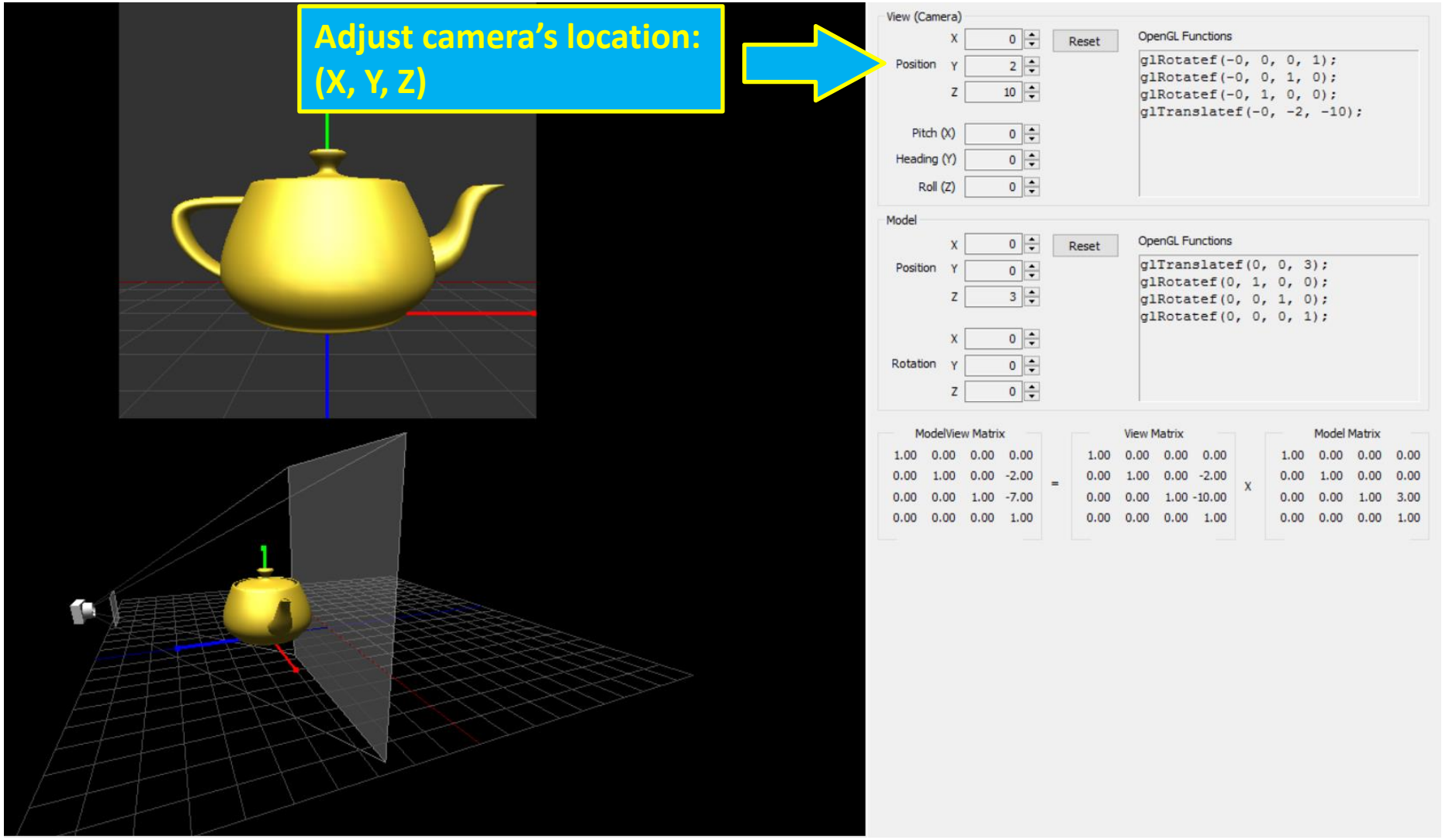
1.00	0.00	0.00	0.00
0.00	1.00	0.00	-2.00
0.00	0.00	1.00	-10.00
0.00	0.00	0.00	1.00

X

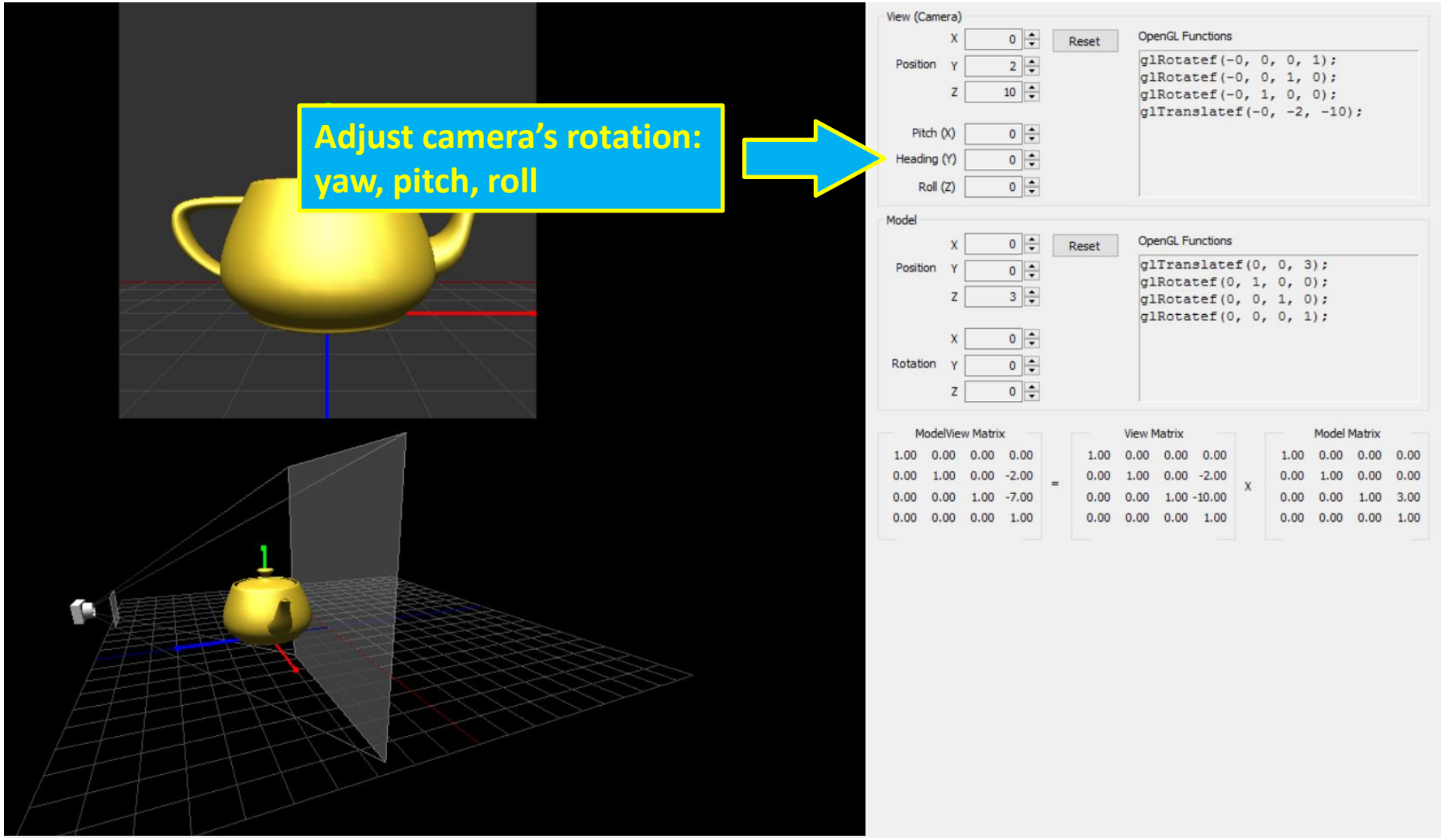
Model Matrix

1.00	0.00	0.00	0.00
0.00	1.00	0.00	0.00
0.00	0.00	1.00	3.00
0.00	0.00	0.00	1.00

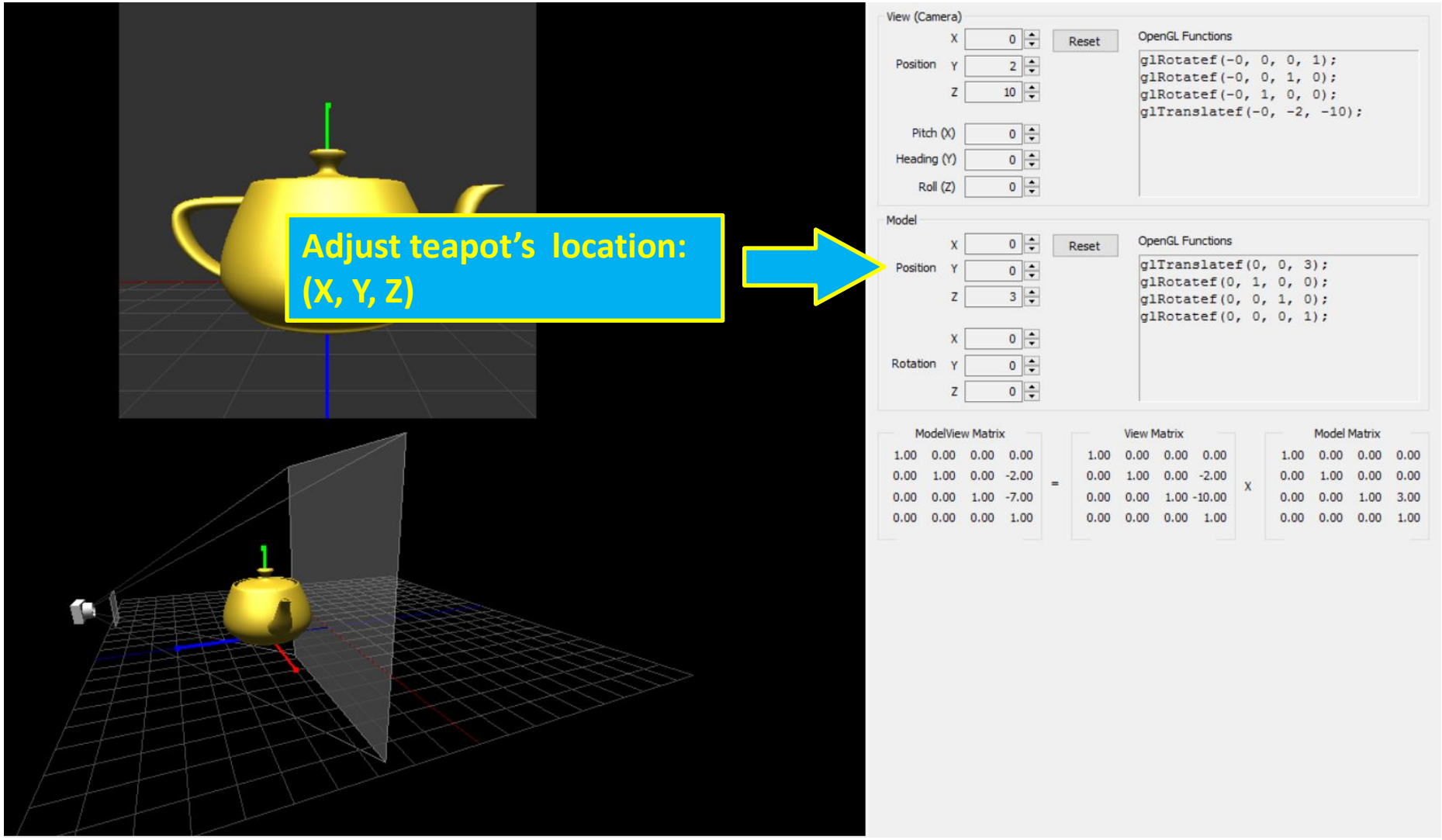
Interactive frustum program: screenshot



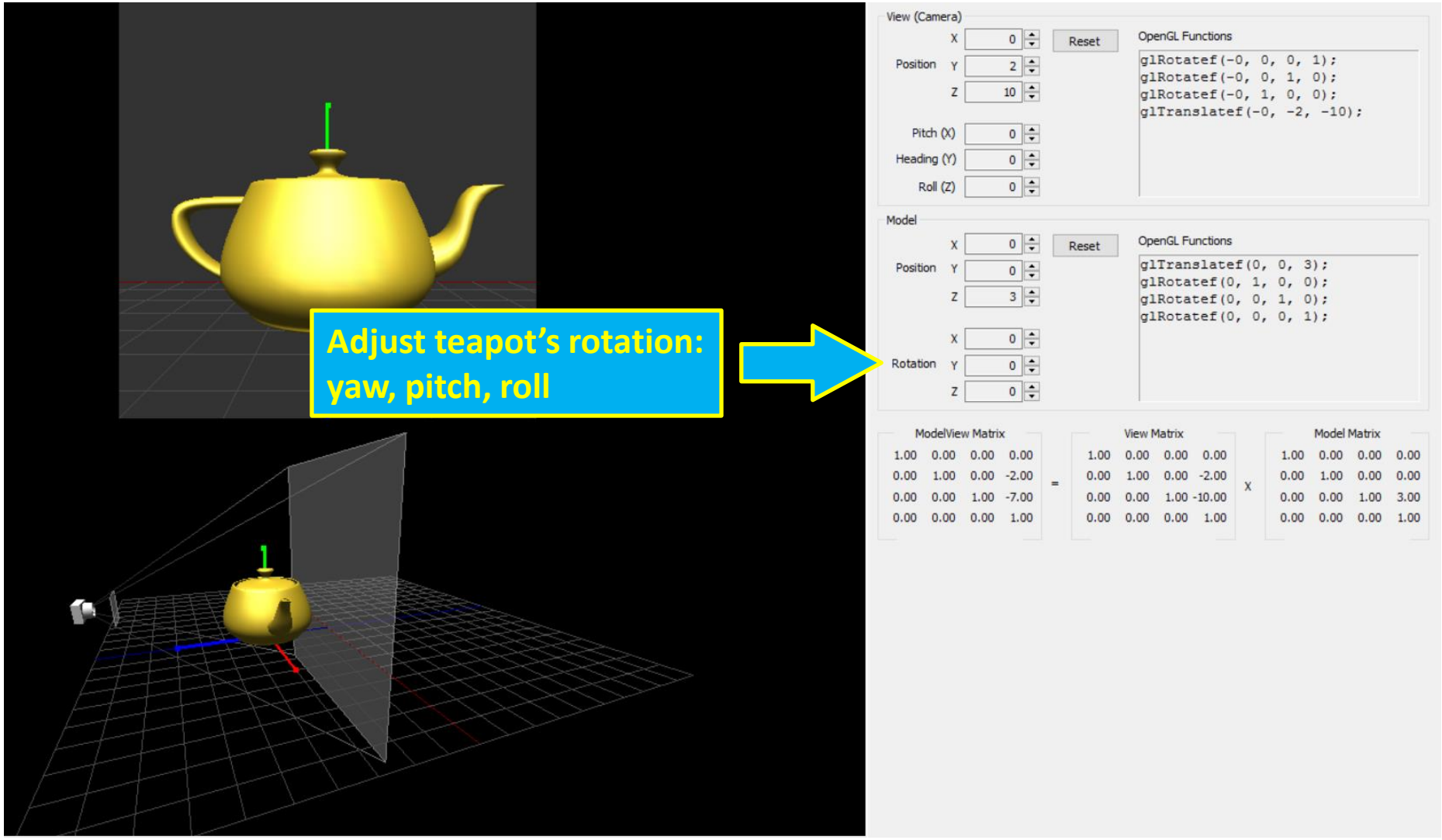
Interactive frustum program: screenshot



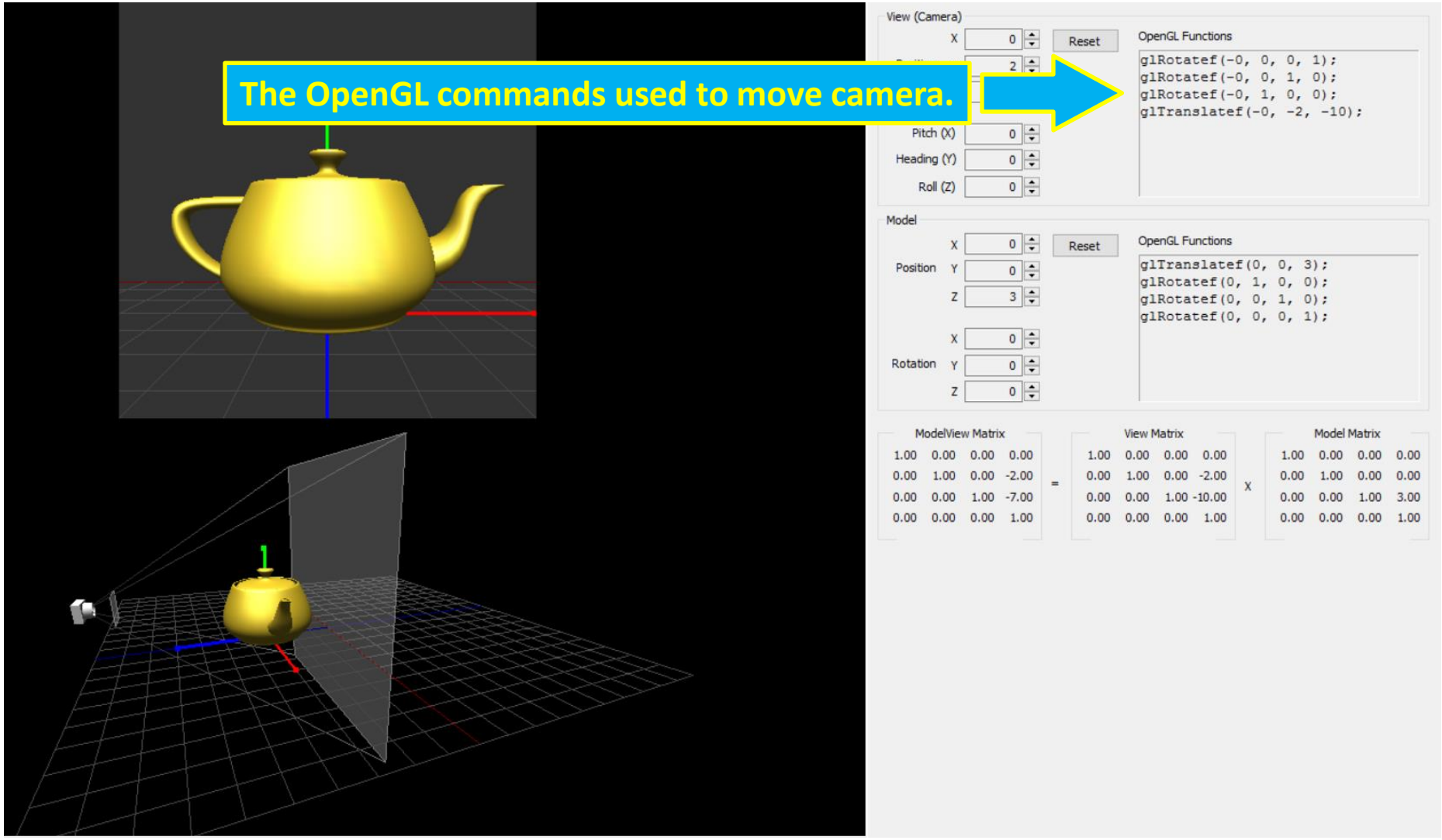
Interactive frustum program: screenshot



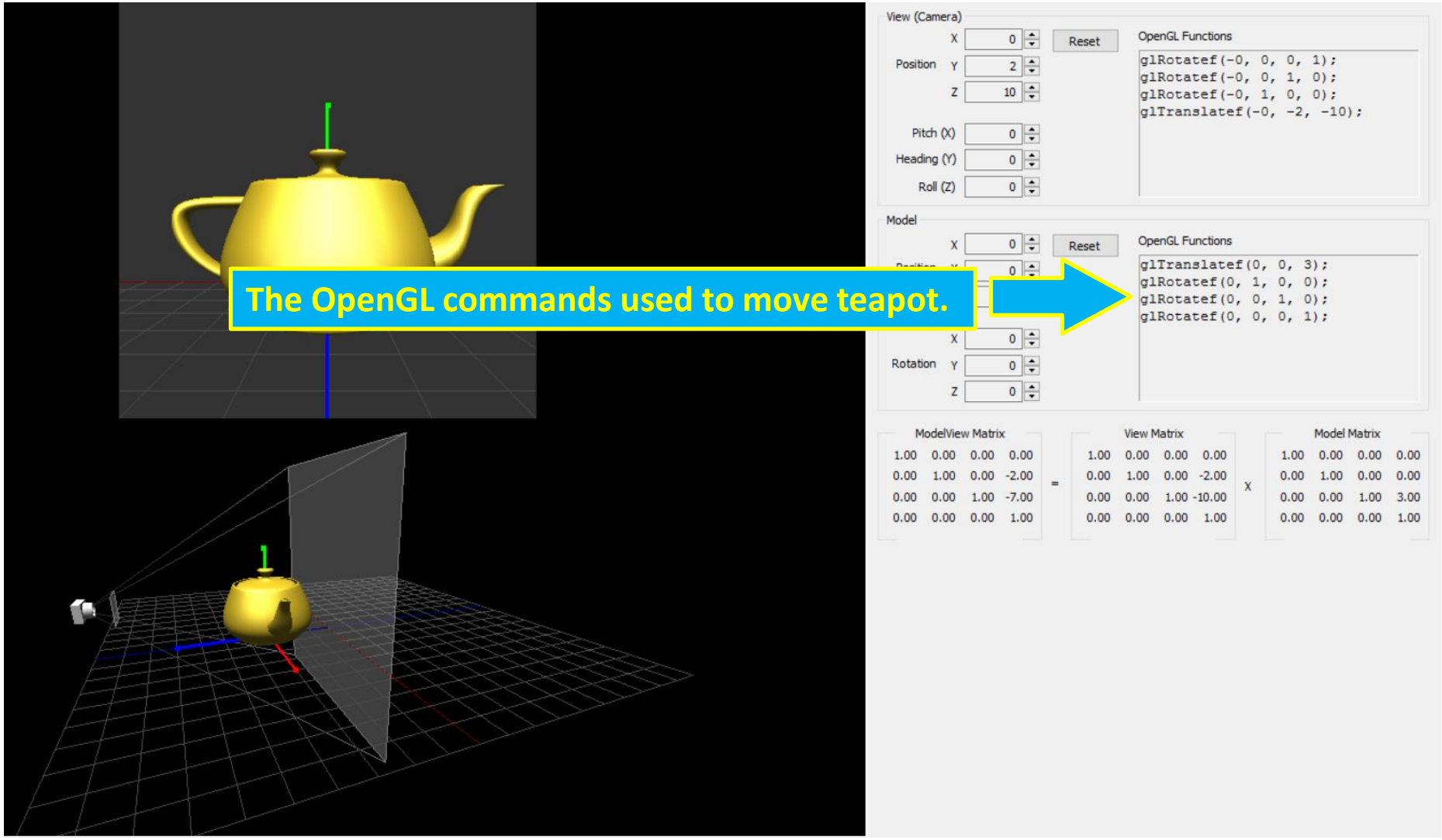
Interactive frustum program: screenshot



Interactive frustum program: screenshot



Interactive frustum program: screenshot



Interactive frustum program: screenshot