

CSE2006 LAB 12

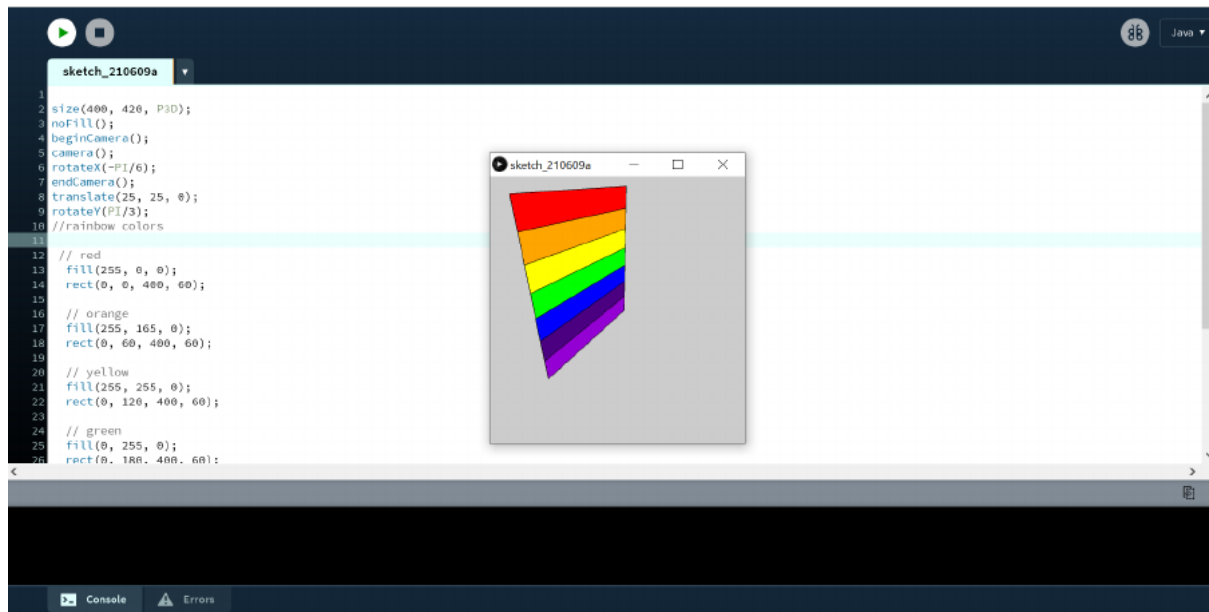
- Job Fernandez 19BCD7154

Camera functions :

1. beginCamera()
2. camera()
3. endCamera()
4. frustum()
5. ortho()
6. perspective()
7. printCamera()
8. printProjection()

beginCamera(), camera(), endCamera()

```
size(400, 420, P3D);
noFill();
beginCamera();
camera();
rotateX(-PI/6);
endCamera();
translate(25, 25, 0);
rotateY(PI/3);
//rainbow colors
// red
fill(255, 0, 0);
rect(0, 0, 400, 60);
// orange
fill(255, 165, 0);
rect(0, 60, 400, 60);
// yellow
fill(255, 255, 0);
rect(0, 120, 400, 60);
// green
fill(0, 255, 0);
rect(0, 180, 400, 60);
// blue
fill(0, 0, 255);
rect(0, 240, 400, 60);
// indigo
fill(75, 0, 130);
rect(0, 300, 400, 60);
// violet
fill(148, 0, 211);
rect(0, 360, 400, 60);
```




camera()

```
void setup() {
  size(640, 360, P3D);
}
void draw() {
  background(0);
  textSize(38);
  camera(mouseX, height/2, (height/2) / tan(PI/6), width/2, height/2, 0, 0, 1, 0);
  translate(width/2, height/2, -100);
  stroke(255);
  noFill();
  text("Job Fernandez", 0, 100);
}
```



Job Fernandez



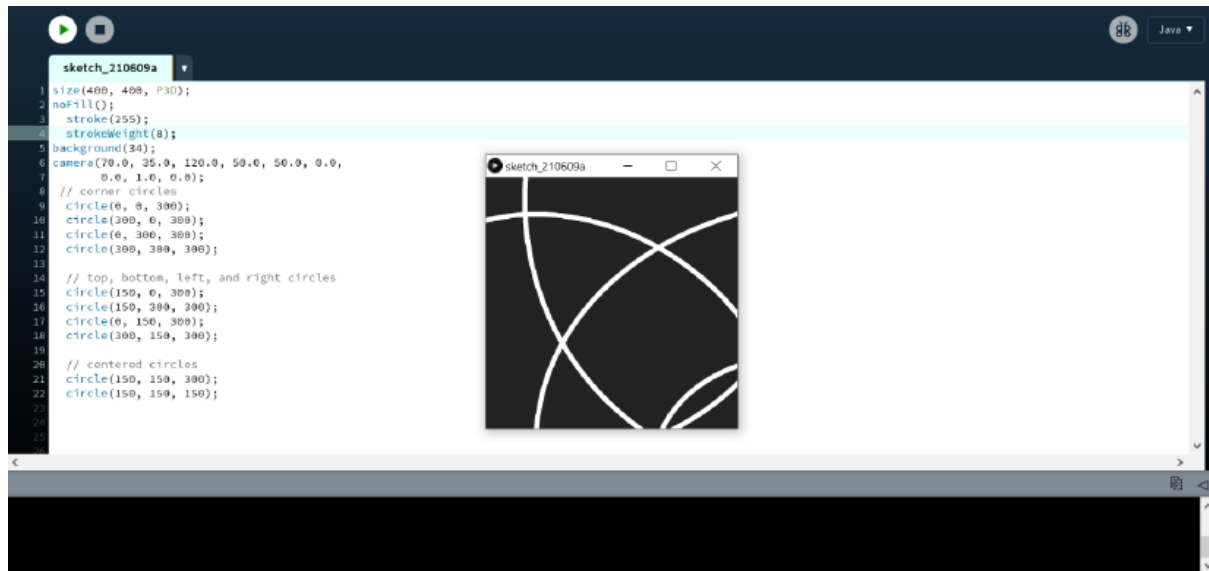
Job Fernandez

```
size(400, 400, P3D);  
noFill();  
stroke(255);  
strokeWeight(8);  
background(34);  
camera(70.0, 35.0, 120.0, 50.0, 50.0, 0.0, 0.0, 1.0, 0.0);  
// corner circles  
circle(0, 0, 300);  
circle(300, 0, 300);  
circle(0, 300, 300);  
circle(300, 300, 300);  
// top, bottom, left, and right circles  
circle(150, 0, 300);
```

```

circle(150, 300, 300);
circle(0, 150, 300);
circle(300, 150, 300);
// centered circles
circle(150, 150, 300);
circle(150, 150, 150);

```

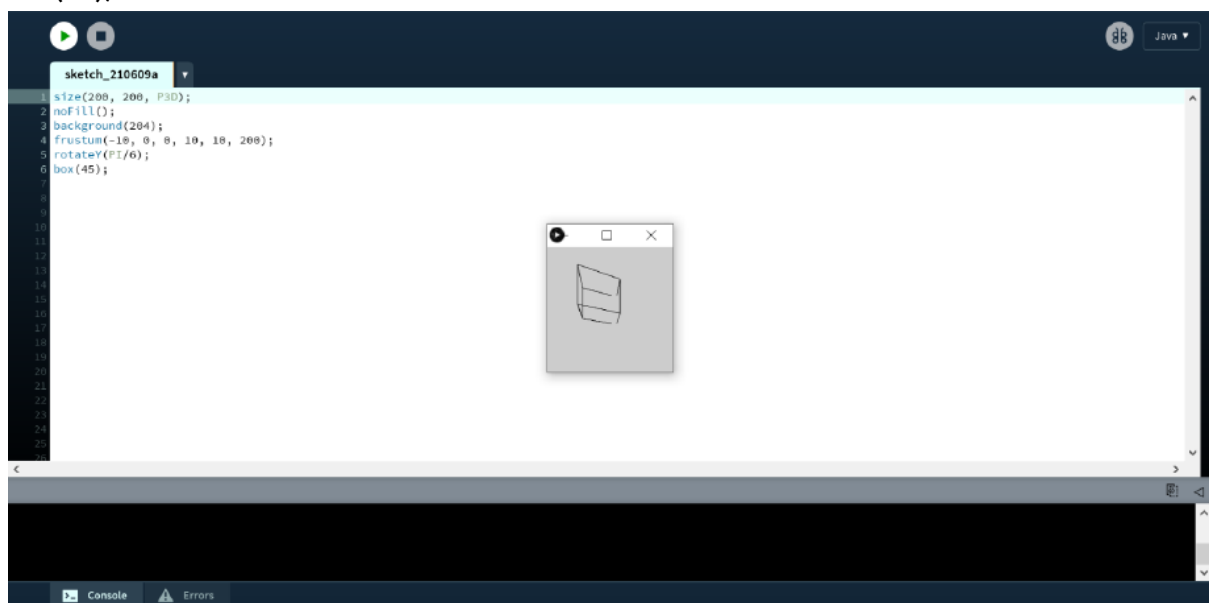


frustum()

```

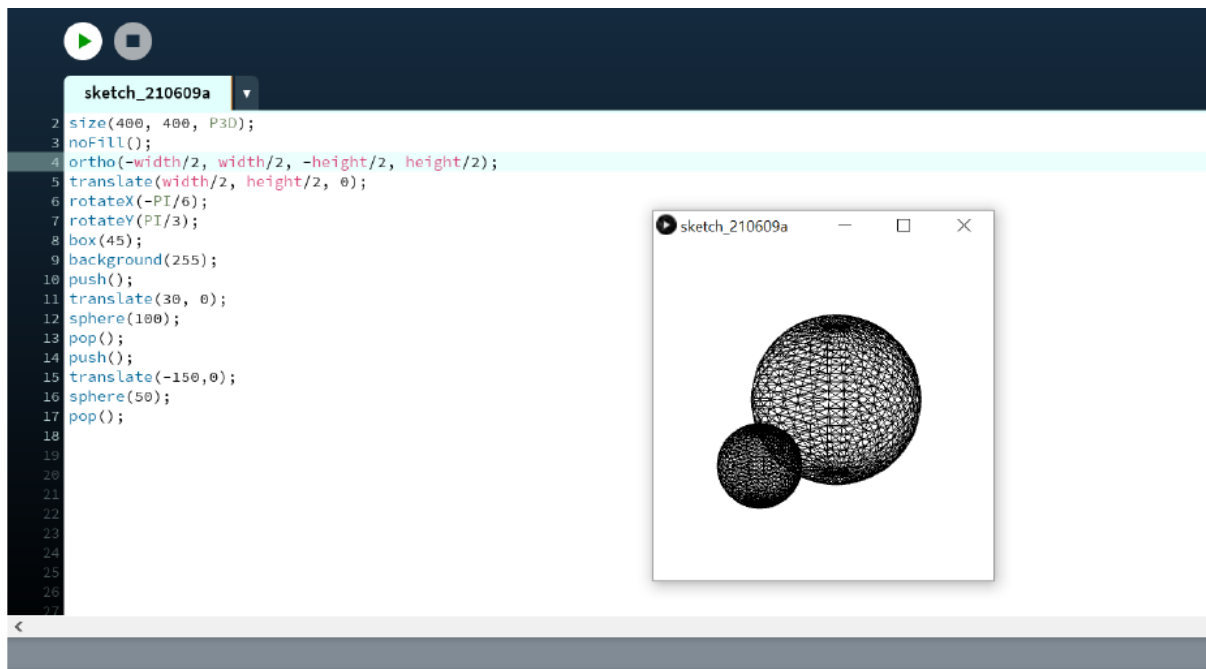
size(200, 200, P3D);
noFill();
background(204);
frustum(-10, 0, 0, 10, 10, 200);
rotateY(PI/6);
box(45);

```



ortho()

```
size(400, 400, P3D);
noFill();
ortho(-width/2, width/2, -height/2, height/2);
translate(width/2, height/2, 0);
rotateX(-PI/6);
rotateY(PI/3);
box(45);
background(255);
push();
translate(30, 0);
sphere(100);
pop();
push();
translate(-150, 0);
sphere(50);
pop();
```



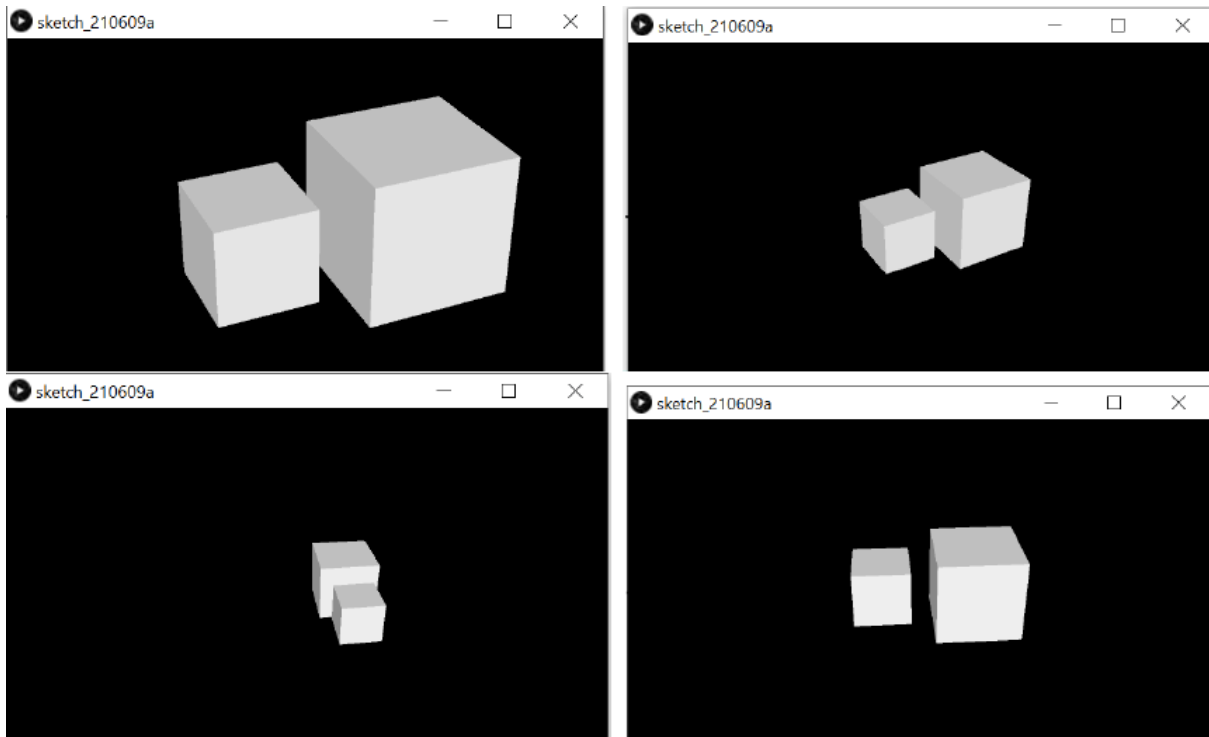
perspective()

```
void setup() {
  size(640, 360, P3D);
}
noStroke();
void draw() {
  lights();
  background(0);
  float cameraY = height/2.0;
  float fov = mouseX/float(width) * PI/2;
  float cameraZ = cameraY / tan(fov / 2.0);
```

```

float aspect = float(width)/float(height);
if (mousePressed) {
  aspect = aspect / 2.0;
}
perspective(fov, aspect, cameraZ/10.0, cameraZ*10.0);
translate(width/2+30, height/2, 0);
rotateX(-PI/6);
rotateY(PI/3 + mouseY/float(height) * PI);
box(45);
translate(0, 0, -50);
box(30);
}

```



printCamera()

```

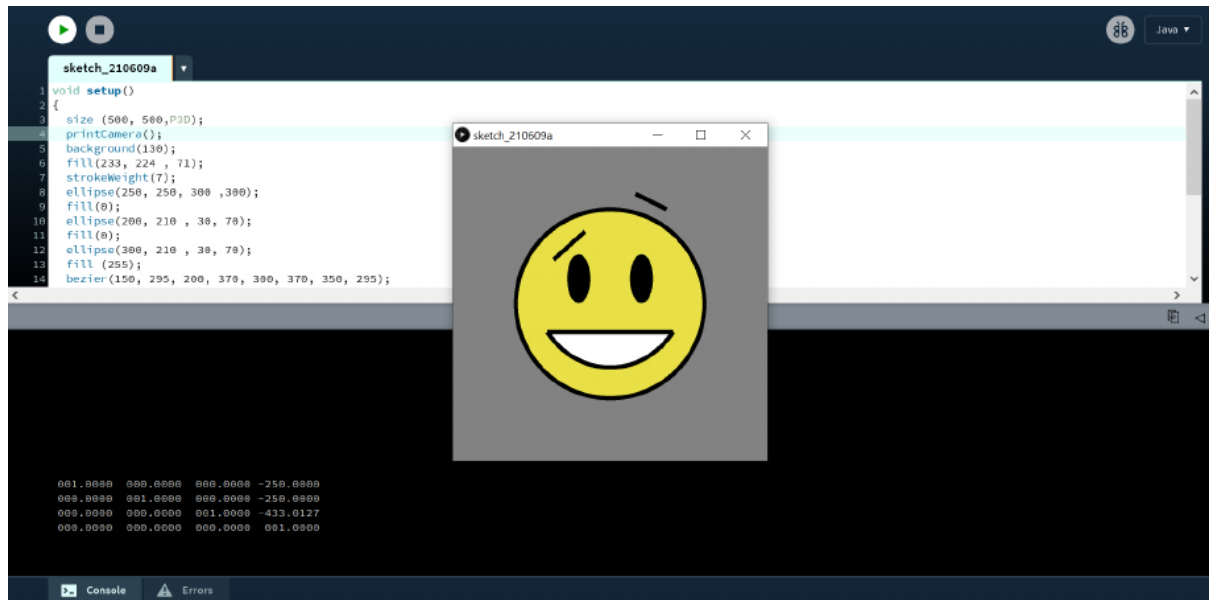
void setup()
{
  size (500, 500,P3D);
  printCamera();
  background(130);
  fill(233, 224 , 71);
  strokeWeight(7);
  ellipse(250, 250, 300 ,300);
  fill(0);
  ellipse(200, 210 , 30, 70);
  fill(0);
  ellipse(300, 210 , 30, 70);
  fill (255);
}

```

```

bezier(150, 295, 200, 370, 300, 370, 350, 295);
line(150, 295, 350, 295);
line(160, 180, 210, 135);
line(340, 100, 290, 75);
}
void draw(){}

```



Output :

```

001.0000 000.0000 000.0000 -250.0000
000.0000 001.0000 000.0000 -250.0000
000.0000 000.0000 001.0000 -433.0127
000.0000 000.0000 000.0000 001.0000

```

printProjection()

```

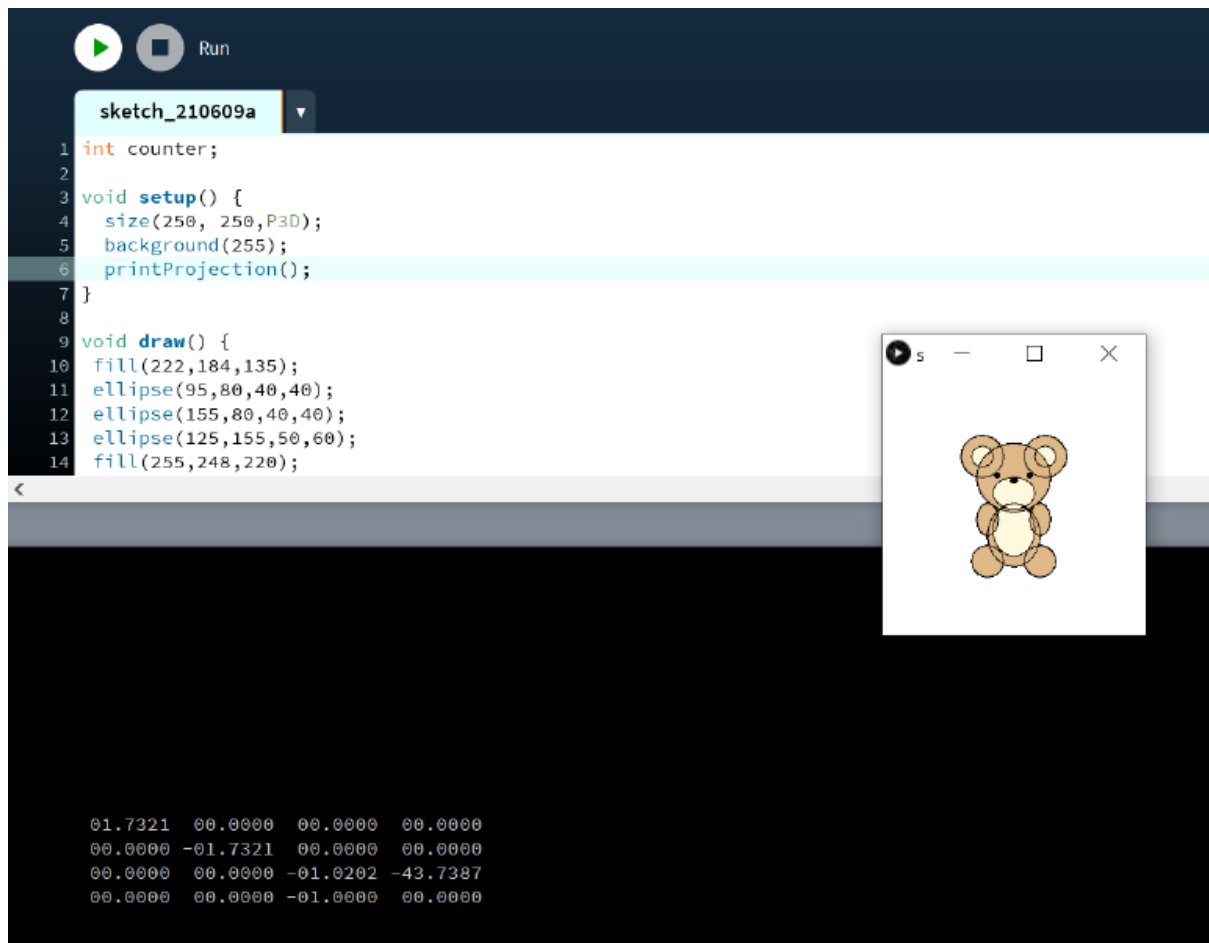
int counter;
void setup() {
  size(250, 250, P3D);
}
background(255);
printProjection();
void draw() {
  fill(222, 184, 135);
  ellipse(95, 80, 40, 40);
  ellipse(155, 80, 40, 40);
  ellipse(125, 155, 50, 60);
  fill(255, 248, 220);
  ellipse(125, 150, 40, 50);
  fill(255, 248, 220);
  ellipse(95, 80, 20, 20);
  ellipse(155, 80, 20, 20);
  fill(222, 184, 135);
  ellipse(100, 180, 30, 30);
}

```

```

ellipse(100,140,20,30);
ellipse(150,140,20,30);
ellipse(150,180,30,30);
ellipse(125,100,70,65);
fill(255,248,220);
ellipse(125,115,40,30);
fill(0,0,0);
ellipse(125,103,7,5);
ellipse(109,98,5,5);
ellipse(140,98,5,5);
}

```



OUTPUT :

```

01.7321 00.0000 00.0000 00.0000
00.0000 -01.7321 00.0000 00.0000
00.0000 00.0000 -01.0202 -43.7387
00.0000 00.0000 -01.0000 00.0000

```