Three Dimensions

The 3D Processing Functions You Will Care About

- rotateX(radians);
- rotateY(radians);
- rotateZ(radians);
- scale(sx, sy, sz);
- translate(tx, ty, tz);
- box(sizex, sizey, sizez);
- sphereDetail(slices, stacks);
- sphere(radius);
- beginShape();
- vertex(x, y, z);
- endShape();

Sample 3D Program – the Global Variables at the top of the program

```java
int LastMouseX;
int LastMouseY;
int Udetail = 20;
int Vdetail = 20;
float Yangle = 0.;
float Xrot = 0., Yrot = 0.;
boolean FillSphere = false;
boolean StillPressed = false;
boolean Animate = false;
```

Sample 3D Program – the setup() Function

```java
void setup() {
  size(800, 800, P3D);
  background(200, 200, 255);
  stroke(0, 0, 0);
  fill(255, 255, 0);
}
```

Sample 3D Program – the draw() Function, part I

```java
if (mousePressed) {
  int dx = mouseX - LastMouseX;
  int dy = mouseY - LastMouseY;
  Xrot = Xrot + dy;
  Yrot = Yrot + dx;
}
LastMouseX = mouseX;
LastMouseY = mouseY;
translate(width/2, height/2);
rotateY(radians(Yrot));
rotateX(radians(Xrot));
fill(255, 30, 30);
pushMatrix();
  rotateX(radians(Yangle));
  translate(0, 300, 0);
  box(20, 20, 20);
popMatrix();
if (FillSphere)
  fill(255, 255, 0);
else
  noFill();
pushMatrix();
  rotateY(radians(Yangle));
sphereDetail(Udetail, Vdetail);
sphere(200.);
if (Animate) 
  Yangle = Yangle + 1.;
popMatrix();
```

Sample 3D Program – the draw() Function, part II