

SECTION 4

Collision Detection for BoxSplash Extension:

<https://Happycoding.io/tutorials/processing/collision-detection>

```
void setup() {
  size(300, 300);
  noFill();
}

void draw() {
  background(64);

  //draw the center rectangle
  stroke(255);
  rect(centerRectX, centerRectY, centerRectWidth, centerRectHeight);

  //if I keep moving in my current X direction, will I collide with the center rectangle?
  if (bouncingRectX + bouncingRectWidth + bouncingRectSpeedX > centerRectX &&
      bouncingRectX + bouncingRectSpeedX < centerRectX + centerRectWidth &&
      bouncingRectY + bouncingRectHeight > centerRectY &&
      bouncingRectY < centerRectY + centerRectHeight) {
    bouncingRectSpeedX *= -1;
  }
  //bounce off left and right edges of screen
  else if(bouncingRectX < 0 || bouncingRectX + bouncingRectWidth > width){
    bouncingRectSpeedX *= -1;
  }

  //if I keep moving in my current Y direction, will I collide with the center rectangle?
  if (bouncingRectX + bouncingRectWidth > centerRectX &&
      bouncingRectX < centerRectX + centerRectWidth &&
      bouncingRectY + bouncingRectHeight + bouncingRectSpeedY > centerRectY &&
      bouncingRectY + bouncingRectSpeedY < centerRectY + centerRectHeight) {
    bouncingRectSpeedY *= -1;
  }
  //bounce off top and bottom edges of screen
  else if(bouncingRectY < 0 || bouncingRectY + bouncingRectHeight > height){
    bouncingRectSpeedY *= -1;
  }

  bouncingRectX += bouncingRectSpeedX;
  bouncingRectY += bouncingRectSpeedY;

  //draw the bouncing rectangle
  rect(bouncingRectX, bouncingRectY, bouncingRectWidth, bouncingRectHeight);
}
```

Translating Rings for Frequency Ring extension:

<https://stackoverflow.com/questions/70917717/how-can-i-plot-4-vertexes-using-a-nested-loop/70917751#70917751>

```
for (var i = 1; i <= 2; i++) {
  for (var j = 1; j <= 2; j++) {

    push()
    translate(200 * i, 200 * j)
    ellipse(0, 0, 100)
    pop()
  }
}
```

P5.Sound.JS and P5.Dom.JS were the only other extensions used.