Código para arte computacional

Operaciones básicas

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Este catálogo pretende recopilar código útil para enseñanza y dirección de futuros trabajos en arte computacional. El objetivo es mostrar cada forma en base a sus operaciones, acompañadas del código fuente para **Processing**.

Formas básicas

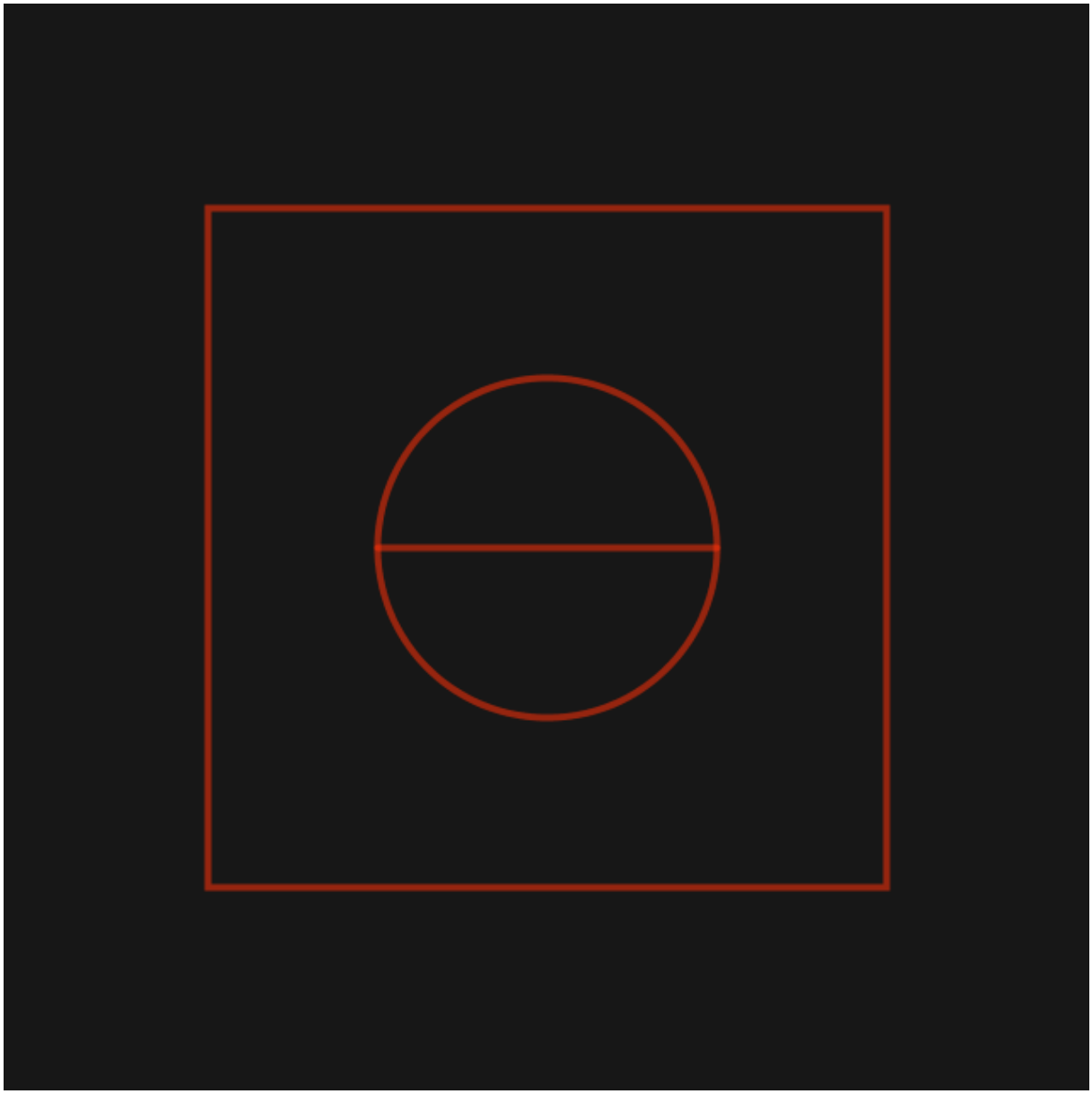
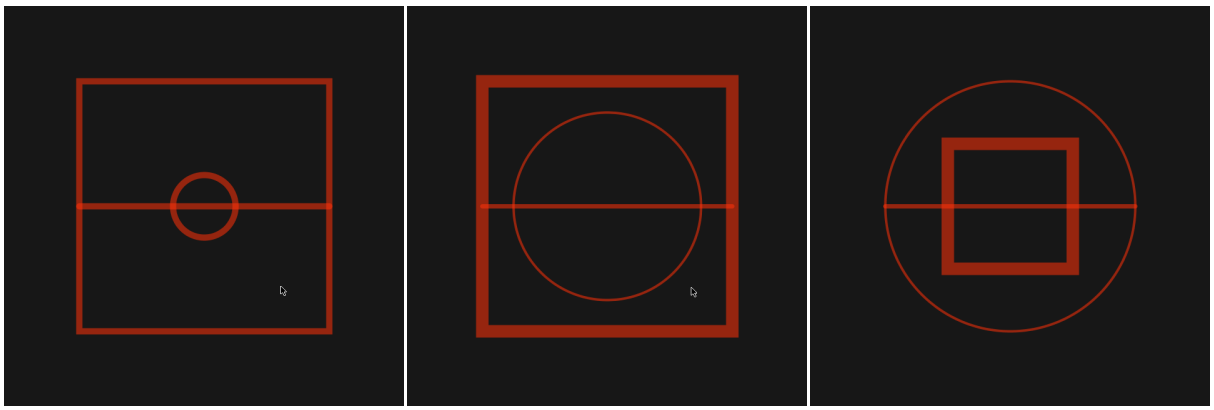


Figure 1: formas basicas



```
void setup() {
size(800,800);
background(22);
fill(22);
strokeWeight(5);
stroke(255,0,0);


int  center_x = width/2;
int  center_y = height/2;
int  size = 100;

ellipseMode(CENTER);
ellipse(center_x, center_y, size,size);
line(center_x - size/2, center_y, center_x + size/2, center_y);
rectMode(CENTER);
rect(center_x,center_y, size * 2,size * 2 );


//OOP

Same cuadrado = new Same(center_x, center_y, size * 4, "quad");
Same circulo = new Same(center_x, center_y, size, "circle");

Same linea= new Same(center_x, center_y, size * 4, "linea_horizontal");
cuadrado.display();
circulo.display();
linea.display();
}
```

```
class Same {
  int x;
  int y;
  int siz; String tipo;

Same(int x_, int y_, int size, String type) {
x = x_;
y = y_;
siz = size; tipo = type;
}

void display() {
    if (tipo== "quad") {
    rectMode(CENTER); rect(x,y, siz,siz);
    } else if (tipo == "circle") {
    ellipseMode(CENTER); ellipse(x, y, siz,siz);
    } else if (tipo == "linea_horizontal") { line(x - siz/2, y, x + siz
       /2, y);
    } else {
    strokeWeight(3); point(x,y);
    }
    } }
```

Grillas

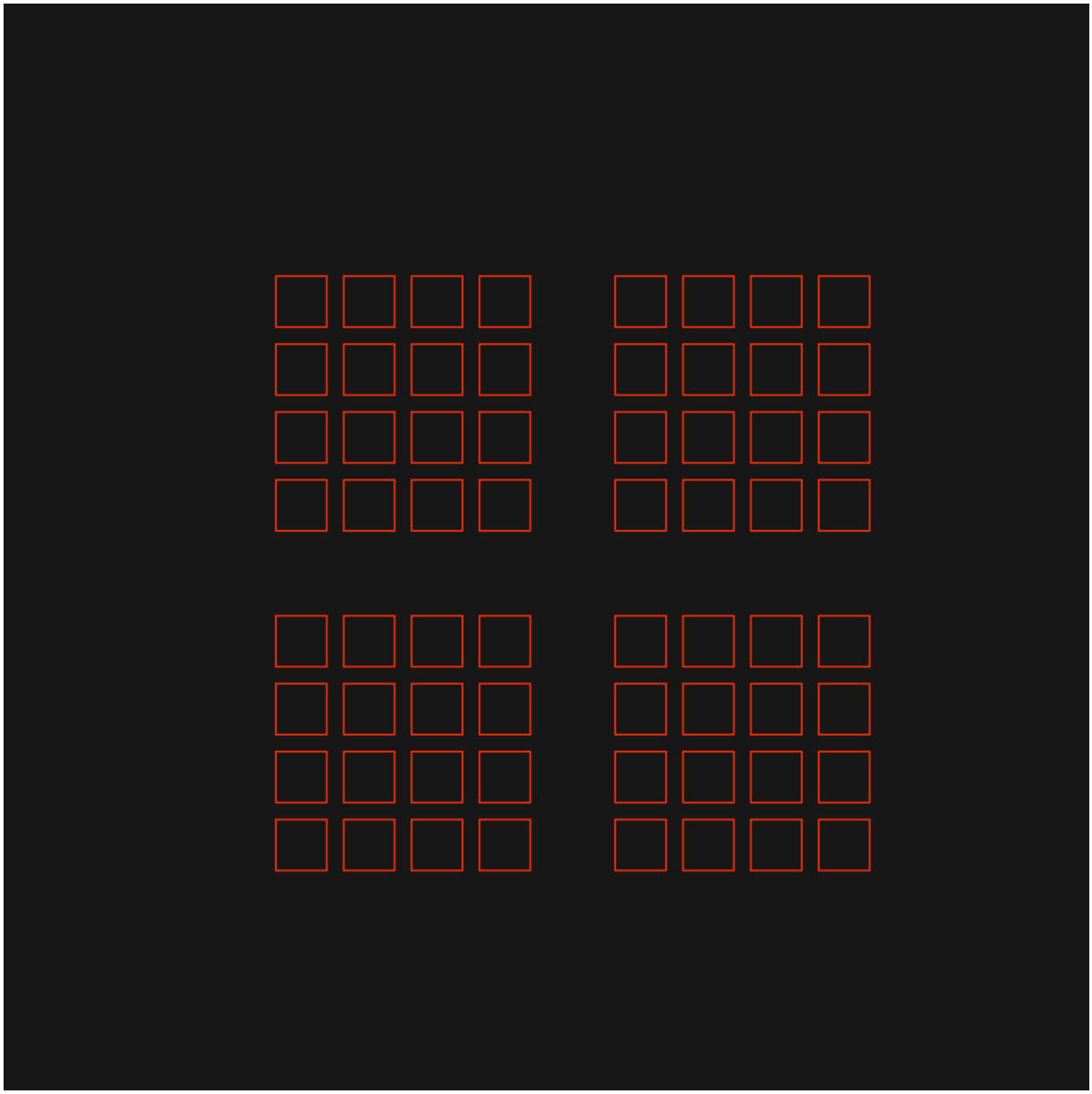
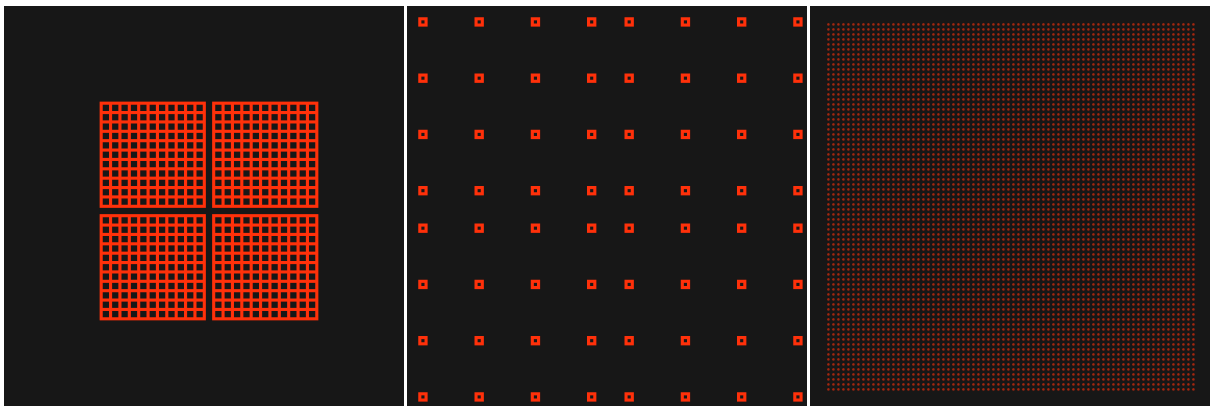


Figure 2: grillas



```
int s, sep;

void setup() {


  size(800,800);
  background(22);
  fill(22);
  strokeWeight(5);
  stroke(255,0,0);

  int real_cant = 8;
  int cant = real_cant /2;
  s = 30;
  sep = s + 10;
  for (int i=0; i< cant; i++) {
   for(int j=0; j < cant; j++) {
     rect(width/2 + sep + i * (sep * (sep/s)), height/2 + sep + j * (
        sep * (sep/s)), s,s);
     rect(width/2 - sep - i * (sep * (sep/s)), height/2 + sep + j * (
        sep * (sep/s)), s,s);
     rect(width/2 - sep - i * (sep * (sep/s)), height/2 - sep - j * (
        sep * (sep/s)), s,s);
     rect(width/2 + sep + i * (sep * (sep/s)), height/2 - sep - j * (
        sep * (sep/s)), s,s);
  } }
}
```

Repetición

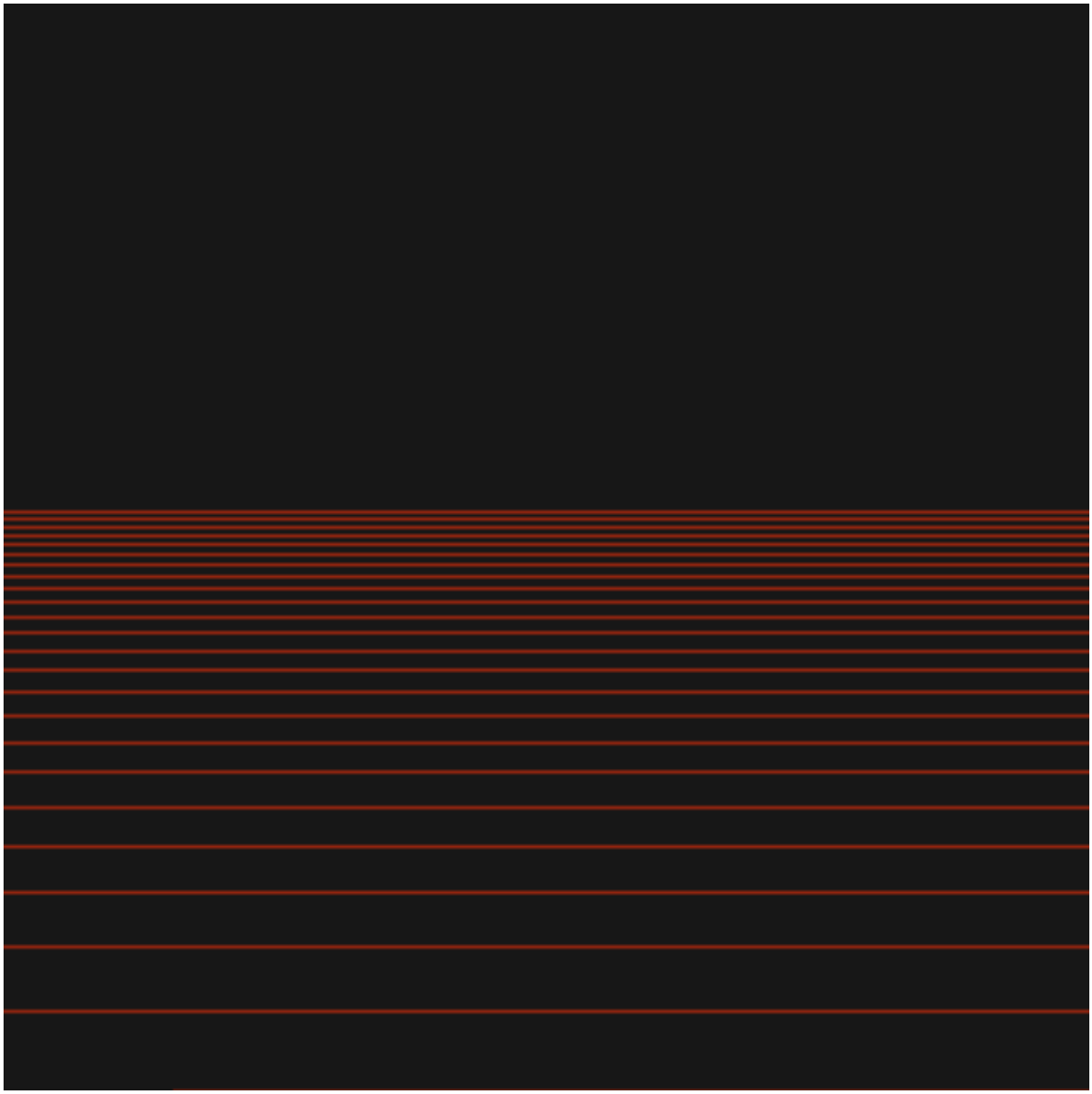
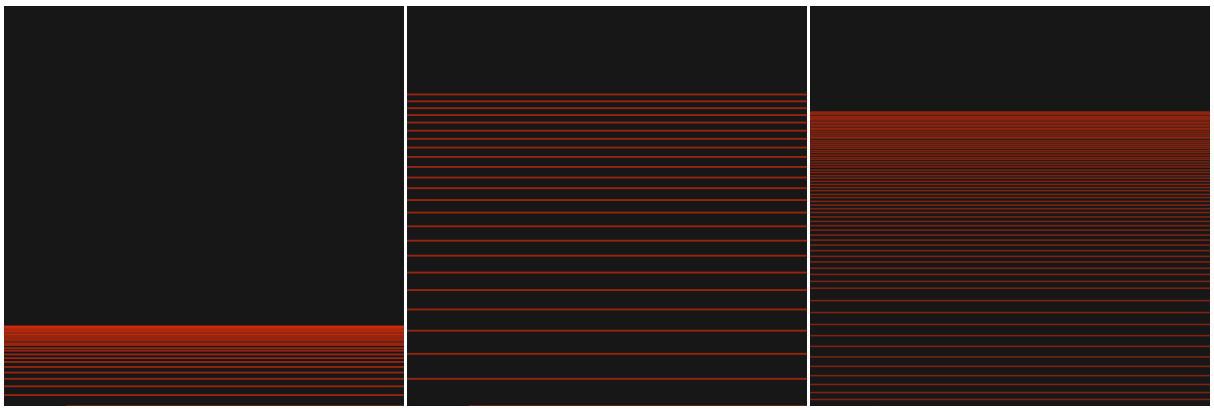


Figure 3: repetición



```
void setup() {


  size(800,800);
  background(22);
  fill(22);
  strokeWeight(5);
  stroke(255,0,0);

  int end_line = 800;
  int dist_observador_del_plano = 282;
  int obsx = end_line + dist_observador_del_plano;
  int obsy = 202;
  int step = 30;
  int vertical_x = 800;
  int altura = 480;

  //line(obsx -2, obsy-2, obsx +3, obsy+3);
  //line(obsx-2, obsy + 3, obsx+3, obsy-2);

  int baseline_y = height - altura;
  strokeWeight(2);
  line(end_line, baseline_y + altura, 100, baseline_y + altura);
  int distance = (vertical_x-100)/ step;
  float op_acumulator = 0;

  for(int i=0; i<distance; i++) {
    // marcas
    //line(100 + i* step, 200 + altura, 100 + i *step, 205 + altura);
    //lineas proyeccion
    //line(100 + i* step, 200 + altura, obsx, obsy);
```

```
        //soh cah toa
        float ad = dist_observador_del_plano + (step * (distance -i));
        float op = altura;
        float ang = tan(op / ad);
        float ad_small = (step * (distance -i));
        float op_small = ad_small * abs(atan(ang));
        //println(op_small);
        line(0,baseline_y + altura - op_small,width,  baseline_y + altura -
            op_small);
    } }
```

Isométrico

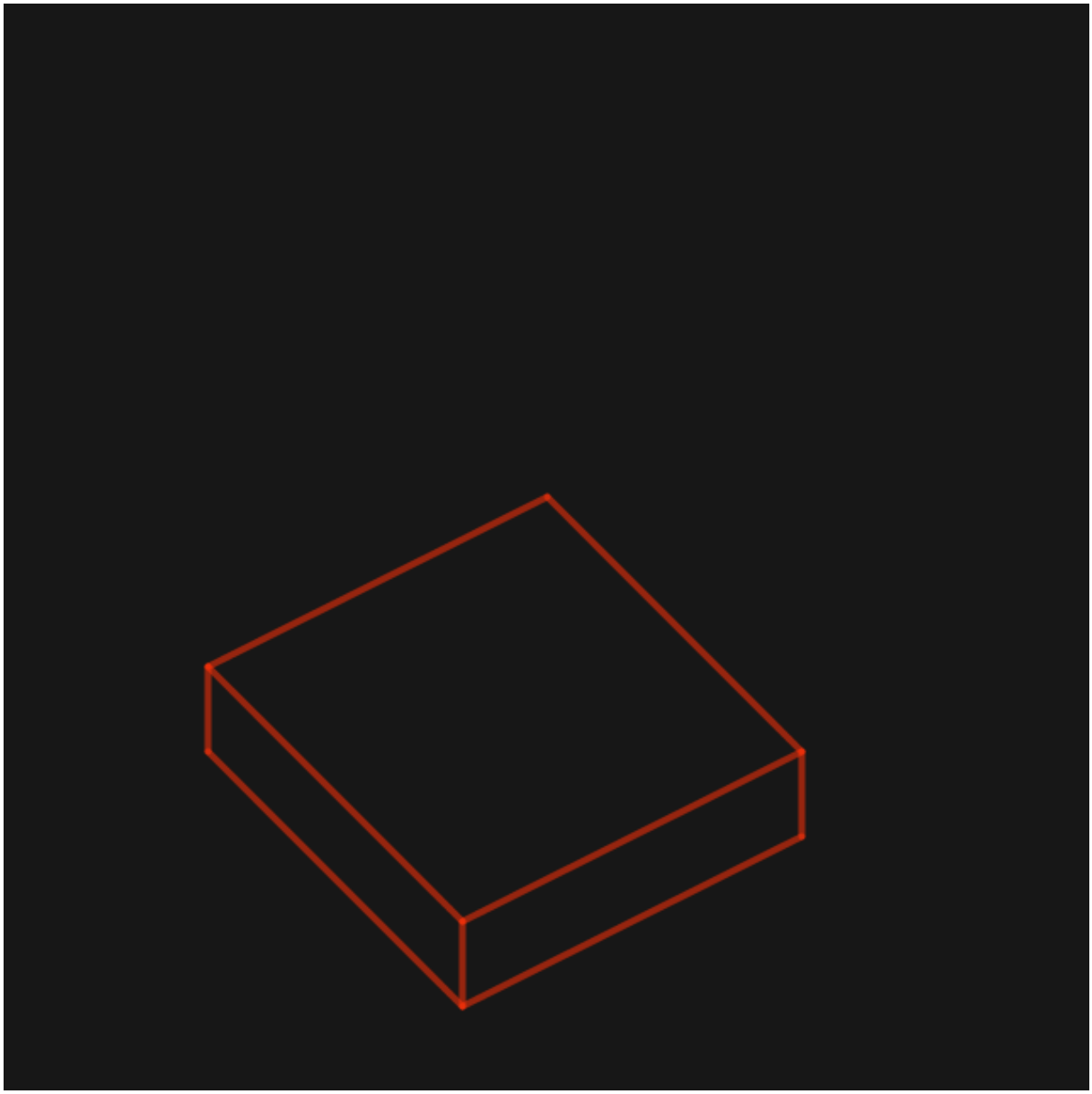
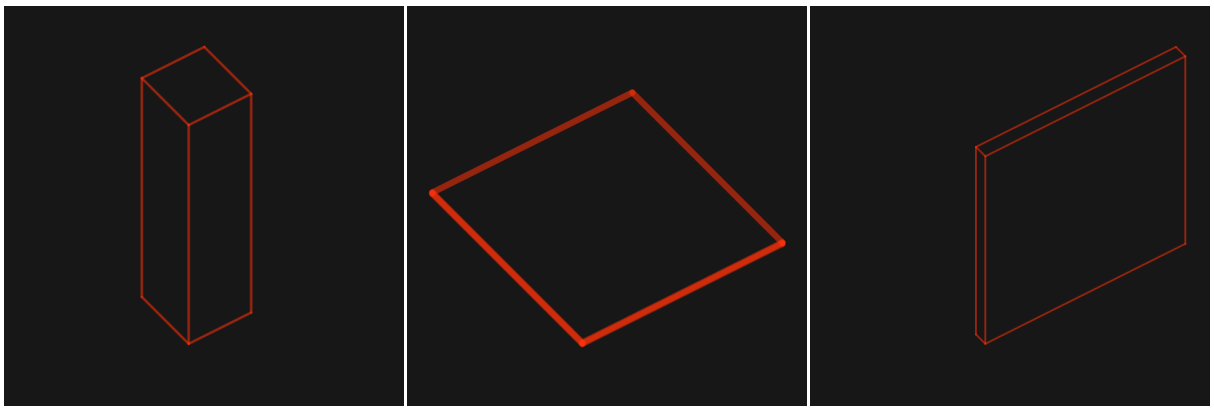


Figure 4: isométrico



```
    void setup() {

      size(800,800);
      background(22);
      fill(22);
      strokeWeight(5);
      stroke(255,0,0);


      int nx = 100;
      int ny = 100;
      int z = 50;
      int posx =width/2 - nx/2;
      int posy = height - 100;
      //baseline
      int x = -nx;
      int x2 = x*2;
      int y = -ny - (ny / 2);
      line(y+posx,y+posy, posx,posy);
      line(posx,posy, -x2+posx,x+posy);
      line(y+posx,y+posy,-x2+y+posx,x+y+posy);
      line(-x2+y+posx,x+y+posy,-x2+posx,x+posy);
      //abajo
      line(y+posx,y+posy+z, posx,posy+z);
      line(posx,posy+z, -x2+posx,x+posy+z);
      //verticales
      line(y+posx,y+posy, y+posx,y+posy+z);
      line(posx, posy, posx, posy+z);
      line(-x2+posx,x+posy, -x2+posx,x+posy+z);

      }
```

Recursivo

Figure 5: árbol en base a recursion

```
float direccionC;
float direccionP;

void setup() {

  size(800,800);
  background(22);
  fill(22);
  strokeWeight(5);
  stroke(255,0,0);

  int tPunto =11;
  float direccionC ;
  float direccionP;
  int snap ;
  direccionC = 0.009;
  direccionP = radians(70);
  snap = 0;
  semilla(tPunto,300, width/2, height);
}

void semilla(float tPunto, float angulo, float x, float y) {
if (tPunto > 0.5) {
   float r = random(1.0);
   if (r > 0.03 && r < 0.1 ){
   ellipse(x,y, tPunto, tPunto);
   int nuevox = int(x + cos(angulo) * tPunto);
   int nuevoy = int(y + sin(angulo) * tPunto);
   semilla(tPunto * 0.8, angulo - direccionC, nuevox, nuevoy);
   semilla(tPunto * 0.6, angulo - direccionP, nuevox, nuevoy);
   semilla(tPunto * 0.6, angulo + direccionP, nuevox, nuevoy);
```

```
      }
      else if (r> 0.03) {
      //point(x,y);
      ellipse(x,y, tPunto, tPunto);
      int nuevox = int(x + cos(angulo) * tPunto);
      int nuevoy = int(y + sin(angulo) * tPunto) ;
      semilla(tPunto * 0.99, angulo - direccionC, nuevox, nuevoy);
       } else {
      ellipse(x,y, tPunto, tPunto);
      int nuevox = int(x + cos(angulo) * tPunto);
      int nuevoy = int(y + sin(angulo) * tPunto);
      semilla(tPunto * 0.8, angulo - direccionC, nuevox, nuevoy);
      semilla(tPunto * 0.6, angulo - direccionP, nuevox, nuevoy);
   }
   } }
```

Trazado

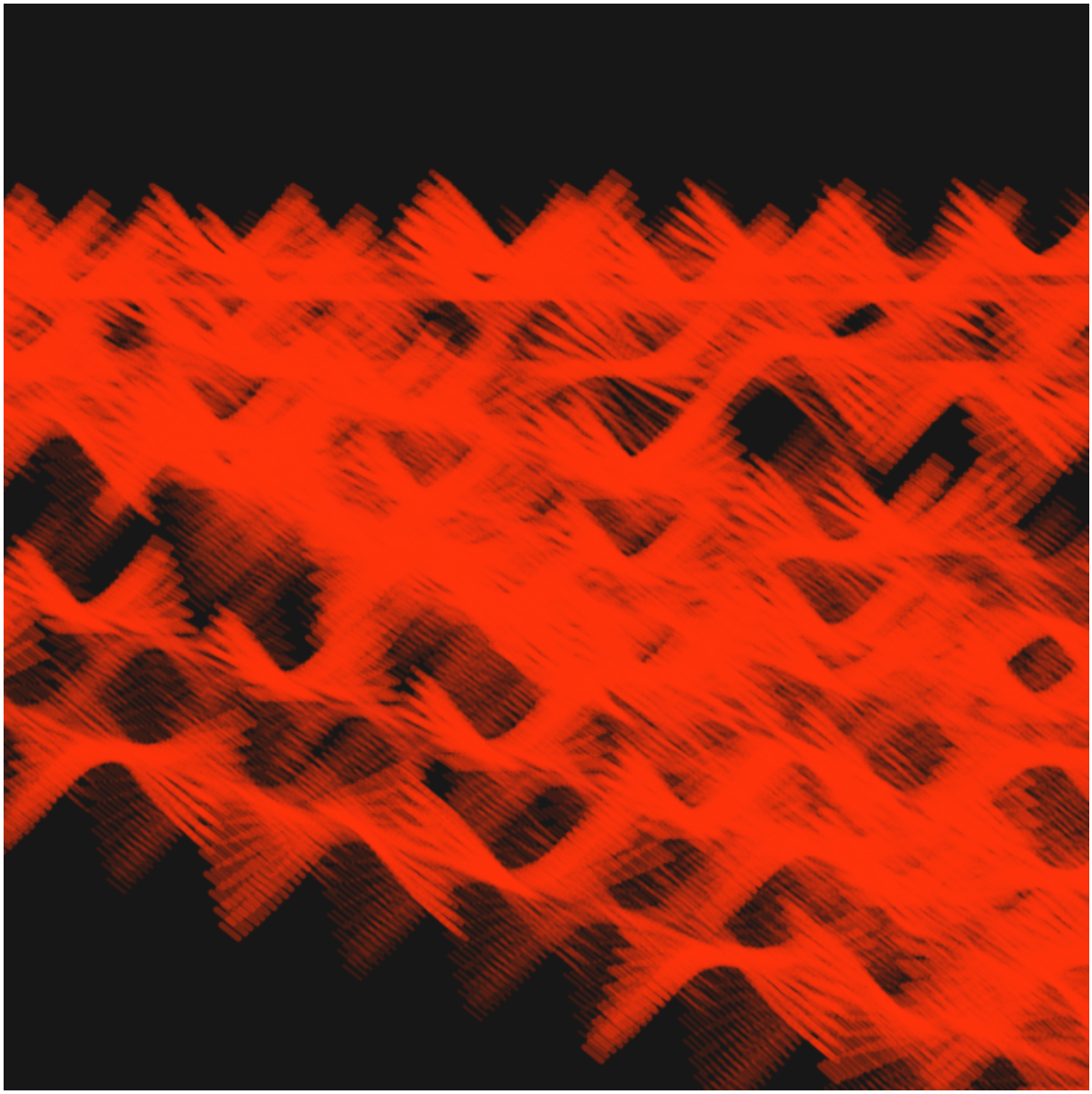
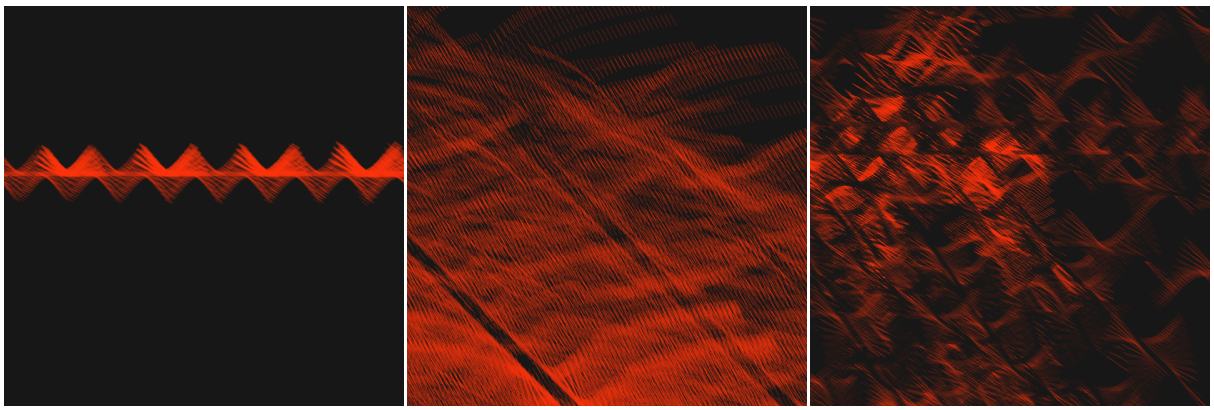


Figure 6: trazado



```
int num = 0;
int dir = 2;
int cant = 12;
int step = 0;
Wing[] pajaros;

pajaros = new Wing[cant];
 for (int i=0; i<cant; i++) {
   int rand_x = int (random(-600, 300));
   int rand_y = int (random(150, 300));
   int rand_size = int (random(12, 16));
   pajaros[i] = new Wing(rand_x, rand_y, rand_size);
 }

void draw() {
 for (int i=0; i<cant; i++) {
   pajaros[i].snapshot();
   pajaros[i].fly();
   pajaros[i].flyaway();
   pajaros[i].display();
} }

class Wing {
      int randStroke = 0;
      int r = int(random(200, 255));
      int g = int(random(200, 255));
      int b = int(random(30, 255));
      int posx;
      int posy;
      float size;
      int num = int(random(-size/2, size/2));
```

```
  int dir = 1;
  float dir_flyaway_x = random(2, 5);
  float dir_flyaway_y = random(0, 2);
  Wing(int posx_, int posy_, int size_) {
    posx = posx_;
    posy = posy_;
    size = size_;
}
  void fly() {
    num = num + dir;
  if ( num >= size/3 || num <= -size/3) {
       dir = dir * -1;
} }

    void flyaway() {
    posx = round(posx + dir_flyaway_x);
    posy = round(posy + dir_flyaway_y);
    size = size + 0.01;
  }
  void display() {
      for (int i=0; i< size; i++) {
      int r = 90 ;
      float h = 0.75;
      float ang = asin(h / r) * i * num;
      int m = int(atan(ang) * r) ;
      line(posx - 10- i * size/5,posy - m,posx - i * size/5, posy +
          size/2 - m);
      line(posx - 10 +size + i * size/ 5,posy - m,posx + size + i *
          size/5, posy + size/2 - m);
 } }

void snapshot() {
     randStroke = randStroke + 1;
  if (randStroke % 40 == 2 ) {
  //stroke(r, g, b, 220);
  stroke(255, 50, 10, 100);
  strokeWeight(4);
}
```

Imágen

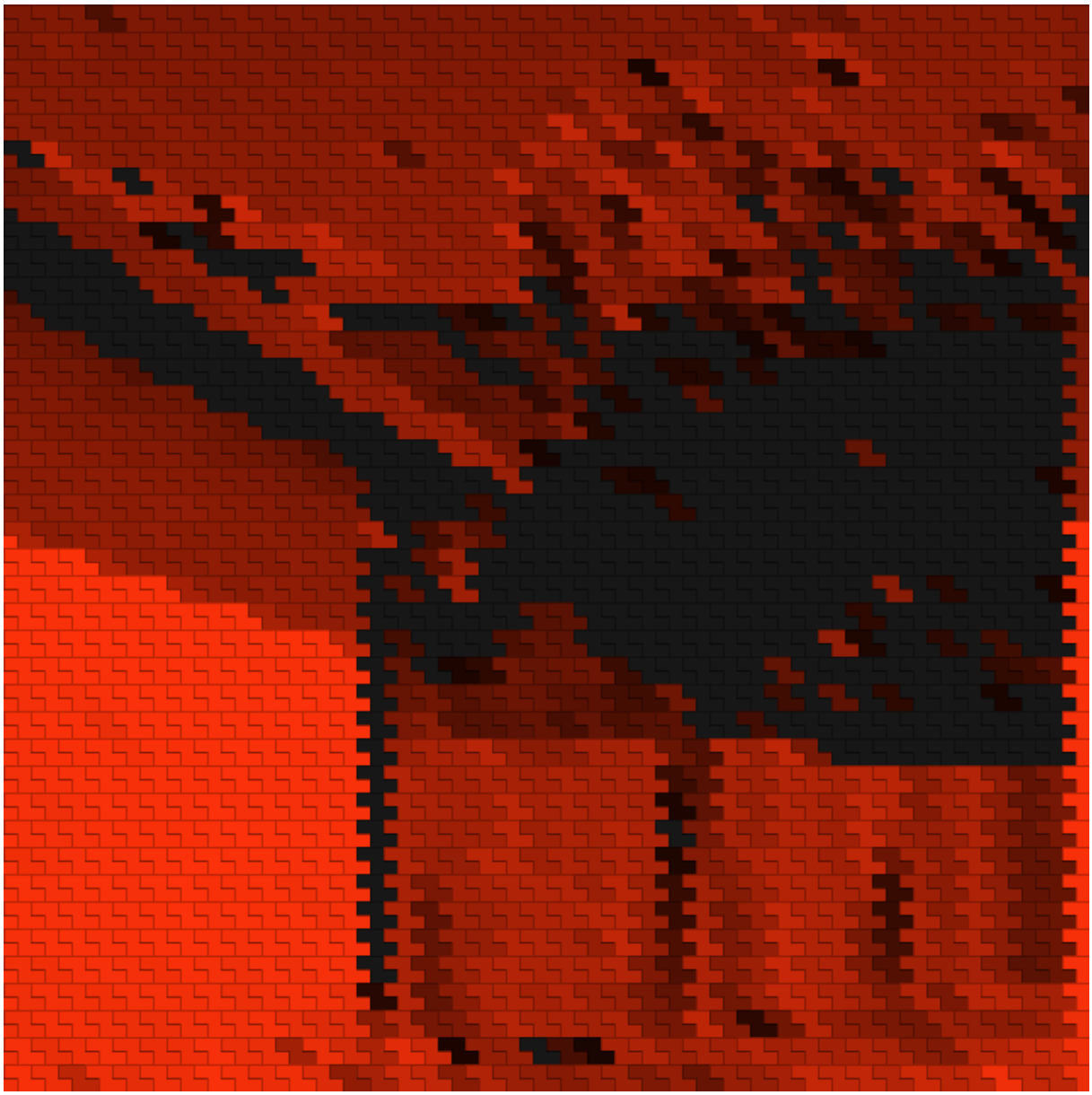
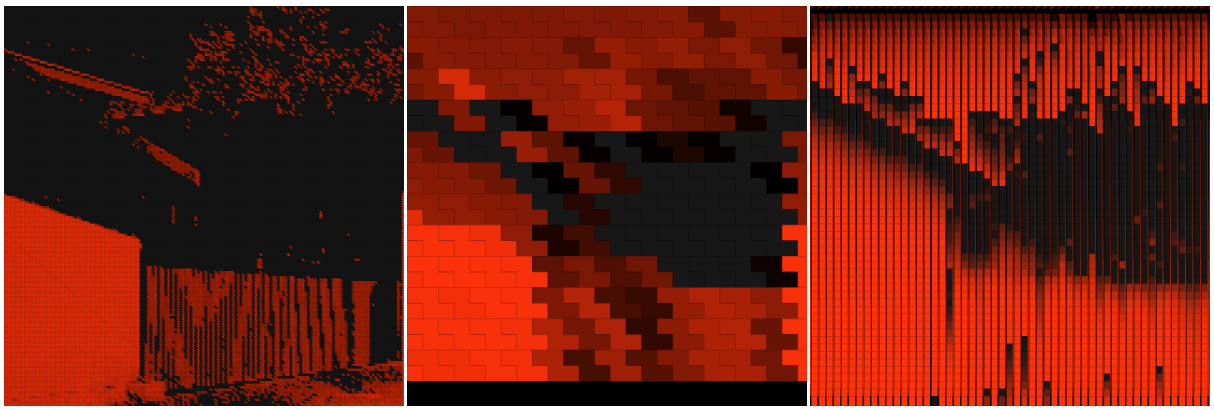


Figure 7: cambio en los pixeles



```
PImage img;

void setup() {

 //idealmente el mismo tamaño de la imagen
 size(1024,1024);

 img = loadImage("your_image.jpg");
 int x=0;
 int y=0;
 int scale = 8;
 for(int j=0; j<height/(2*scale); j++) {
   y = j*2*scale;
  for(int i=0; i<width/(2*scale)+2*scale; i++) {
 x = (i*2*scale)-2*scale;
 int loc = x + 2*scale + y * img.width;
 float r = red(img.pixels[loc]);
 float g = green(img.pixels[loc]);
 float b = blue(img.pixels[loc]);
 fill(r, g,b);
 stroke(r,g,b);

 beginShape();
 vertex(x,y);
 vertex(2*scale+x,y);
 vertex(2*scale+x,1*scale+y);
 vertex(3*scale+x,1*scale+y);
 vertex(3*scale+x,2*scale+y);
 vertex(1*scale+x,2*scale+y);
 vertex(1*scale+x,1*scale+y);
 vertex(x,1*scale+y);
```

```
    endShape(CLOSE);
  } }
  }
```

Ciclo

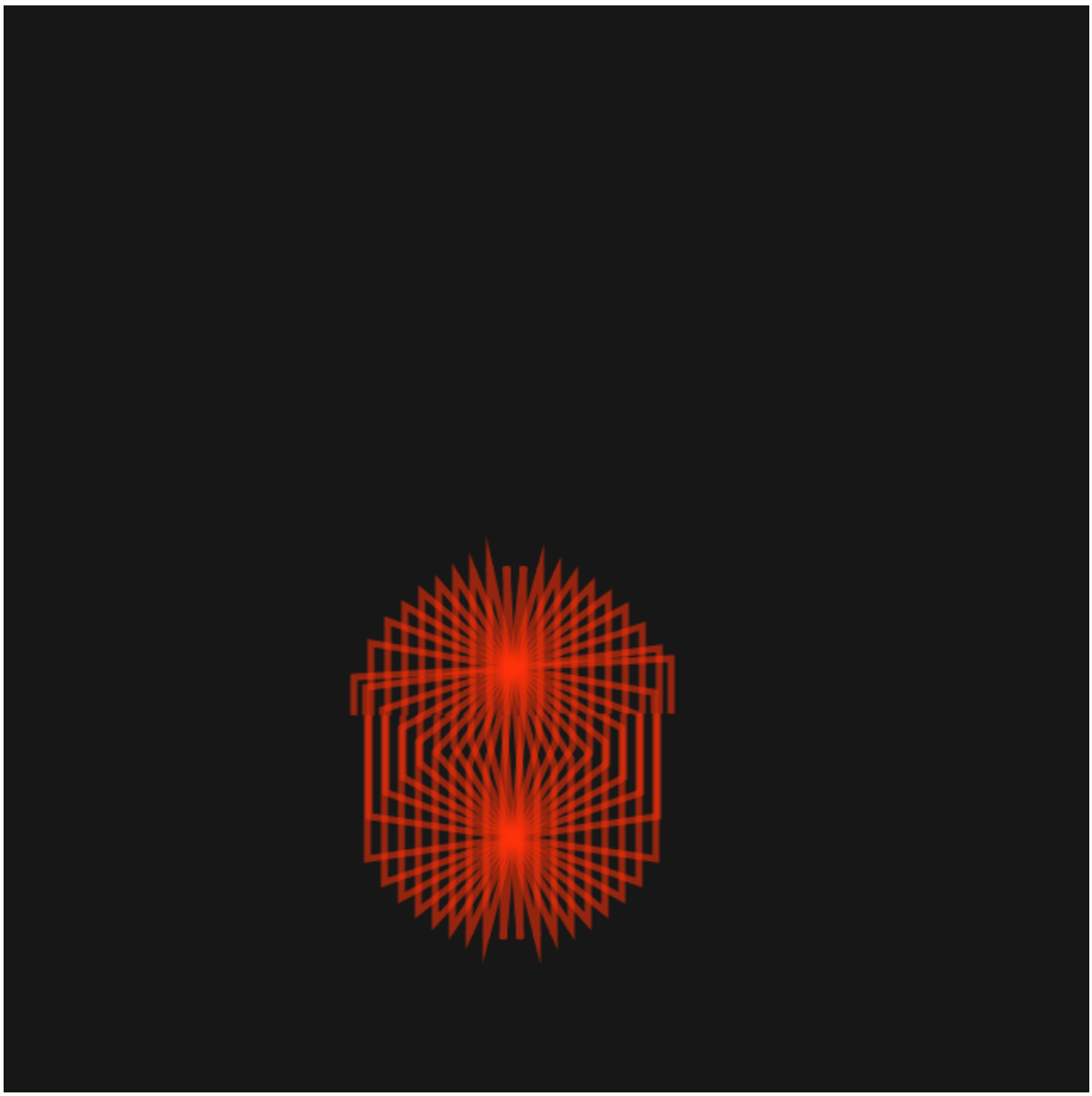
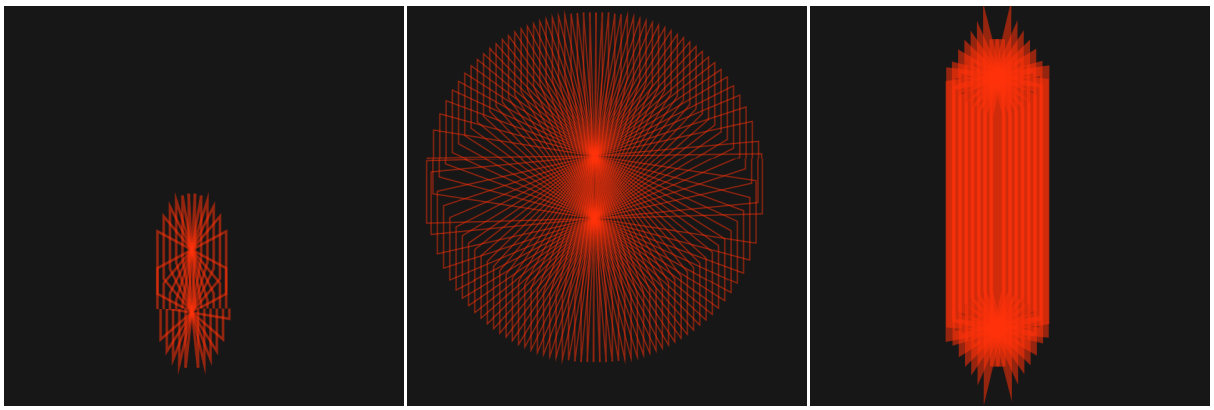


Figure 8: ciclo



```
float n = 0;
float aumento = 0.1;
float base_left = 100;
float base_right = 100;
void setup() {
  size(640,640);
  background(23);
  noFill();
//fill(255, 50, 10, 140);
  stroke(255, 50, 10, 140);
strokeWeight(4);
  frameRate(12);
}
void draw() {
  background(23);
  base_left = base_left  - aumento;
  base_right = base_right + aumento;
 for (float i=- base_left; i < base_right; i+= 1) {
    float altura = 10 * i;
    float radio = 100 + n;
    float ang = asin(altura / radio);
    float x = cos(ang) * radio;
    int posy = 350;
    int posx = 300;
    // restriccion angulos NaN y excesivos
    if ((ang > 0 || ang < 0) && (ang >= - 1.05 && ang <= 1.25 )) {
  beginShape();
    vertex(posx + (10 * i) , posy + x);
    vertex(posx + (10 * i) , posy + x + 100);
    vertex(posx + (10 * -i) , posy + 80 - x + 100);
    vertex(posx + (10 * -i) , posy + 80 - x);
```

```
        endShape(CLOSE);
    } }
    }
```

Seguir dirección

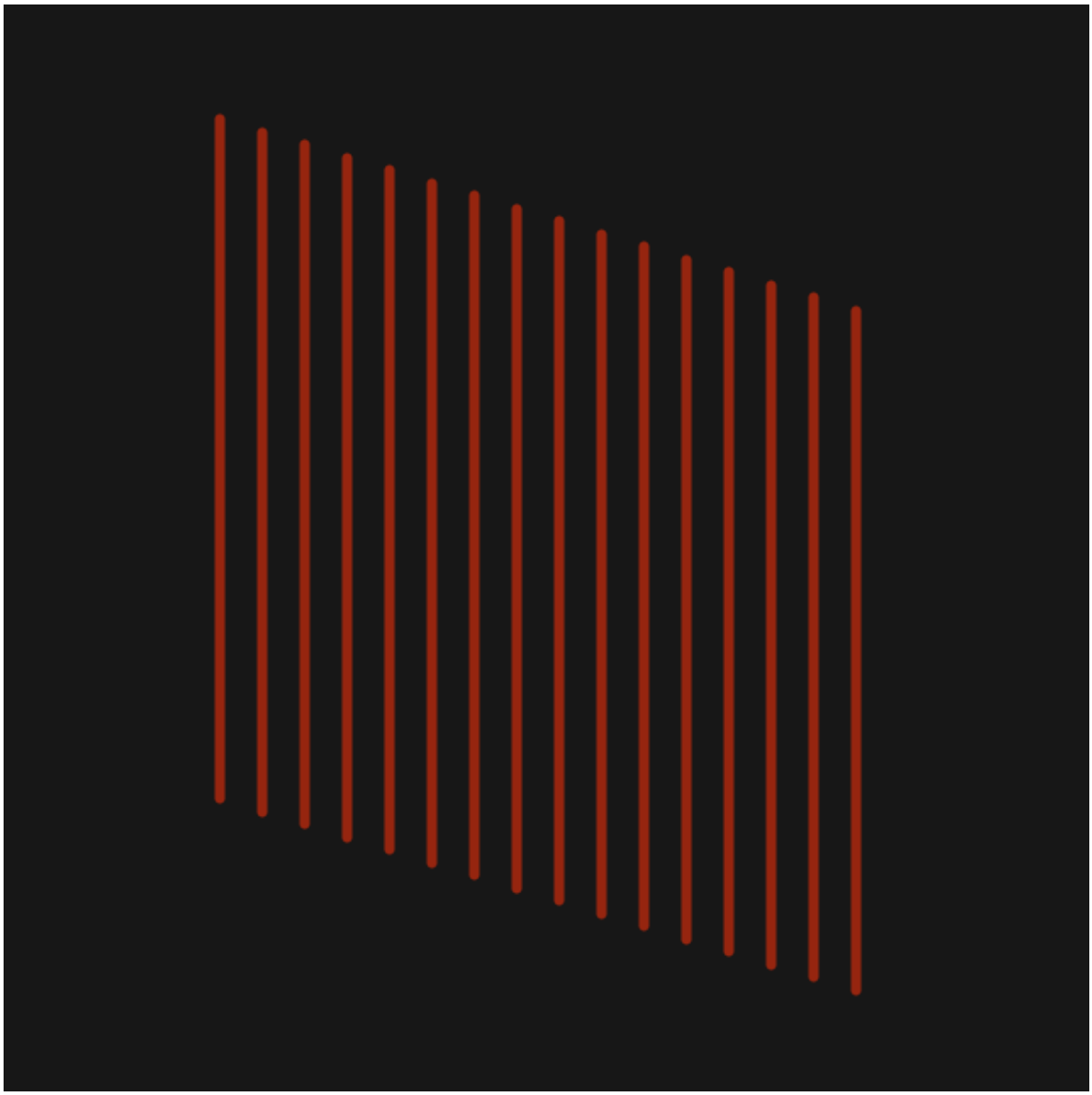
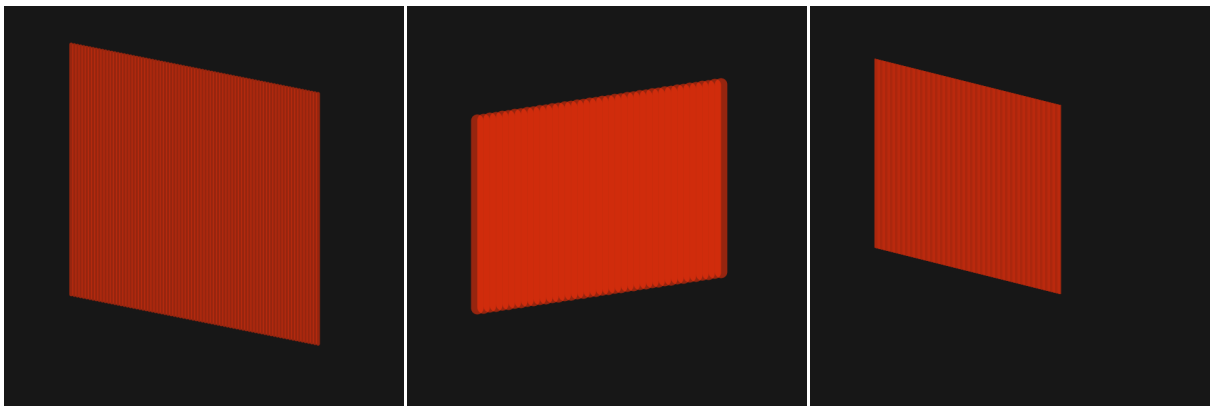


Figure 9: dirección diagonal



```
    void setup() {


      size(800,800);
      background(22);
      fill(22);
      strokeWeight(5);
      stroke(255,0,0);


      float x = 2.0;
      float y = 120.0;
      float separacion_x = 25.0;
      int limite = 400;
      int px = 100;
      int altura = 400;
      float desplazamiento_y = 15.0;


      void draw() {
       if ( x >= limite ) {
       x = limite;
      } else {
         x = x + separacion_x ;
         y = y + desplazamiento_y;
         line(px + x ,y/2.0 , px + x , altura +
      y/2.0 );
      }
      }
```

Fuentes

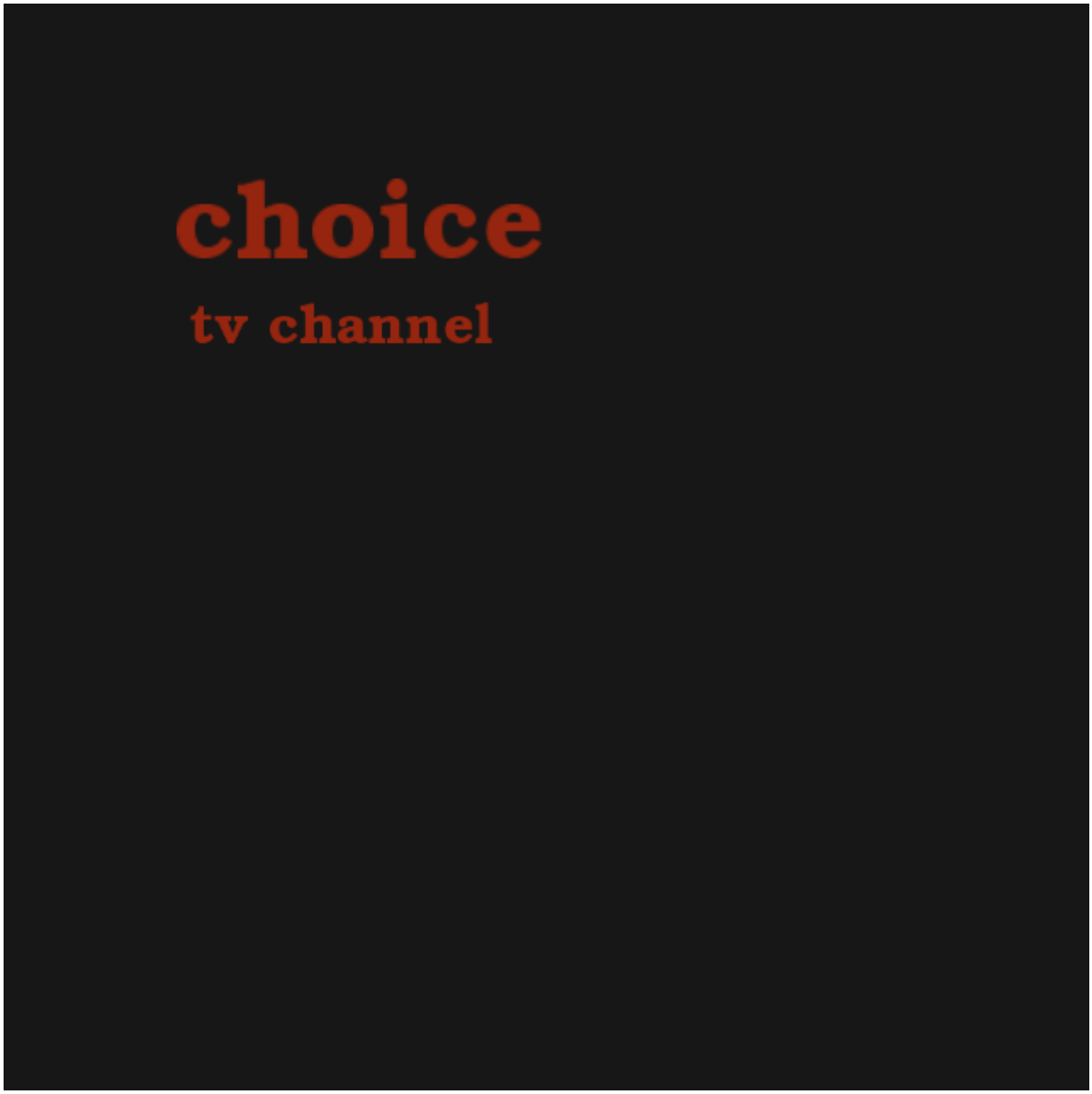


Figure 10: fuente

```
    PFont font;

    void setup() {

```

```
      size(800,800);
      background(22);
      fill(255,0,0);
      strokeWeight(6);
      stroke(255,0,0);


      font = loadFont("ArialMT-48.vlw");
      //String[] fontList = PFont.list();
      //println(fontList);
      textFont(font, 64);
      text("choice", 100, 150);
      textFont(font,32);
      text("life is", 110, 200);

    }
```