

Falling Balls

CODE

```
ArrayList<Ball> balls;
int ballWidth = 48;

void setup() {
  size(640, 360);
  noStroke();
  balls = new ArrayList<Ball>(); // Create an empty ArrayList stores
  Ball objects
  balls.add(new Ball(width/2, 0, ballWidth)); // Start by adding one
  element
}

void draw() {
  background(255);
  for (int i = balls.size()-1; i >= 0; i--) {
    // An ArrayList doesn't know what it is storing so we have to cast
    the object coming out
    Ball ball = balls.get(i);
    ball.move();
    ball.display();
    if (ball.finished()) { // Items can be deleted with remove()
      balls.remove(i);
    }
  }
}
```

```
/**
 * ArrayList of objects
 * by Daniel Shiffman.
 *
 * This example demonstrates how to
 * use a Java ArrayList to store
 * a variable number of objects. Items
 * can be added and removed
 * from the ArrayList.
 *
 * Click the mouse to add bouncing
 * balls.
 */
```

```
// With an array, we say balls.length,
// with an ArrayList, we say balls.size()
// The length of an ArrayList is
// dynamic
// Notice how we are looping through
// the ArrayList backwards
// This is because we are deleting
// elements from the list
```

```
// Adds a new ball to the ArrayList
// (by default to the end)
```

```
void mousePressed() { balls.
  add(new Ball(mouseX, mouseY,
  ballWidth));
}
```

```
// BALL OBJECT
// Simple bouncing ball class
```

```
class Ball {
  float x;
  float y;
  float speed;
  float gravity;
  float w;
  float life = 255;

  Ball(float tempX, float tempY,
  float tempW) {
    x = tempX;
    y = tempY;
    w = tempW;
    speed = 0;
    gravity = 0.1;
  }
}
```

```
void move() {
  // Add gravity to speed
  speed = speed + gravity;
  // Add speed to y location
  y = y + speed;
  // If square reaches the bottom
  // Reverse speed
  if (y > height) {
    speed = speed * -0.8;
    y = height;
  }
}

boolean finished() {
  life--; // Balls fade out
  if (life < 0) {
    return true;
  } else {
    return false;
  }
}

void display() {
  fill(0,life); // Display the circle
  //stroke(0,life);
  ellipse(x,y,w,w);
}
}
```

