

CMSC 117: Introduction to Computing: Interactive Systems

Assignment 4: Game II

Due by Class (1:30pm) November 7, 2012

This assignment asks you to build upon the simple bouncing-ball *game* from earlier in the semester. First, you should create a `Paddle` object, similar to the `Ball` class in this new version. Second, you should add a new type of object to your game by creating a new class. You should reflect on how your new object improves the game; the game might be more fun to play, or you might do something with the game (e.g. provoke empathy or play a prank).

You should comment on the following aspects of the new game:

- the static appearance of your object;
- the dynamic behavior of the object;
- the interaction between the user and the object;
- at the beginning of your code, include a comment with your name, date, email, and your reflection.

Learning Objectives

- Modify an existing program.
- Employ object-oriented design.

Deliverable

Submit an electronic copy of your sketch via moodle: either a zip file of your Processing sketch named **game2_NAME.zip** and submit the URL of your sketch to moodle on the forum. If you use <http://bard117f12.sketchpad.cc> please begin by cloning the ball bouncing sketch here:

<http://bard117f12.sketchpad.cc/sp/pad/view/hImhCdQfhU/latest>

```

/*
 * Skeleton of a ball bouncing /game/.
 *
 * Keith O'Hara <kohara@bard.edu>
 * Oct 2012
 */
Ball ball;

float paddle_x;
float paddle_step;
float paddle_size = 15;

void setup() {
    size(500, 200);
    smooth();

    paddle_x = width/2;
    paddle_step = 0;
    ball = new Ball();
}

void draw() {
    background(196);

    // move paddle
    paddle_x = paddle_x + paddle_step;

    // draw paddle
    stroke(24);
    fill(64);
    rect(paddle_x, height-paddle_size, paddle_size*3, paddle_size);

    ball.move();
    ball.show();
}

void keyPressed() {
    if (keyCode == LEFT) {
        paddle_step = -3;
    }
    else if (keyCode == RIGHT) {
        paddle_step = 3;
    }
}

void keyReleased() {
    paddle_step = 0;
}

class Ball {

    float x, y;
    float x_step, y_step;
}

```

```

float r = 5;
57
Ball() {
58
59
    x = random(0, width);
60
    y = random(0, height/2);
61
    x_step = random(-3, 3);
62
    y_step = random(1, 3);
63
}
64

void move() {
65
66
    // is the ball hitting the right or left wall?
67
    if (x - r < 0 || x + r > width) {
68
        x_step = -x_step;
69
    }
70
71
    // is the ball hitting the top or bottom wall?
72
    if (y - r < 0 || y + r > height) {
73
        y_step = -y_step;
74
    }
75
76
    // move ball by ball_x_step and ball_y_step
77
    x = x + x_step;
78
    y = y + y_step;
79
}
80
81

void show() {
82
    //draw ball
83
    noStroke();
84
    fill(196, 0, 0);
85
    ellipse(x, y, r*2, r*2);
86
}
87
}
88

```