

```
1 import java.util.Random;
2
3 public class Box {
4
5     public enum Direction {up, down, left, right}
6
7     private Direction[] direction = Direction.values();
8     private Direction current;
9     private String name;
10    private int life;
11    private int x;
12    private int y;
13    private int maxX;
14    private int maxY;
15
16
17    public int getLife() {
18        return life;
19    }
20
21    public int getX() {
22        return x;
23    }
24
25    public int getY() {
26        return y;
27    }
28
29    public Box(int name, int maxX, int maxY) {
30
31        Random rand = new Random();
32        int i = rand.nextInt(4);
33        this.current = direction[i];
34        this.name = String.valueOf(name);
35        this.maxX = maxX;
36        this.maxY = maxY;
37        this.x = rand.nextInt(maxX);
38        this.y = rand.nextInt(maxY);
39        life = 1;
40        System.out.println("Box" + name + "is at (" + x +
41            ", " + y + ")");
42    }
43
44    public void move() {
45        if (current == Direction.up) {
46            y++;
47            System.out.println("Box" + name + " is moved x
48                : " + x + " y: " + y);
49            if (y >= maxY) {
50                current = Direction.down;
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```

49         }
50     } else if (current == Direction.down) {
51         y--;
52         System.out.println("Box" + name + " is moved x
53         :\" + x + \" y:\" + y);
54         if (y <= 0) {
55             current = Direction.up;
56         }
57     } else if (current == Direction.left) {
58         x--;
59         System.out.println("Box" + name + " is moved x
60         :\" + x + \" y:\" + y);
61         if (x <= 0) {
62             current = Direction.right;
63         }
64     } else {
65         x++;
66         System.out.println("Box" + name + " is moved x
67         :\" + x + \" y:\" + y);
68         if (x >= maxX) {
69             current = Direction.left;
70         }
71     }
72 }
73
74 public void hitBox() {
75     life = 0;
76     if (current == Direction.up) {
77         System.out.println("Box" + name + " is hit
78         another at (\" + x + \",\" + y + \")");
79         current = Direction.down;
80     } else if (current == Direction.down) {
81         System.out.println("Box" + name + " is hit
82         another at (\" + x + \",\" + y + \")");
83         current = Direction.up;
84     } else if (current == Direction.left) {
85         System.out.println("Box" + name + " is hit
86         another at (\" + x + \",\" + y + \")");
87         current = Direction.right;
88     } else {
89         System.out.println("Box" + name + " is hit
90         another at (\" + x + \",\" + y + \")");
91         current = Direction.left;
92     }
93 }
94
95 public void hitEdge() {
96     if (current == Direction.up) {
97         System.out.println("Box" + name + " is hit edge
98         at (\" + x + \",\" + y + \")");

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91         current = Direction.down;
92     } else if (current == Direction.down) {
93         System.out.println("Box" + name + " is hit
edge at (" + x + "," + y + ")");
94         current = Direction.up;
95     } else if (current == Direction.left) {
96         System.out.println("Box" + name + " is hit
edge at (" + x + "," + y + ")");
97         current = Direction.right;
98     } else {
99         System.out.println("Box" + name + " is hit
edge at (" + x + "," + y + ")");
100        current = Direction.left;
101    }
102 }
103 }
104
```

```
1 import java.util.ArrayList;
2
3 public class game {
4     ArrayList<Box> boxes;
5     private static int count = 0;
6
7
8     private static boolean isHit(ArrayList<Box> b) {
9         boolean result = false;
10        for (int i = 0; i <= 15; i++) {
11            for (int j = 0; j <= 15; j++) {
12                Box temp = b.get(i);
13                Box temp1 = b.get(j);
14                if (i != j) {
15                    if (temp.getX() == temp1.getX()) {
16                        if (temp.getY() == temp1.getY()) {
17                            temp.hitBox();
18                            result = true;
19                        }
20                    }
21                }
22            }
23        }
24        return result;
25    }
26
27    private static void isHitEdge(ArrayList<Box> b){
28        for (int i = 0; i <= 15; i++) {
29            Box temp = b.get(i);
30            if(temp.getY() == 0){
31                temp.hitEdge();
32            }
33            if(temp.getX() == 0){
34                temp.hitEdge();
35            }
36        }
37    }
38 }
39
40 private static boolean checkLife(ArrayList<Box> b){
41     boolean result = true;
42     for (int i = 0; i <= 15; i++){
43         Box temp = b.get(i);
44         if(temp.getLife() == 1){
45             return false;
46         }
47     }
48     return result;
49 }
50
```

```
51     public static void main(String[] args) {
52         ArrayList<Box> boxes = new ArrayList<>();
53         for (int i = 0; i <= 15; i++) {
54             Box temp = new Box(i, 16, 16);
55             boxes.add(temp);
56         }
57
58         while (checkLife(boxes) == false && (count <= 500)
59 ) {
60             for (int i = 0; i < boxes.size(); i++) {
61                 Box temp = boxes.get(i);
62                 temp.move();
63                 if(isHit(boxes) == true){
64                     count++;
65                 }
66                 isHitEdge(boxes);
67                 System.out.println("count = " + count);
68             }
69             if(checkLife(boxes) == true){
70                 System.out.println("boxes' life is 0");
71             }
72             if(count >= 500){
73                 System.out.println("overlapping more than 500
74 times");
75             }
76             System.out.println("GAME OVER");
77         }
78     }
```