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Mini-project Programming

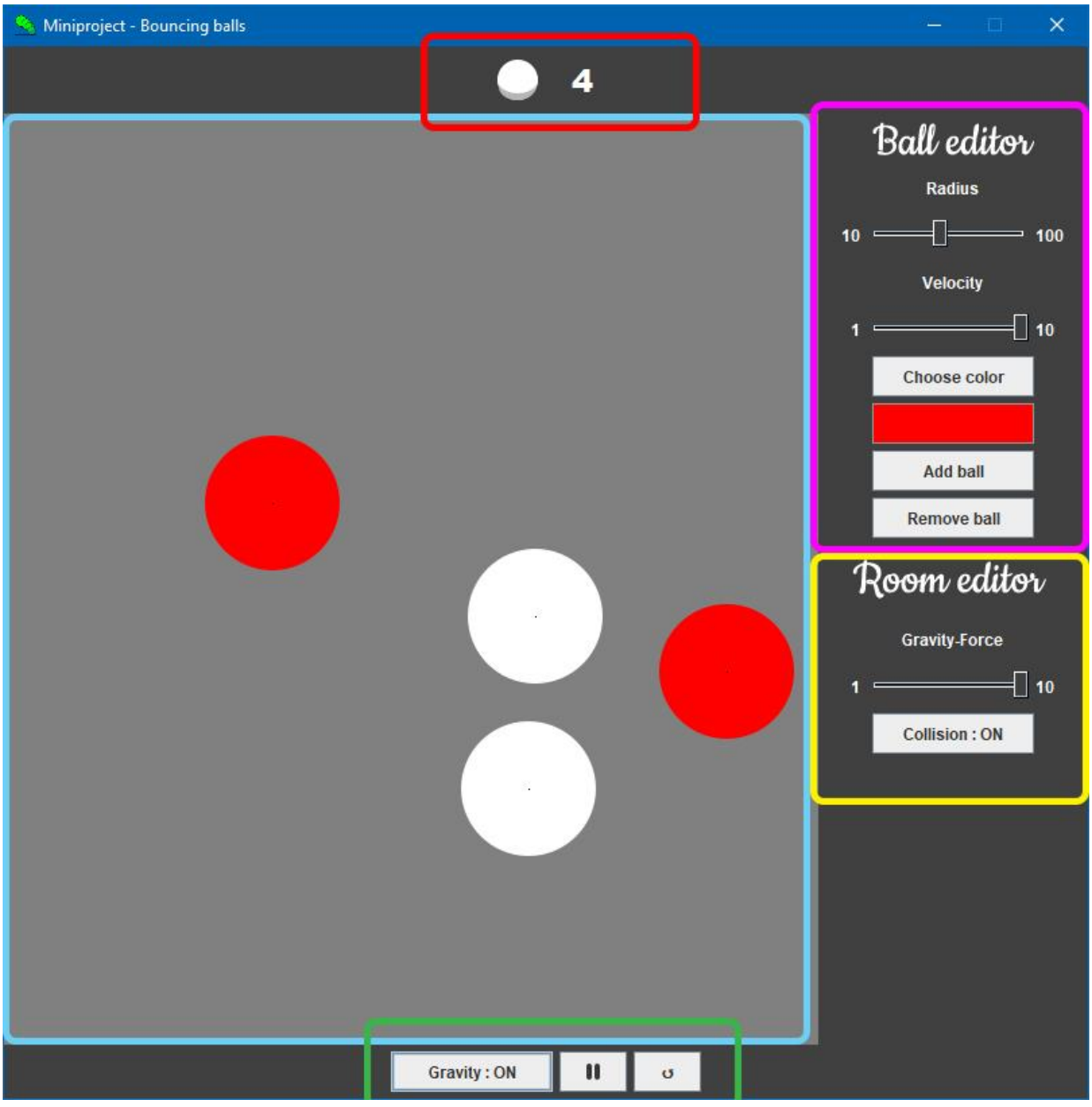
The end-assignment in this programming course was to develop a bouncing ball in a simulation program.

What tasks I worked on and tried to solve:

- Part 1
- Part 2
    - 2.1
    - 2.2 (GUI)
    - 2.3 (Energy loss, hitting ball against ball and wall against ball)

Program

The program is divided into four different panels where the user will interact with the software in specific way.



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Red: A counter of the number of balls in the room

Magenta: In this area is the tools for editing the ball setting. When adding a ball, the settings on the screen will be applied on that specific ball object

Yellow: The room editor affects the environment for all the balls. Here you can apply collision and change the gravitation-force.

Blue: This is the panel where the balls will bounce and were the physics, forces will be applied. It is the viewing area of the simulation.

Green: Here you can turn on and off the gravity, pause and play, and reset the simulation.

How to use it:

Part 1

To recreate this scenario, add a ball. It will begin to collide with the walls. Next you may activate gravity. To activate the gravity, press the gravity button found in the (**Green)** area**.** Gravity should now be in active, observe that friction is added on the floor!

Part 2

2.1:

Press on the collision button found in (**Yellow)** area. Add the number of balls you want. Turn on gravity. Try to fill the room with balls, a maximum ball dialog message will appear.

2.2:

Press on different buttons in the application to give different colors, sizes, and speeds on the balls. You can reset the frame with the ↺ button. You can pause the frame and resume it again.

2.3:

The energy losses are already applied on the ground and on ball with ball collision. Try with smaller number of balls to see it in action

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Methods in the code corresponding to the parts in the assignment:

Part 1:

You will find the code corresponding to this in the Ball.java and Room.java class. The panel setup is found in simulator class.

Ball.java

moveBall() – row 42

checkFloorRoof() – row 120

Room.java

gameloop() – row 98

paint() – 205

Part 2

2.1 & 2.3: It is accessible in the Simulator.java class where the whole class is responding on the assignment.

Ball.java

moveBall() – row 42, gravity – row 61

isIntersecting() – row 98

Room.java

maximumAreaReached() – row 60

isIntersecting() – row 138

getCollision() – row 148

paint() – 205

2.2: It is accessible in the Simulator.java class where the whole class is responding on the assignment.

Methods directly connected with buttons is from:

Room.java

addBall() – row 23

subtractBall()- row 82

resetRoom() – row 91

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Known issues

- The collision between the balls is working, but in combination with the gravity and when balls are stacking on each other at the ground is not working correctly. To avoid this problem, you need to activate gravity and collision then only add balls, so the floor is not filled.