

## Part 1: Bouncing Ball on Walls

Go to <https://trinket.io/home> and Login and select New Trinket > GlowScript.

1. Create a new program and make a sphere object:

```
ball=sphere(pos=vector(-5,0,0), radius=0.5, color=color.red)
```

2. Create a “wall” by making a box object:

```
wallR = box(pos=vector(6, 0, 0), size=vector(0.2, 4, 4), color=color.green)
```

3. Animate the ball:

You need to display “snapshots” of the position of the ball at successive times as it moves across the screen. For a short time interval we will use “dt”.

```
dt=0.5
```

4. Define ball’s velocity as a vector (right now we’ve specified that the ball moves only in the x-direction, the y and z are 0):

```
ball.velocity=vector(.2,0,0)
```

5. Run your program. Nothing happens yet! We need to update the ball’s position.

6. Add this loop:

```
while(1==1):  
    rate(100)  
    ball.pos=ball.pos + ball.velocity*dt
```

7. Now, run your program and see what happens.

8. You need to check for the collision with the wall and go backwards when that happens.

```
if ball.pos.x > wallR.pos.x:  
    ball.velocity.x=-ball.velocity.x
```

9. Now run your program.

10. Create a new wall on the left.

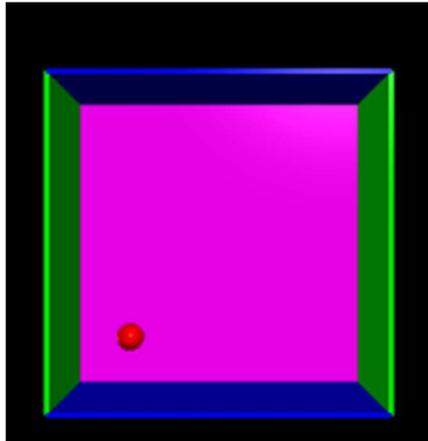
11. Make the ball bounce on the left side too.



**Now turn to Part 2...**

**Part 2: Ball in a Box**

1. Add a top and bottom wall:
  - a. Use a different color to make the 3D more visible (perhaps blue)
  - b. Make sure they touch the horizontal walls.
  - c. Make the ball bounce off the top and bottom walls.
  - d. Modify velocity for the y position
  - e. Use an appropriate “if” statement in the “while” loop.
2. Add a back wall in yet another color (perhaps magenta). And an “invisible front wall.” That is, for the front wall, don’t create a wall, just include an “if” statement to prevent the ball from coming through the front. Give your ball components of velocity in the z-direction as well so it bounces off all 6 walls!



[https://www.glowscript.org/docs/VPythonDocs/VPython\\_Intro.pdf](https://www.glowscript.org/docs/VPythonDocs/VPython_Intro.pdf)



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