

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



روش تحقیق در فیزیک

جلسه ششم

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Vpython as Object oriented programming Lecture demonstration

Some comments to install Vpython

For Windows:

32-bit: install Python-3.2.2 then install VPython-Win-Py3.2-5.74

For Mac

install Python-2.7.9 and then install VPython-Mac-Py2.7-6.11

Bouncing ball program

```
from visual import *

# screen definition
screen=display(title="sadegh",width=1000,height=1000,center=(5,5,5))
floor=box(pos=vector(0,0,0),length=30,height=1,width=30,color=color.green)
ball=sphere(pos=vector(-15,8,0),radius=1,color=color.red)
trail=curve(color=ball.color)

#***** initial conditions
t=0.0
dt=0.01
ball.velocity=vector(2,2,0)
g=vector(0.2,-2,0.1)
restitution=0.8
#*****
while abs(ball.pos.x)<=floor.length/2.0 and abs(ball.pos.z)<=floor.width/2.0:
    ball.pos=ball.pos+ball.velocity*dt+0.5*g*dt**2
    ball.velocity.x=ball.velocity.x+g.x*dt
    ball.velocity.z=ball.velocity.z+g.z*dt
    trail.append(pos=ball.pos)
    if ball.pos.y<=(floor.height/2+ball.radius):
        ball.velocity.y=-ball.velocity.y*restitution
    else:
        ball.velocity.y=ball.velocity.y+g.y*dt
    t=t+dt
    rate(1/dt)
```

از توجه شما سپاسگزارم