Lab Six

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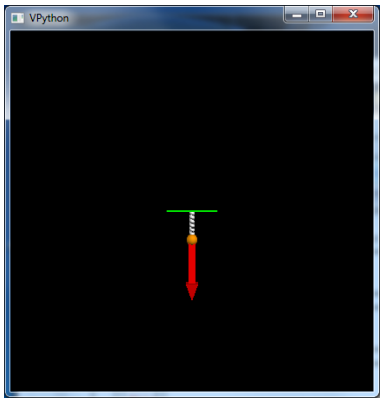
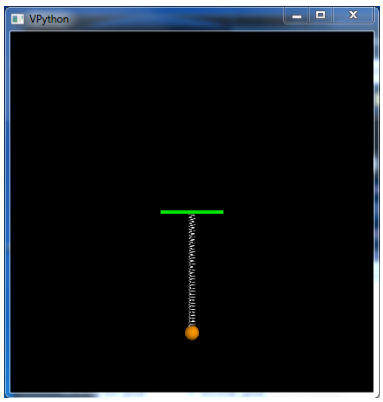
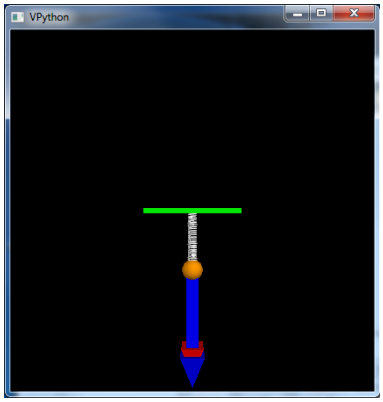
Question 58



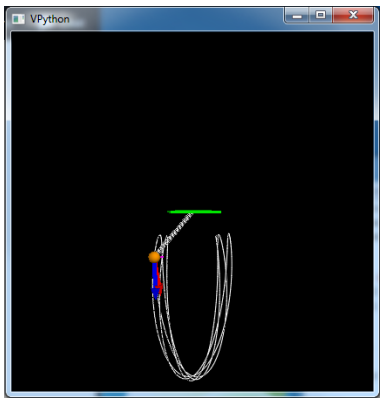
(a) Visual output of P58 a (a)



(b) Visual output of P58 c (b)



(c) Visual output of 58 d



(d) Visual output of 58 e

Figure 1:

For part c, the initial conditions that produced the visual displayed above included

$$\vec{r} = \langle 0, -0.418, 0 \rangle \tag{1}$$

This condition causes the system to be at rest, thus no force is applied according to the model. For part d, the initial conditions were

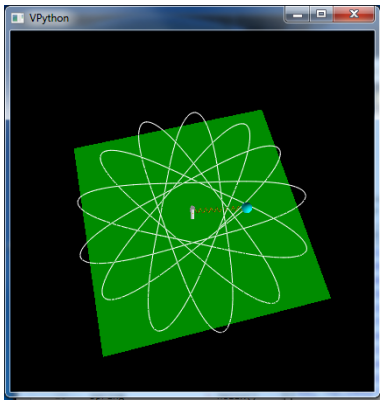
$$\vec{r} = \langle 0, -0.1, 0 \rangle \tag{2}$$

This condition causes the orthogonal force to be zero because there is no other force aside from gravity. For part e, the initial conditions were

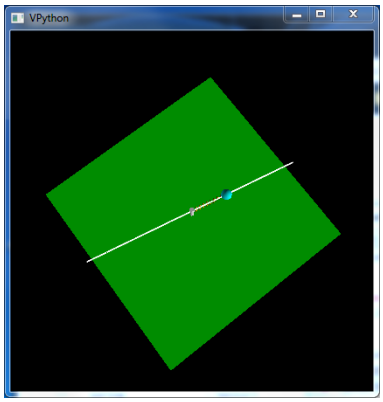
$$\vec{r} = \langle 0.1, -0.1, 0 \rangle \tag{3}$$

This condition causes motion in the x and y direction thus neither the parallel or orthogonal force is zero.

Question 74



(a) Visual output of P74 (a)



(b) A Alternate visual output of P74 (b)

Figure 2:

The initial conditions to produce the motions displayed in Figure 2 (a) are

$$\vec{r} = \langle 0.1, 0, 0.1, \rangle \tag{4}$$

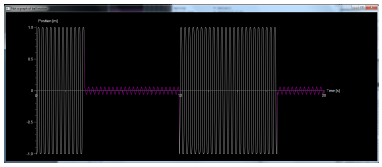
$$\vec{p} = m_{ball} \langle 1, 0, -0.6 \rangle \tag{5}$$

And for the alternative motion:

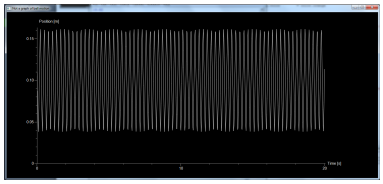
$$\vec{r} = \langle 0.5, 0, 0.1 \rangle \tag{6}$$

$$\vec{p} = m_{ball} \langle 0.1, 0, 0.02 \rangle \tag{7}$$

Question 75



(a) Visual output of P74 (a)



(b) A Graphical Output for P74 b (b)

Figure 3:

Figure 3 (a) is a plot of the velocity of the ball in the x-direction as a function of time and the stretch of the spring, also as a function of time. Figure 3 (b) is a plot displaying the x-component of the position of the ball. After changing the initial stretch from 0.02 m to 0.03 m, I did not see any significant change in the period of the ball.