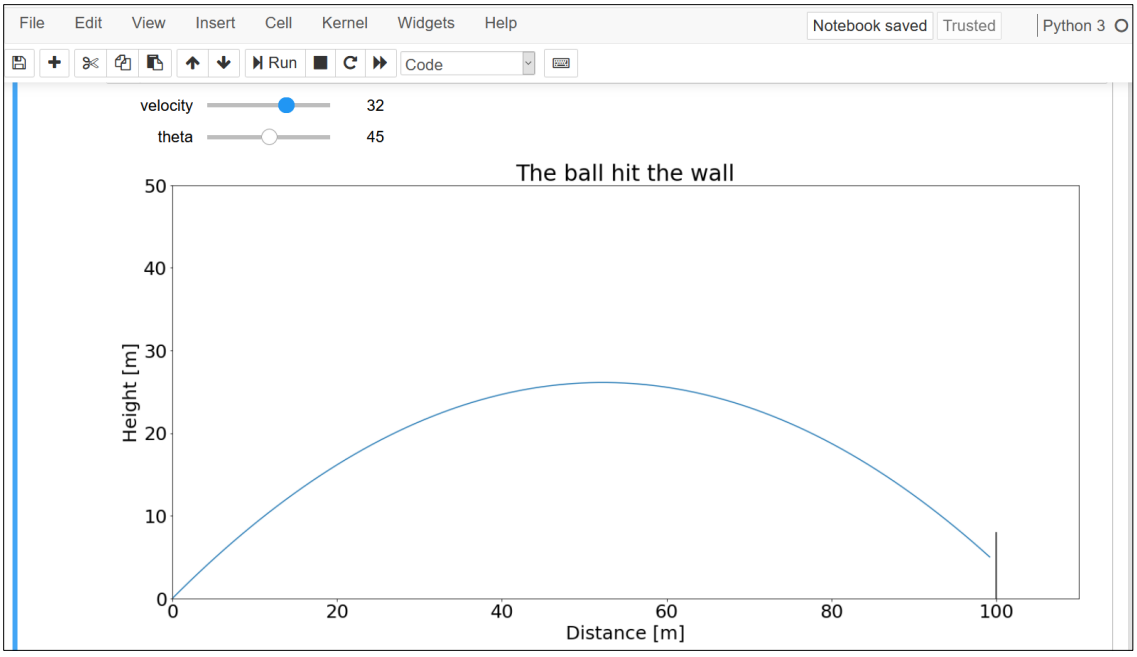
LAB 13

Home Run Derby Widget

Learning Goals:
Use of vectorization and looping.
Use various conditional and if statements.
Practice with plotting and interactive widgets.

In this lab, we will revisit Lab 10 and recode it to use an interactive widget. You will need to refer back to the example widget shown in an early lecture.

Redo lab 10, but now display the resulting plot using an interactive widget. In your widget, create two slider bars: one that controls the initial speed of the ball v_0 and a second that controls the angle θ_0 of the hit ball. Also, include a displayed message about the ball (Hit Ground/Hit Wall/Homerun) in the plot title that automatically changes to the correct phrase based on the slider values used for v_0 and θ_0. The axis ranges of your plot should be fixed and should not auto scale to the baseball's trajectory. Your widget/plot should look something like the following:



Be sure to again create three plots, one for each case of ball hits the ground, ball hits the wall, and a home run, and make sure that all three plots are included when you submit your lab.

Extra Credit: Add an additional pull-down menu that allows the user to change the wall to a house or a building (drawn simply as rectangles of different heights). The message in the plot title should change from “Hit Wall” to “Broken Window!” if the ball hits the building.