

Instructions to run the catapult simulator

It is a Python based program that is easily edited to help in your design challenge. The values set are just general numbers to get you started. I have commented the code and will add any updates to the website as I go. If you are using the program be sure to check for updates.

To start, what is Python? Python is a higher level object oriented programming language to be technical. Beyond the “blah blah blah” of the tech side, it is programming language in a simple sense like Java, C++ (it actually runs this under the hood), etc. that easy to learn and has a well developed set of tools to help with these types of calculations.

The methodology employed in the code is a explicit time integration of the equations of motion. It is great example for math teachers to show calculus in action. Obviously, physics too. It includes two iterations, one with the effects of air drag and one without. It also shows the effects of launch angle. Pay particular attention the maximum distance between the with and without drag.

To run Python as simply as possible I would suggest using Engthought Canopy package manager. It is a easy to use self contained python interface where you can just click run on scripts with ease. It is free to students and teachers at:

<https://store.enthought.com/#canopy-academic>

To run the provided program, open Canopy from the start menu and click on the editor button. Copy (ctrl+C) the text from the CatapultSimulator2016r3.txt and paste (ctrl+V) into the blank space. Go to the File pull down and save the file as CatapultSimulator2016r3.py. Then just click the green arrow. Two plots should appear. If you would like a picture guided tutorial email the CMSE and well will send one to you.