

## Programming a random walk

---

Gareth Tribello

January 9, 2018

In the exercise:

<http://gtribello.github.io/mathNET/gamblers-ruin-exercise.html>

you learnt how to write a program to generate a simple random walk in one dimension with adsorbing boundary conditions. Now write a python notebook that allows you to perform a simple random walk in one dimension with adsorbing boundary conditions. By running the program in your python notebook multiple times calculate estimates for the following:

1. The probability that the walk finishes at  $X = 0$  together with error bars at the 90 % confidence limit on this estimate.
2. The probability mass function for the number of steps in the walk prior to absorbtion.

Now replace the absorbing boundary condition at  $X = 0$  with a reflecting boundary condition at  $X = 0$ . Calculate the probability mass function for the number of steps in the walk prior to absorbtion for this modified chain.