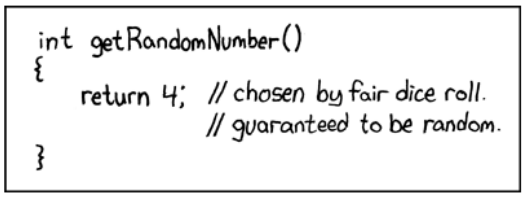
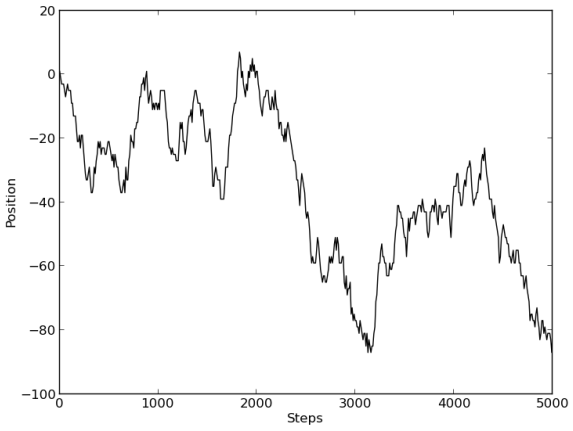
Simulating random walks

Imagine you need to follow a straight line home from some point P. As you have a lot of time on your hands, you decide to this by taking a step forward or backward based on some random event – say, flipping a coin. Since you are equally likely to take a step forward or backward, you might expect never to reach home. But here's the cool part – it is **mathematically certain** that you will reach your destination in a *finite* amount of time.

A good way to test these kind of theories is to run *simulations* on a computer. Computers are good at generating seemingly random numbers:



Simulate a random walk using the `numpy.random` module. A one dimensional random walk might look like this:



This may not be a very exciting figure, but if you run several simulations like these, some very interesting features start to pop up. Put your code in a loop so that your program simulates **N** random walks. Once you have this running, you can arrive at all sorts of interesting conclusions and experiment with different parameters.