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1 # Python-Script for Random Walk Implementation - 2D
2
3 import numpy as np
4 import matplotlib.pyplot as plt
5 import random
6
7 n = eval(input('Enter the number of steps:'))
8
9 # x and y are arrays which store the coordinates of the position
10 y = np.zeros(n)
11 x = np.zeros(n)
12
13 # Assuming the four directions of movement.
14 direction=['NORTH','SOUTH','EAST','WEST']
15
16 for i in range(1, n):
17     step = random.choice(direction) #Randomly choosing the direction of movement.
18     if step == "EAST":                #updating the direction
19         x[i] = x[i - 1] + 1
20         y[i] = y[i - 1]
21     elif step == "WEST":
22         x[i] = x[i - 1] - 1
23         y[i] = y[i - 1]
24     elif step == "NORTH":
25         x[i] = x[i - 1]
26         y[i] = y[i - 1] + 1
27     else:
28         x[i] = x[i - 1]
29         y[i] = y[i - 1] - 1
30
31 #plotting the walk.
32 plt.title("Random Walk 2-D")
33 plt.xlabel('x-position')
34 plt.ylabel('y-position')
35 plt.plot(x, y, "g-")
36 plt.show()
```