

a) The histogram exhibits a left-skewed shape, indicating asymmetry and a lack of centering around 0. This asymmetry is attributed to the condition in line 41, where "if all(diff(x) > 0)" ensures the prevention of collisions or crossings between agents.

Consequently, the probability of the bottom agent remaining below 0 is elevated, contributing to the observed leftward skewness in the distribution.

b) The histogram's shape closely resembles that of a uniform distribution. The presence of the condition in line 56, "if all(diff(x) > 0)," effectively prevents collisions or crossings between agents.

Consequently, adhering to the laws of motion, the middle agent consistently endeavors to position itself between the top and bottom agents.

As a result, the histogram assumes a form reminiscent of a uniform distribution.

c) The histogram after 10 steps reveals three prominent peaks centered around -20, 0, and 20, suggesting higher likelihoods of the walker ending up in these positions.

The distribution in this histogram appears relatively symmetrical.

The histogram after 40 steps displays a more widely distributed pattern with higher peaks compared to the histogram after 10 steps.

Notably, the peaks centered around -20, 0, and 20 are more pronounced, reflecting increased chances of landing in these positions with the larger number of steps.

In the histogram after 160 steps, representing an extended period, a bell-shaped distribution is observed.

Multiple peaks, including those at -20, 0, and 20, signify diverse possibilities of landing on these positions with the walker's movements over an extended duration.