**INFO 6205: Fall 2021**

**Assignment No: 1**

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**Task**: Random walk experiment

**Conclusion**: By performing series of experiments, I can conclude that Euclidean distance (d) of the man from the lamppost is equal to the square root of no of steps walked(n).

**D = sqrt(n)**

Graphical user interface, text, application

Description automatically generated

**Evidence:**

For n=10

10 steps: 2.7989618526699593 over 30 experiments

Root of 10: 3.16

For n=20

20 steps: 3.7468481455963354 over 30 experiments

Root of 20: 4.47

For n=30

30 steps: 5.426490460483745 over 30 experiments

Root of 30: 5.47

For n=40

40 steps: 5.750712540972093 over 30 experiments

Root of 40: 6.32

For n=50

50 steps: 6.923247814108019 over 30 experiments

Root of 50: 7.07

For n=60

60 steps: 7.689880275397207 over 30 experiments

Root of 60: 7.74

|  |  |  |  |
| --- | --- | --- | --- |
| No of steps(n) | D = sqrt(n) | Calculated distance | Difference % |
| 10 | 3.16 | 2.79 | 11.7 |
| 20 | 4.47 | 3.74 | 16.3 |
| 30 | 5.47 | 5.42 | 0.91 |
| 40 | 6.32 | 5.75 | 9.01 |
| 50 | 7.07 | 6.92 | 2.12 |
| 60 | 7.74 | 7.68 | 0.77 |

**Unit test Screenshot:**

