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Program Structures & Algorithms

Fall 2021

Assignment No. 1

⊙ **Task (List down the tasks performed in the Assignment)**

1. Your conclusion about the relationship between d and n ;
2. Your evidence to support that relationship (screen shot and/or graph and/or spreadsheet);
3. Your code (RandomWalk.java plus anything else that you changed or created);
4. A screen shot of the unit tests all passing.

⊙ **Relationship Conclusion: (For ex : $z = a * b$)**

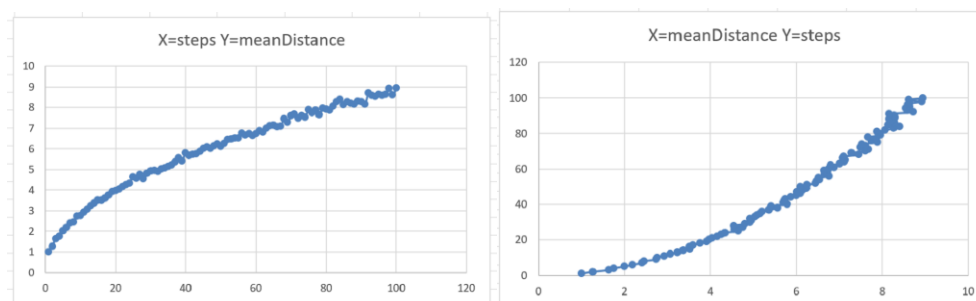
$n = \text{avg}(d)^2$ (n: steps; d: mean distance)

⊙ **Evidence to support the conclusion:**

1. **Output (Snapshot of Code output in the terminal)**

```
Run: RandomWalk x
73 steps: 7.632463280725288 over 1000 experiments
74 steps: 7.685687994647592 over 1000 experiments
75 steps: 7.526291686315173 over 1000 experiments
76 steps: 7.870431170554758 over 1000 experiments
77 steps: 7.885947613807495 over 1000 experiments
78 steps: 8.018447744834035 over 1000 experiments
79 steps: 7.829204080890481 over 1000 experiments
80 steps: 7.78742761862189 over 1000 experiments
81 steps: 8.088117474254727 over 1000 experiments
82 steps: 8.419819606916393 over 1000 experiments
83 steps: 8.13635821856698 over 1000 experiments
84 steps: 8.089809818390021 over 1000 experiments
85 steps: 8.171876662272169 over 1000 experiments
86 steps: 8.241944189514511 over 1000 experiments
87 steps: 8.306239931975037 over 1000 experiments
88 steps: 8.330694306719069 over 1000 experiments
89 steps: 8.12515239046975 over 1000 experiments
90 steps: 8.362476632986873 over 1000 experiments
91 steps: 8.639395061467775 over 1000 experiments
92 steps: 8.677697441481097 over 1000 experiments
93 steps: 8.591797824832463 over 1000 experiments
94 steps: 8.440623644567198 over 1000 experiments
95 steps: 8.649163440546358 over 1000 experiments
96 steps: 8.73839684419695 over 1000 experiments
97 steps: 8.854131662548255 over 1000 experiments
98 steps: 8.970510409221484 over 1000 experiments
99 steps: 8.647353691881532 over 1000 experiments
100 steps: 8.76304240075159 over 1000 experiments
```

2. Graphical Representation(Observations from experiments should be tabulated and analyzed by plotting graphs(usually in excel) to arrive on the relationship conclusion)



○ Unit tests result:(Snapshot of successful unit test run)

