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**Program Structures & Algorithms**

**Fall 2021**

**Assignment No. 1**

* **Task (List down the tasks performed in the Assignment)**
  + First I modified the RandomWalk.java to let it work.
  + I used 8 different step size values, ran each value 10 times.
  + Record the outputs including step size and distance from origin point.
  + Computed the mean distance for 8 step values(10, 50, 140, 300, 550, 910, 1400, 2040), and plot the figure with Excel.
  + Added the tend line of average distance values and computed the algorithm function with Excel.
* **Relationship Conclusion: (For ex : z = a \* b)**
  + The relationship I got from 8 different step values is : , where d is distance, n is step value.
* **Evidence to support the conclusion:**

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

Output of 8 step values’ experiments

Text

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

1. **Graphical Representation(Observations from experiments should be tabulated and analyzed by plotting graphs(usually in excel) to arrive on the relationship conclusion)**
2. Table of outputs (totally 80 runs)

Table

Description automatically generated

1. Table of average distance

Table

Description automatically generated

1. Graph of step value vs. distance

Chart, scatter chart

Description automatically generated

From this graph, we can conclude the relationship of step value and distance.

1. **Unit tests result:(Snapshot of successful unit test run**

All test in RandomWalkTest.java passed

Text

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