

Tasks:

1. Ran unit test cases from RandomWalkTest.java before starting with RandomWalk.java. (failed)
2. Coded “move” function in RandomWalk.java to move the position of the drunkard in the x and y direction. (increment by step size)
3. Coded “randomWalk” function to iterate over the number of steps and invoke “randomMove”.
4. Coded “distance” function to return the distance between the lamp post and the current position of the drunkard. ($d = \sqrt{x^2 + y^2}$)
5. Ran unit test cases from RandomWalkTest.java again and all unit test cases passed. (screenshot attached in the end)
6. Compiled and ran RandomWalk.java for multiple values of m (number of steps) and 1 experiment to isolate accurate values.
7. Compiled document for assignment report

Relationship conclusion:

$$d = \sqrt{n}$$

d = distance of the drunkard from the pole

n = number of steps

Evidence:

Outputs:

```
varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 36 1
36 steps: 6.0 over 1 experiments

varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ 
varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 2 1
2 steps: 1.4142135623730951 over 1 experiments

varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 4 1
4 steps: 2.0 over 1 experiments

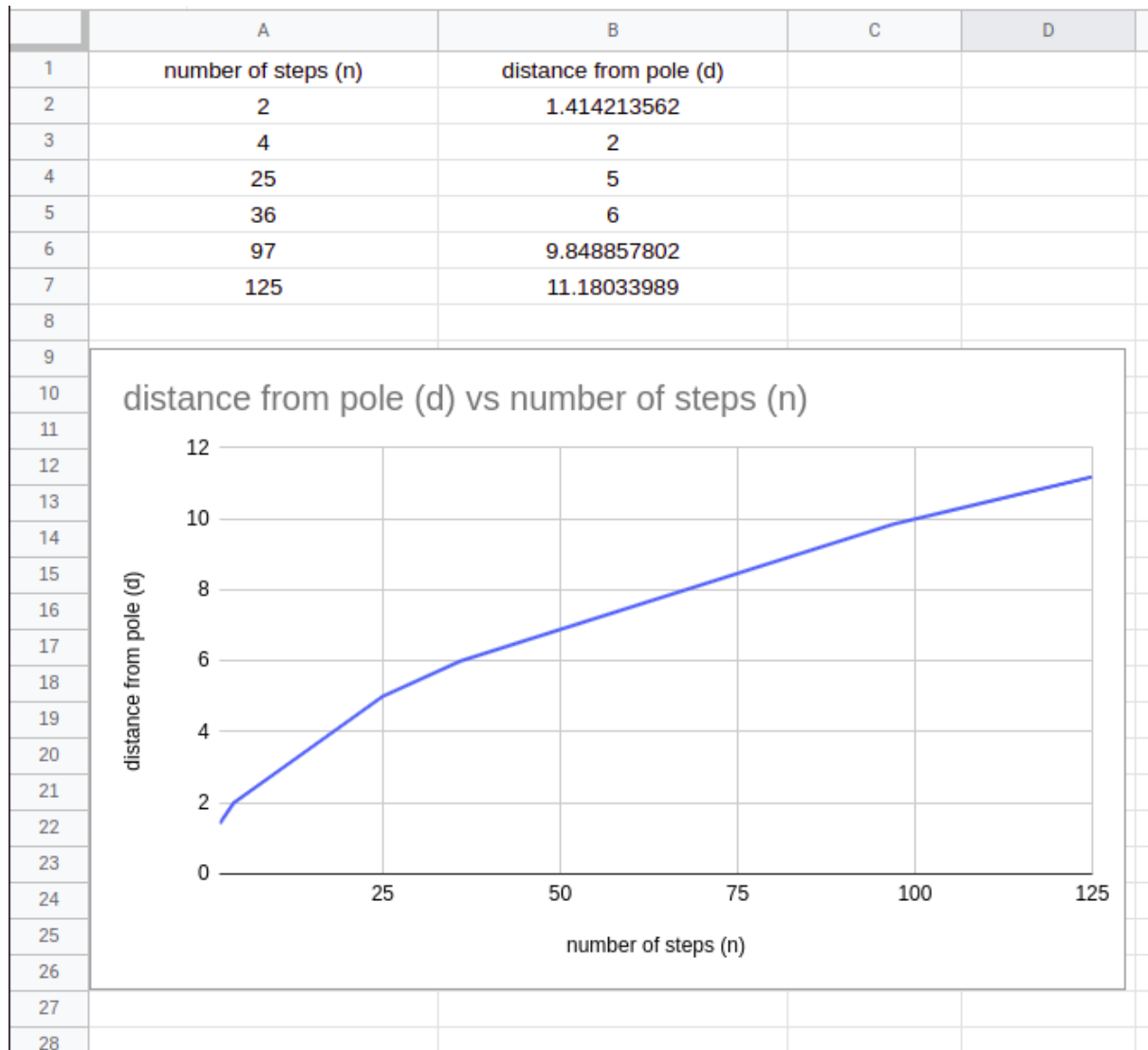
varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 97 1
97 steps: 9.848857801796104 over 1 experiments

varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 125 1
125 steps: 11.180339887498949 over 1 experiments

varun@varun-Predator-63-571:~/Northeastern/INFO 6205 - Sec 01/Assignment 0/INFO6205/src/main/java$ java edu.neu.coe.info6205.randomwalk.RandomWalk 25 1
25 steps: 5.0 over 1 experiments
```

The output trends indicate $d = \sqrt{n}$

Tabulation:



The above curve is that of $y = \sqrt{x}$ i.e $d = \sqrt{n}$

UNIT TESTS:

INFO6205 – RandomWalkTest.java

File Edit View Navigate Code Refactor Build Run Tools Git Window Help

INFO6205 / src / test / java / edu / neu / coe / info6205 / randomwalk / RandomWalkTest

Project

- Project
 - SizedIterable
 - SizedIterableImpl
 - Ticket
 - TicketChecker.java
 - Tuple
 - VLA2
 - resources
 - test
 - java
 - edu.neu.coe.info6205
 - bqs
 - dynamicProgramming
 - functions
 - graphs
 - greedy
 - hashtable
 - lab_1
 - life
 - pq
 - randomwalk
 - RandomWalkTest
 - reduction
 - sort
 - symbolTable
 - threesum
 - union_find
 - util
 - BinarySearchTest
 - ComparableTupleTest

Commit

Pull Requests

```
12
13 public class RandomWalkTest {
14
15     @Test
16     public void testMove0() {
17         RandomWalk rw = new RandomWalk();
18         PrivateMethodTester pmt = new PrivateMethodTester(rw);
19         pmt.invokePrivate( name: "move", _parameters: 1, 0);
20         assertEquals( expected: 1.0, rw.distance(), delta: 1.0E-7);
21     }
22
23     /**
24      *
25      */
26     @Test
27     public void testMove1() {
28         RandomWalk rw = new RandomWalk();
29         PrivateMethodTester pmt = new PrivateMethodTester(rw);
30         pmt.invokePrivate( name: "move", _parameters: 1, 0);
31         assertEquals( expected: 1.0, rw.distance(), delta: 1.0E-7);
32         pmt.invokePrivate( name: "move", _parameters: 1, 0);
33         assertEquals( expected: 2.0, rw.distance(), delta: 1.0E-7);
34         pmt.invokePrivate( name: "move", _parameters: -1, 0);
35         assertEquals( expected: 1.0, rw.distance(), delta: 1.0E-7);
36         pmt.invokePrivate( name: "move", _parameters: -1, 0);
37         assertEquals( expected: 0.0, rw.distance(), delta: 1.0E-7);
38     }
39
40     /**
```

Run: RandomWalkTest

Tests passed: 6 of 6 tests – 277 ms

RandomWalkTest(edu.neu.coe.info6205) 277 ms /usr/lib/jvm/java-1.8.0-openjdk-amd64/bin/java ...

- testRandomWalk2 7 ms
- testMove0 1 ms
- testMove1 1 ms
- testMove2 2 ms
- testMove3 1 ms
- testRandomWalk 265 ms

Tests passed: 6

Git Run TODO Problems Terminal Build Dependencies

Tests passed: 6 (moments ago)