**Program Structures & Algorithms**

**Spring 2022**

**Assignment No. 1**

**Random Walk**

Name: Aishwarya Surve

(NUID): 002123768

* **Task**
  + Relationship between dandn
  + Implement blank functions
  + **Evidence** to support the relationship
  + Run unit test cases
* **Output Screenshot**

1. **10 steps and 30 experiments**

A screenshot of a computer

Description automatically generated

1. **50 steps and 30 experiments**

A screenshot of a computer

Description automatically generated

1. **100 steps and 30 experiments**

A screenshot of a computer

Description automatically generated

1. **150 steps and 30 experiments**

A screenshot of a computer

Description automatically generated

1. **200 steps and 30 experiments**

A screenshot of a computer

Description automatically generated with medium confidence

* **Relationship Conclusion**

The relation between the Euclidean distance of the man from the lamp-post (d) and the steps(n) is **d = √n**

* **Evidence / Graph**

|  |  |  |
| --- | --- | --- |
| **Number of Steps(n)** | **Number of Experiments** | **Mean of Euclidean distance (d)** |
| **10** | **30** | **2.4490416633683783** |
| **50** | **30** | **5.682481293987783** |
| **100** | **30** | **9.791029856683611** |
| **150** | **30** | **10.771149469762262** |
| **200** | **30** | **14.389307214525259** |

* **Unit tests result**

All 6 test cases have passed

A screenshot of a computer

Description automatically generated