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**Program Structures & Algorithms**

**Fall 2021**

**Assignment No. 01**

* **Task :**

Imagine a drunken man who, starting out leaning against a lamp post in the middle of an open space, takes a series of steps of the same length: 1 meter. The direction of these steps is randomly chosen from North, South, East or West. **After n steps, how far (d), generally speaking, is the man from the lamp post?** Note that d is the Euclidean distance of the man from the lamp-post.

It turns out that there is a relationship between d and n which is typically applicable to many different types of stochastic (randomized) experiments. Your task is to implement the code for the experiment and, most importantly, to **deduce the relationship**.

* **Relationship Conclusion:**

**d**

* **Evidence to support the conclusion:**

1. **Output**

**文本

描述已自动生成**

**文本

描述已自动生成**

1. **Graphical Representation**

**Relationship between and :**

**图表

描述已自动生成**

**Relationship between and :**

**图表, 散点图

描述已自动生成**

**It is like a linear function which through the two coordinates and , so the relationship conclusion is d**

* **Unit tests result:**

文本

描述已自动生成