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## Program Structures & Algorithms

Fall 2021

### Assignment No. 1

- Task (List down the tasks performed in the Assignment)

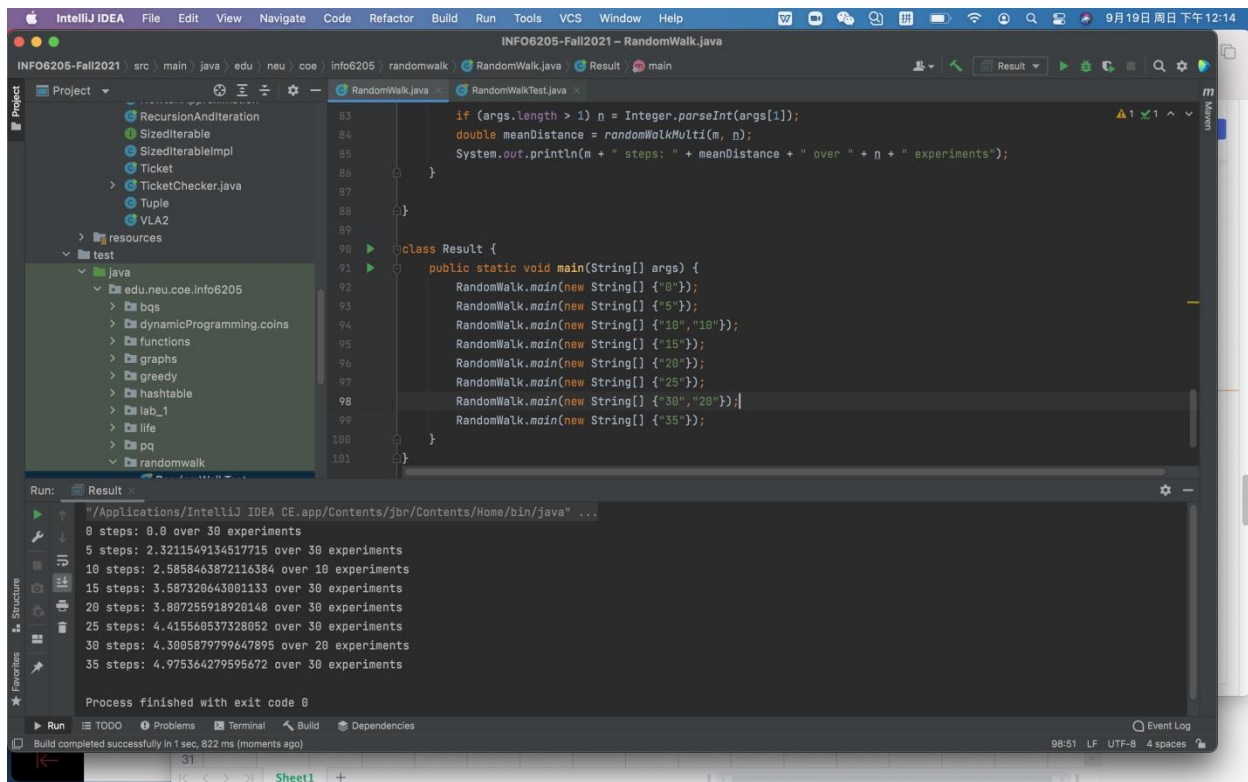
Imagine a drunken man starting out leaning against a lamp post in the middle of an open space, takes a series of steps of the same length: 1 meter. The direction of these steps is randomly chosen from N, S, E or W. After  $n$  steps, how far ( $d$ ) is the man from the lamp post? Note that  $d$  is the 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 experiments. Your task is to implement the code for the experiment and to deduce the relationship.

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

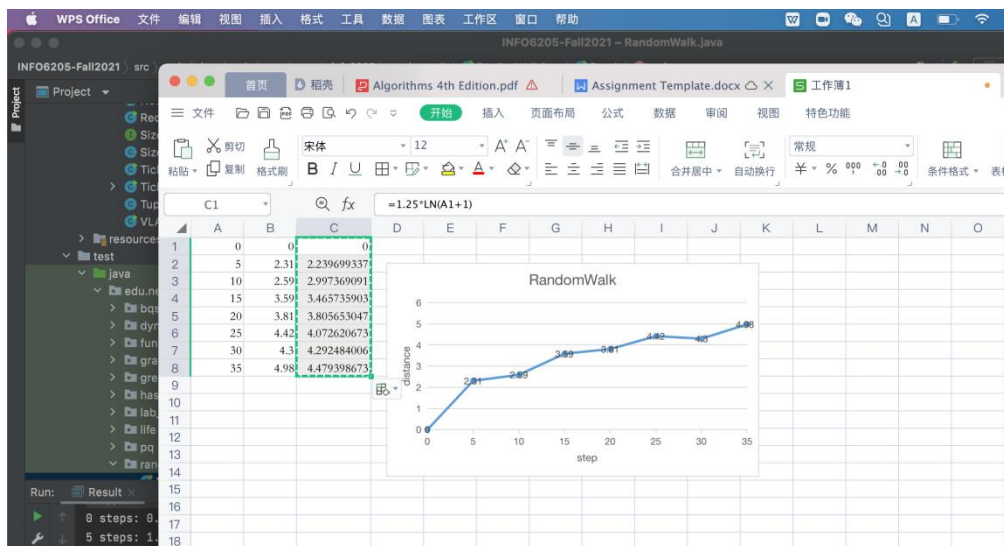
$$d = 5/4 \ln(n+1)$$

- Evidence to support the conclusion:

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



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)

