INFO6205 - Assignment01

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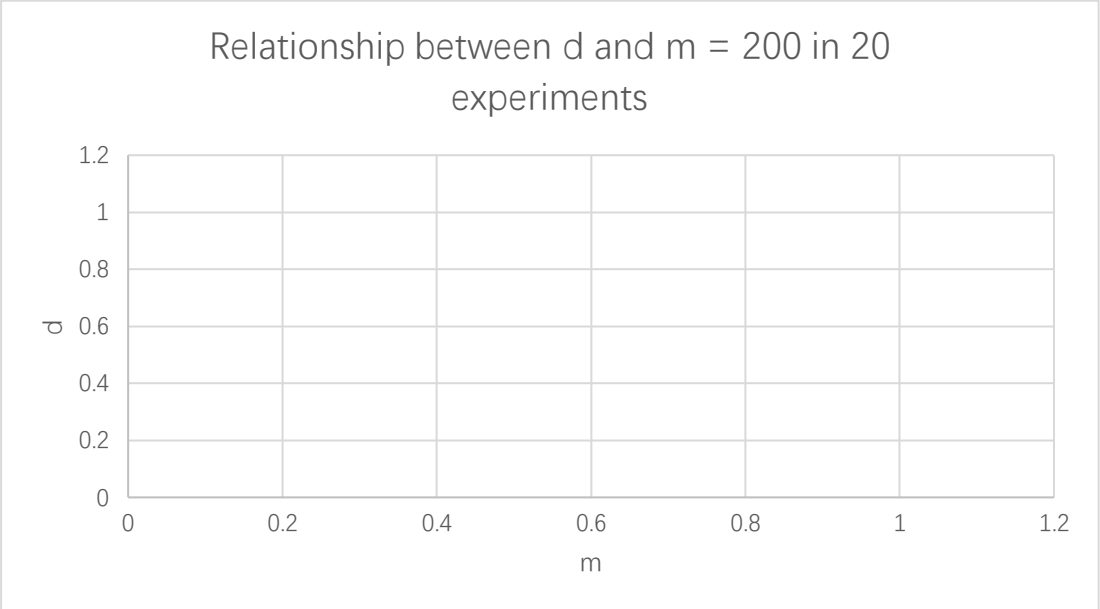
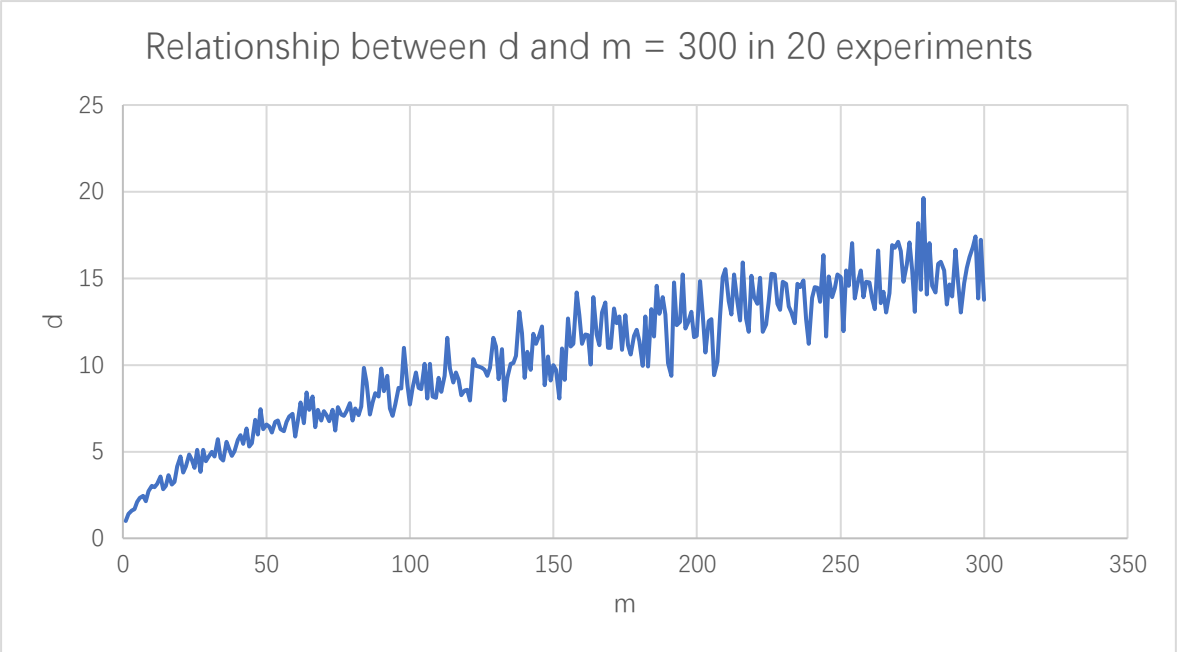
Referred from the website:
https://mathworld.wolfram.com/RandomWalk2-Dimensional.html#:~:text=Amazingly%2C%20it%20has%20been%20proven,number%20of%20steps%20approaches%20infinity,
we can know that the relationship between the number of steps m and the distance d is:

$$d = \sqrt{m}$$

I implement 20 times experiments with 200 steps and 300 steps, and then output the distance corresponded to each number of steps into a line chart.

```
public static void main(String[] args) {
    if (args.length == 0)
        throw new RuntimeException("Syntax: RandomWalk steps [experiments]");
    int m = Integer.parseInt(args[0]);
  int n = 20, m = -1;
  for(int i = 1; i <= 200; i++) {
      m = i;
      if (args.length > 1) n = Integer.parseInt(args[1]);
      double meanDistance = randomWalkMulti(m, n);
      System.out.println(m + " steps: " + meanDistance + " over " + n + " experiments");
  }
```





It can be found from the chart that the relationship between d and m is relatively close to the relationship shown from the above formula.

Here is the screen shot for passing all unit tests: