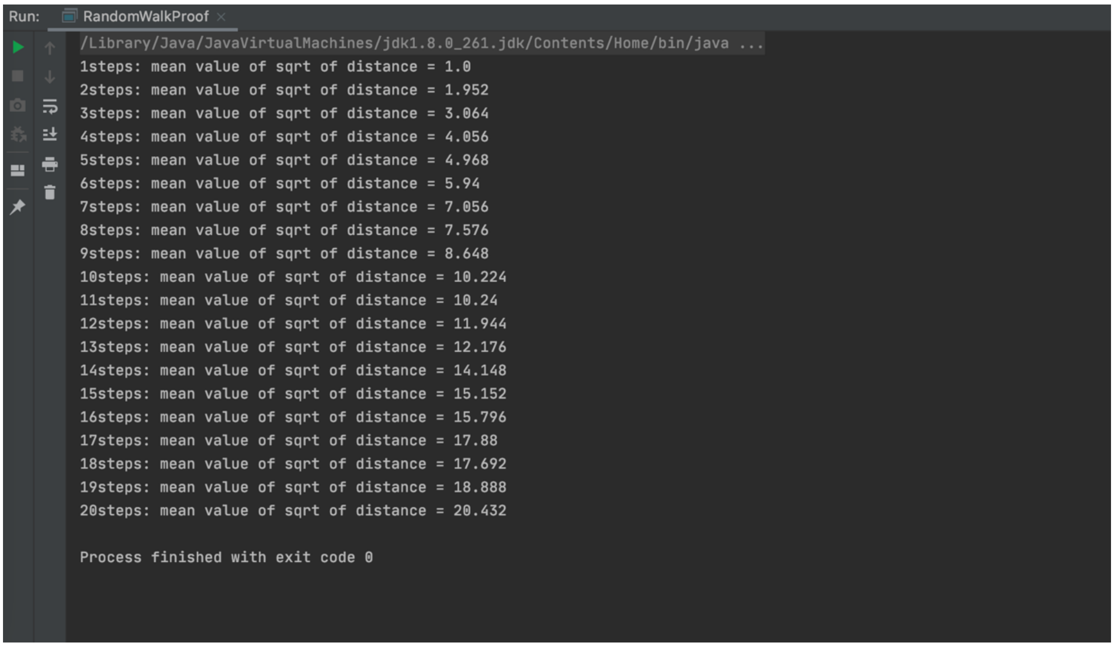
1. The conclusion about relationship between d and n:

$$func(d): E(d^2)=n$$

2. The evidence to support relationship:

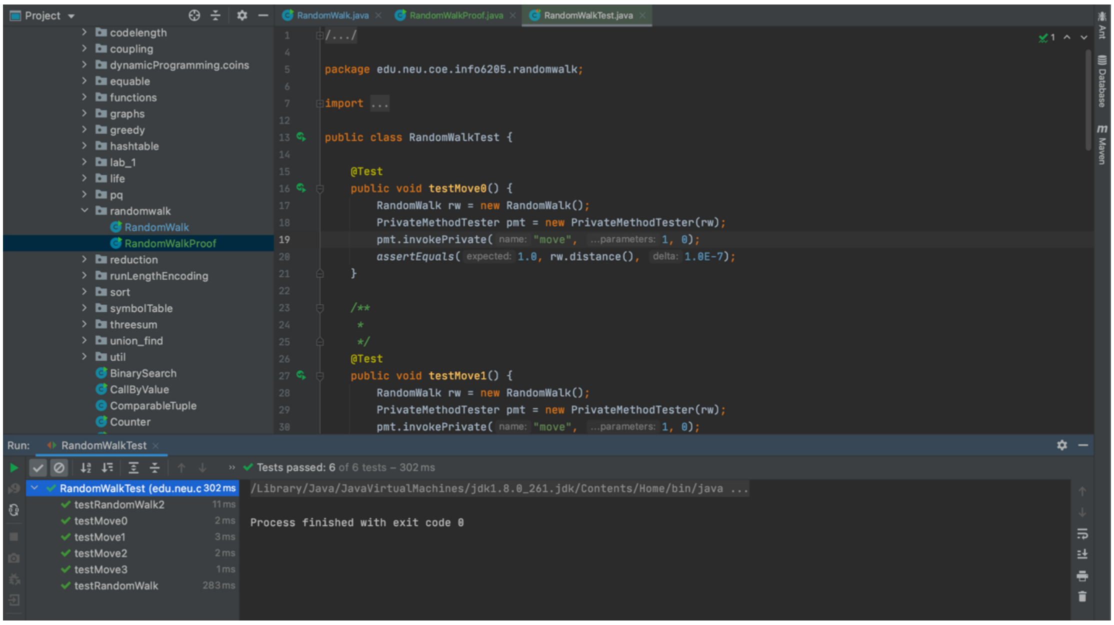
   Making 500 times experiments and find out that the mean value of sqrt of distance infinitely approach the number of steps (*RandomWalkProof.java*):



```
/Library/Java/JavaVirtualMachines/jdk1.8.0_261.jdk/Contents/Home/bin/java ...
1steps: mean value of sqrt of distance = 1.0
2steps: mean value of sqrt of distance = 1.952
3steps: mean value of sqrt of distance = 3.064
4steps: mean value of sqrt of distance = 4.056
5steps: mean value of sqrt of distance = 4.968
6steps: mean value of sqrt of distance = 5.94
7steps: mean value of sqrt of distance = 7.056
8steps: mean value of sqrt of distance = 7.576
9steps: mean value of sqrt of distance = 8.648
10steps: mean value of sqrt of distance = 10.224
11steps: mean value of sqrt of distance = 10.24
12steps: mean value of sqrt of distance = 11.944
13steps: mean value of sqrt of distance = 12.176
14steps: mean value of sqrt of distance = 14.148
15steps: mean value of sqrt of distance = 15.152
16steps: mean value of sqrt of distance = 15.796
17steps: mean value of sqrt of distance = 17.88
18steps: mean value of sqrt of distance = 17.692
19steps: mean value of sqrt of distance = 18.888
20steps: mean value of sqrt of distance = 20.432

Process finished with exit code 0
```

3. I complete the code in *RandomWalk.java* and *RandomWalkProof.java*
4. Screen Shot of Unit Test:



```
/.../

package edu.neu.coe.info6205.randomwalk;

import ...

public class RandomWalkTest {

    @Test
    public void testMove0() {
        RandomWalk rw = new RandomWalk();
        PrivateMethodTester pmt = new PrivateMethodTester(rw);
        pmt.invokePrivate( name: "move",  ...parameters: 1, 0);
        assertEquals( expected: 1.0, rw.distance(),  delta: 1.0E-7);
    }

    /**
     *
     */
    @Test
    public void testMove1() {
        RandomWalk rw = new RandomWalk();
        PrivateMethodTester pmt = new PrivateMethodTester(rw);
        pmt.invokePrivate( name: "move",  ...parameters: 1, 0);
```

```
✓ Tests passed: 6 of 6 tests – 302 ms

✓ RandomWalkTest (edu.neu.c 302 ms
    ✓ testRandomWalk2    11 ms
    ✓ testMove0           2 ms
    ✓ testMove1           3 ms
    ✓ testMove2           2 ms
    ✓ testMove3           1 ms
    ✓ testRandomWalk    283 ms

/Library/Java/JavaVirtualMachines/jdk1.8.0_261.jdk/Contents/Home/bin/java ...

Process finished with exit code 0
```