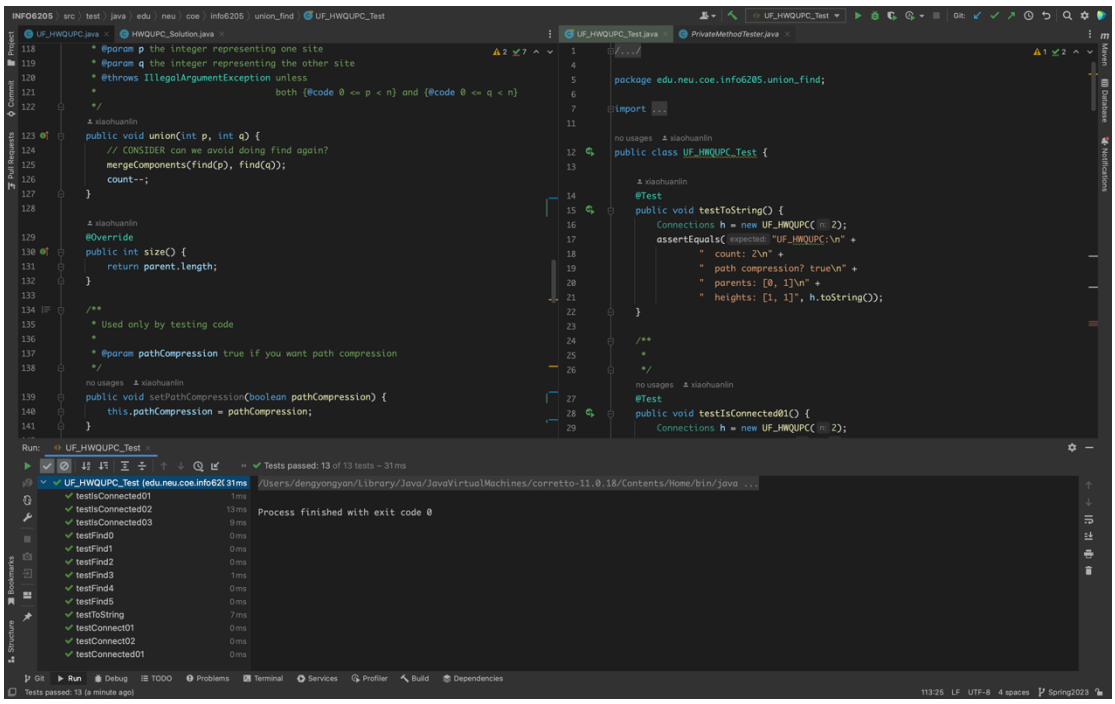
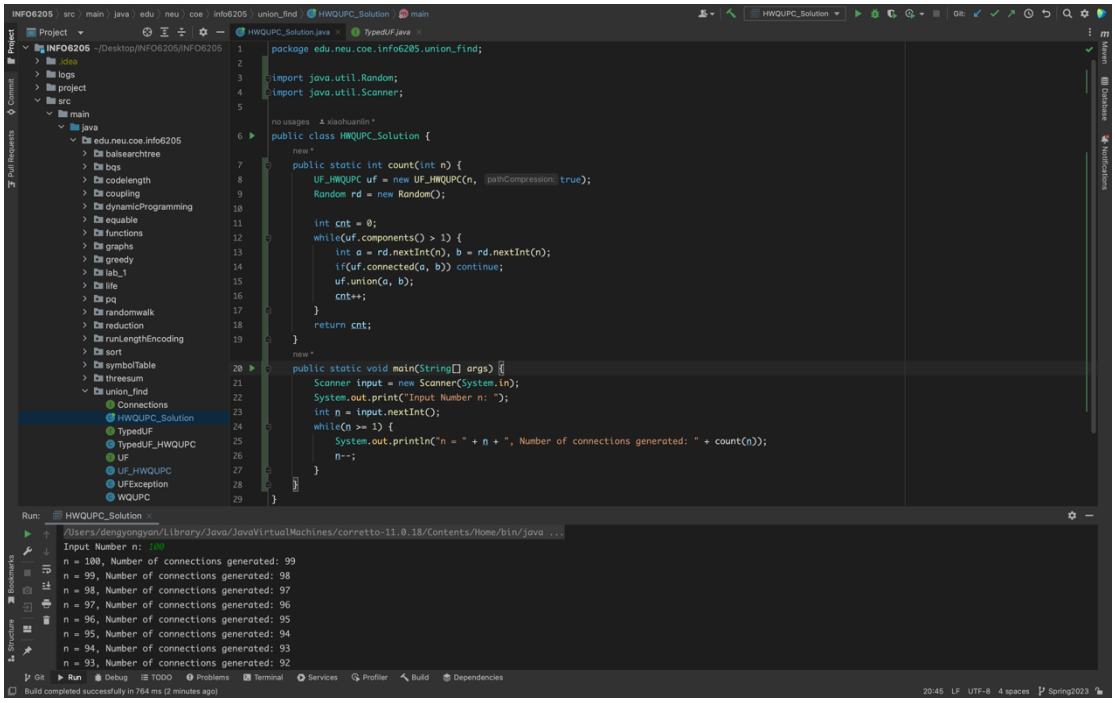
INFO6205 - Height-weighted Quick Union with Path Compression

Here is the screenshot of unit test for "*UF_HWQUPC*" class:



Here is the screenshot of "*HWQUPC_Solution*" class to get number of connections of n sites:



/src/main/java/edu.neu.coe.info6205/union_find/HWQUPC_Solution.java

Output:

```
Input Number n: 100
```

n = 100, Number of connections generated: 99
n = 99, Number of connections generated: 98
n = 98, Number of connections generated: 97
n = 97, Number of connections generated: 96
n = 96, Number of connections generated: 95
n = 95, Number of connections generated: 94
n = 94, Number of connections generated: 93
n = 93, Number of connections generated: 92
n = 92, Number of connections generated: 91
n = 91, Number of connections generated: 90
n = 90, Number of connections generated: 89
n = 89, Number of connections generated: 88
n = 88, Number of connections generated: 87
n = 87, Number of connections generated: 86
n = 86, Number of connections generated: 85
n = 85, Number of connections generated: 84
n = 84, Number of connections generated: 83
n = 83, Number of connections generated: 82
n = 82, Number of connections generated: 81
n = 81, Number of connections generated: 80
n = 80, Number of connections generated: 79
n = 79, Number of connections generated: 78
n = 78, Number of connections generated: 77
n = 77, Number of connections generated: 76
n = 76, Number of connections generated: 75
n = 75, Number of connections generated: 74
n = 74, Number of connections generated: 73
n = 73, Number of connections generated: 72
n = 72, Number of connections generated: 71
n = 71, Number of connections generated: 70
n = 70, Number of connections generated: 69
n = 69, Number of connections generated: 68
n = 68, Number of connections generated: 67
n = 67, Number of connections generated: 66
n = 66, Number of connections generated: 65
n = 65, Number of connections generated: 64
n = 64, Number of connections generated: 63
n = 63, Number of connections generated: 62

n = 62, Number of connections generated: 61
n = 61, Number of connections generated: 60
n = 60, Number of connections generated: 59
n = 59, Number of connections generated: 58
n = 58, Number of connections generated: 57
n = 57, Number of connections generated: 56
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n = 53, Number of connections generated: 52
n = 52, Number of connections generated: 51
n = 51, Number of connections generated: 50
n = 50, Number of connections generated: 49
n = 49, Number of connections generated: 48
n = 48, Number of connections generated: 47
n = 47, Number of connections generated: 46
n = 46, Number of connections generated: 45
n = 45, Number of connections generated: 44
n = 44, Number of connections generated: 43
n = 43, Number of connections generated: 42
n = 42, Number of connections generated: 41
n = 41, Number of connections generated: 40
n = 40, Number of connections generated: 39
n = 39, Number of connections generated: 38
n = 38, Number of connections generated: 37
n = 37, Number of connections generated: 36
n = 36, Number of connections generated: 35
n = 35, Number of connections generated: 34
n = 34, Number of connections generated: 33
n = 33, Number of connections generated: 32
n = 32, Number of connections generated: 31
n = 31, Number of connections generated: 30
n = 30, Number of connections generated: 29
n = 29, Number of connections generated: 28
n = 28, Number of connections generated: 27
n = 27, Number of connections generated: 26
n = 26, Number of connections generated: 25
n = 25, Number of connections generated: 24

n = 24, Number of connections generated: 23

n = 23, Number of connections generated: 22

n = 22, Number of connections generated: 21

n = 21, Number of connections generated: 20

n = 20, Number of connections generated: 19

n = 19, Number of connections generated: 18

n = 18, Number of connections generated: 17

n = 17, Number of connections generated: 16

n = 16, Number of connections generated: 15

n = 15, Number of connections generated: 14

n = 14, Number of connections generated: 13

n = 13, Number of connections generated: 12

n = 12, Number of connections generated: 11

n = 11, Number of connections generated: 10

n = 10, Number of connections generated: 9

n = 9, Number of connections generated: 8

n = 8, Number of connections generated: 7

n = 7, Number of connections generated: 6

n = 6, Number of connections generated: 5

n = 5, Number of connections generated: 4

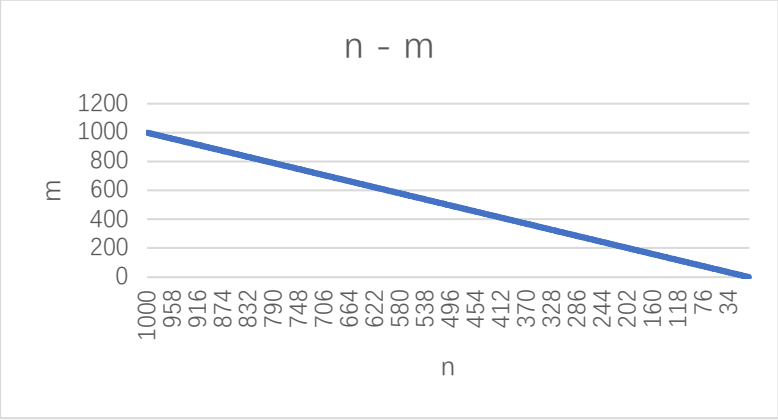
n = 4, Number of connections generated: 3

n = 3, Number of connections generated: 2

n = 2, Number of connections generated: 1

n = 1, Number of connections generated: 0

Conclusion:



The number of objects (n) and the number of pairs (m) generated to union n objects into only one is:

$$m = n - 1;$$