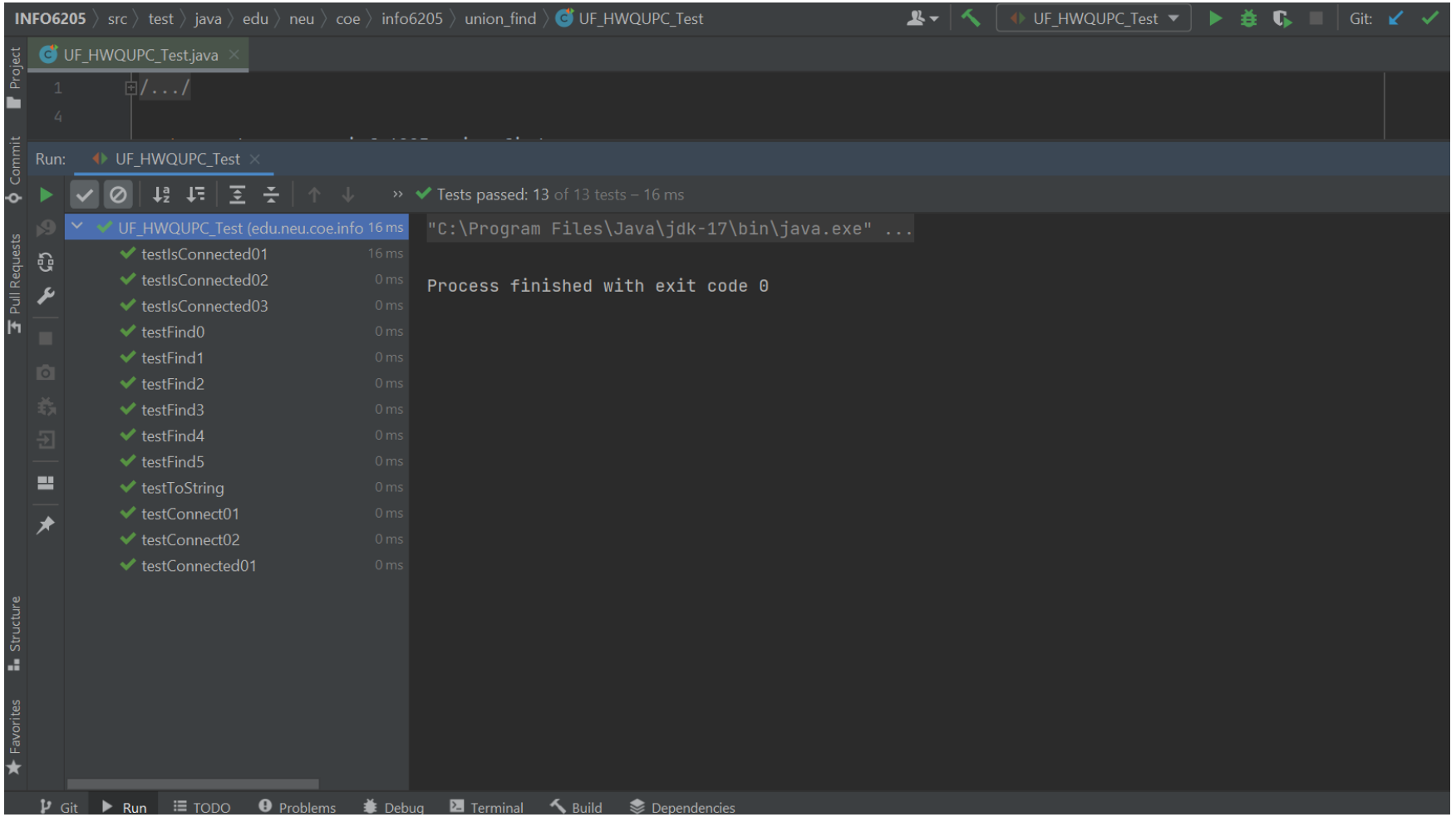
NUID: 002175782
PSA Fall 21

Assignment 3: Weighted Quick Union with Path Compression

DIKSHA BHATIA

TASKS

- Part 1 – Implement height-weighted Quick Union with Path Compression.
- Implemented the functions **mergeComponents()**, **doPathCompression()** and **find()**
- Then, successfully ran all test cases. Screenshot attached below.



TASKS

- Step 2: Implemented UnionFindClient.java (INFO6205\src\main\java\edu\neu\coe\info6205\union_find**UnionFindClient**.java)
- Designed a main function which calls UnionFind by passing the **number of sites** in the constructor.
- UnionFindClient.java also has a function called count which counts the number of non-unique connections / pairs it took to fully connect n (number of sites).
- Recorded the number of sites versus number of connections it took to connect them as 1 component in directory INFO6205\src\main\java\edu\neu\coe\info6205\union_find\assign3_submission**Relationship**.xls

Relationship between n(number of sites) and m(number of connections)is: m >=n
The relationship is linear. As the number of sites grow, the number of connections grow **linearly**.

	A	B
1	Number of sites	Number of connections
2	2	3
3	4	3
4	8	12
5	16	16
6	32	40
7	64	70
8	128	131
9	256	259
10	512	516
11	1024	1031
12	2048	2053
13	4096	4101
14	8192	8195
15	16384	16388
16	32768	32775
17	65536	65537
18	131072	131078
19	262144	262149
20	524288	524291
21	1048576	1048585
22	2097152	2097154
23	4194304	4194305
24	8388608	8388617
25	16777216	16777220
26	33554432	33554435