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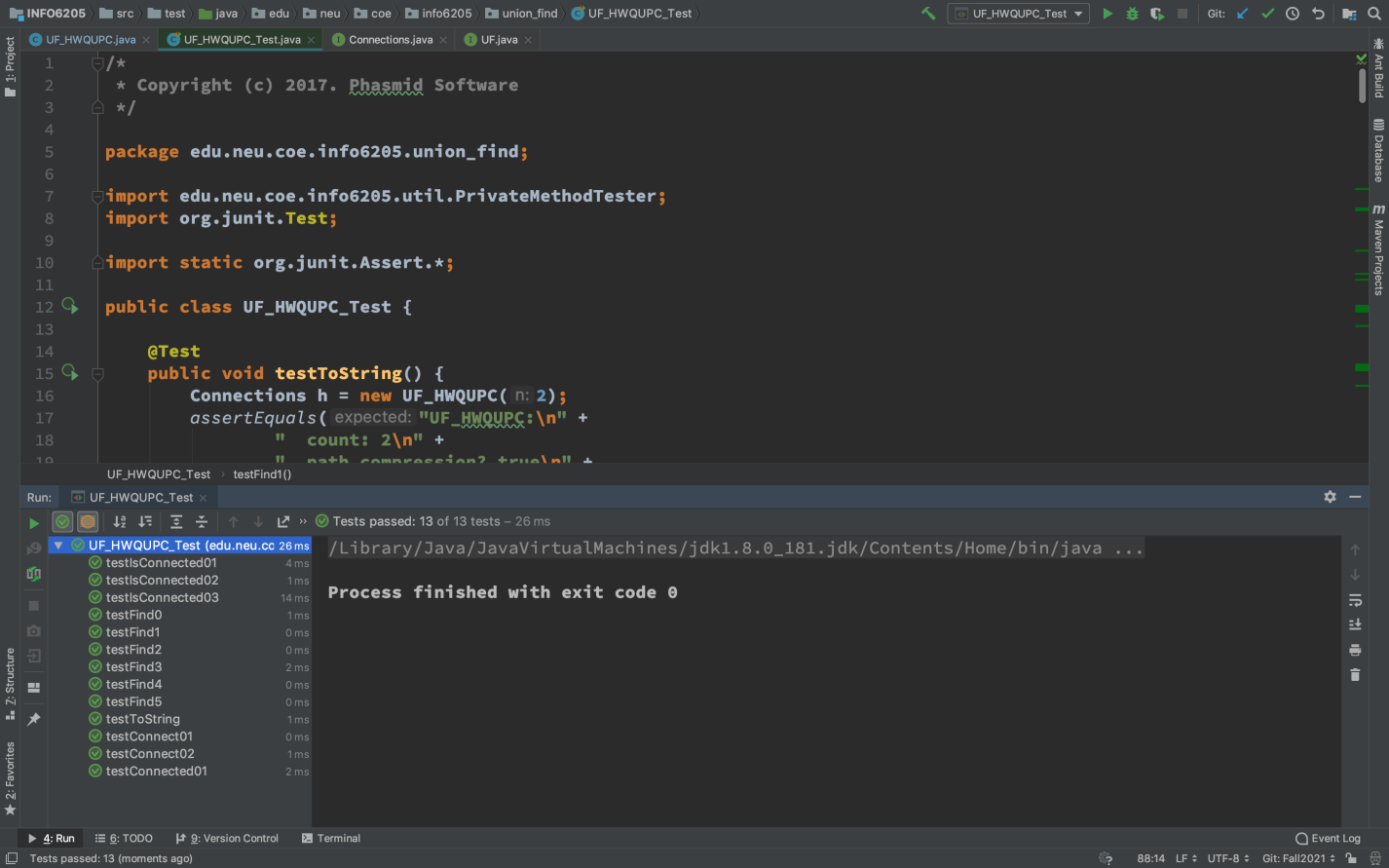
**Program Structures & Algorithms**

**Fall 2021**

**Assignment No. 3**

**Part1**

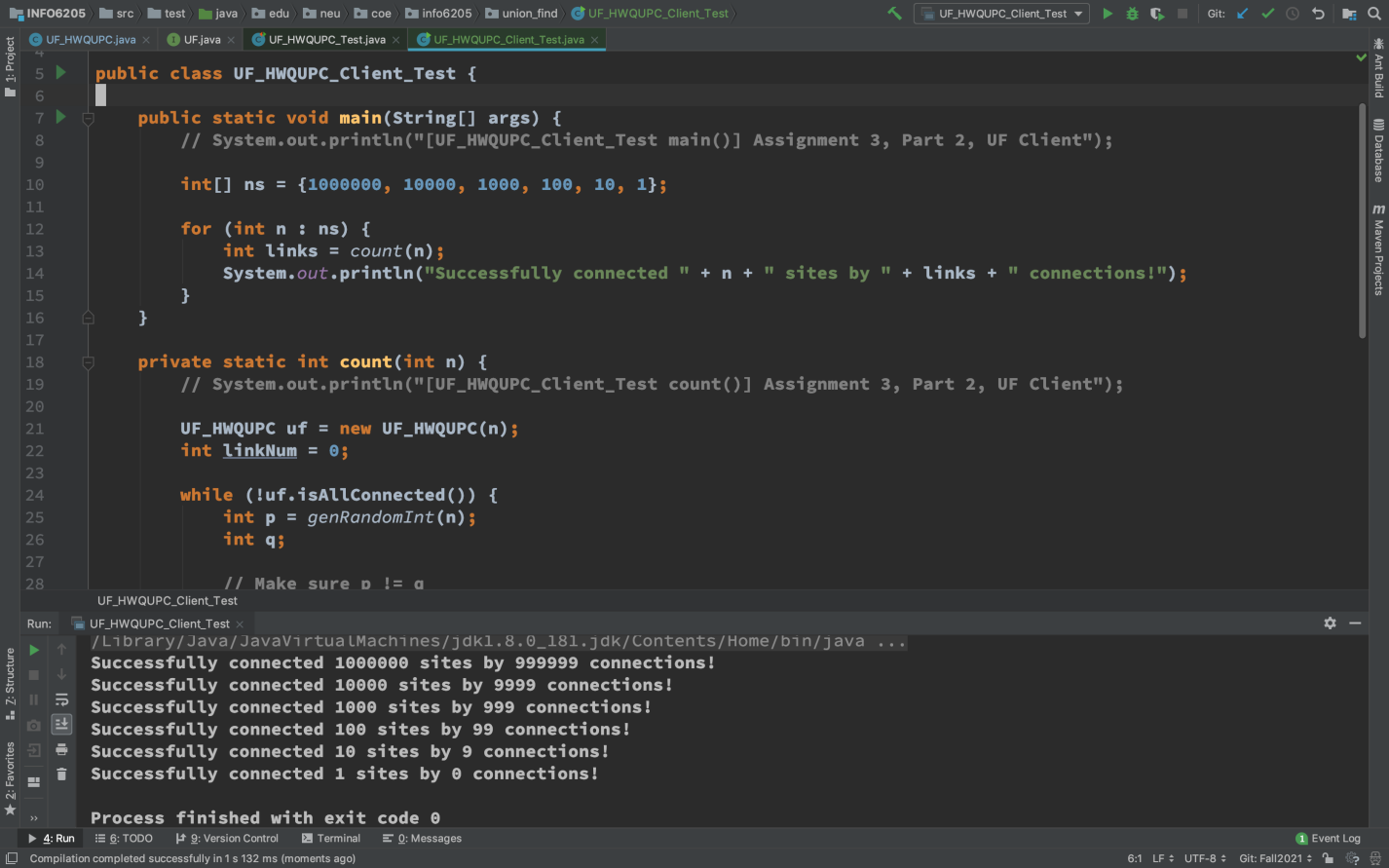
The screenshot of Unit test `UF\_HWQUPC\_Test`:



Picture 1 Screentshot of passing UF\_HWQUPC\_Test

**Part2**

Implemented target functions such as main() and count() by the requirement in file `UF\_HWQUPC\_Client\_Test`:



Picture 2 Client code of Part 2

After developed this code, we gather output result here:

Connected 1000000 sites by 999999 pairs

Connected 10000 sites by 9999 pairs

Connected 1000 sites by 999 pairs

Connected 100 sites by 99 pairs

Connected 10 sites by 9 pairs

Connected 1 sites by 0 pairs

**Part3**

I drew a table which records the number of site(s) in graph (represented by variable n) and the number pair(s) (represented by variable m) to make sure all sites are connected or we say in the same union, as following:

|  |  |
| --- | --- |
| **n** | **m** |
| **1** | 0 |
| **10** | 9 |
| **100** | 99 |
| **1000** | 999 |
| **10000** | 9999 |
| **100000** | 99999 |

Table 1 Result between the number of objects (n) and the number of pairs (m)

From this test result, I assume that the relationship between the number of objects (n) and the number of pairs (m) is: **wpsoffice**