

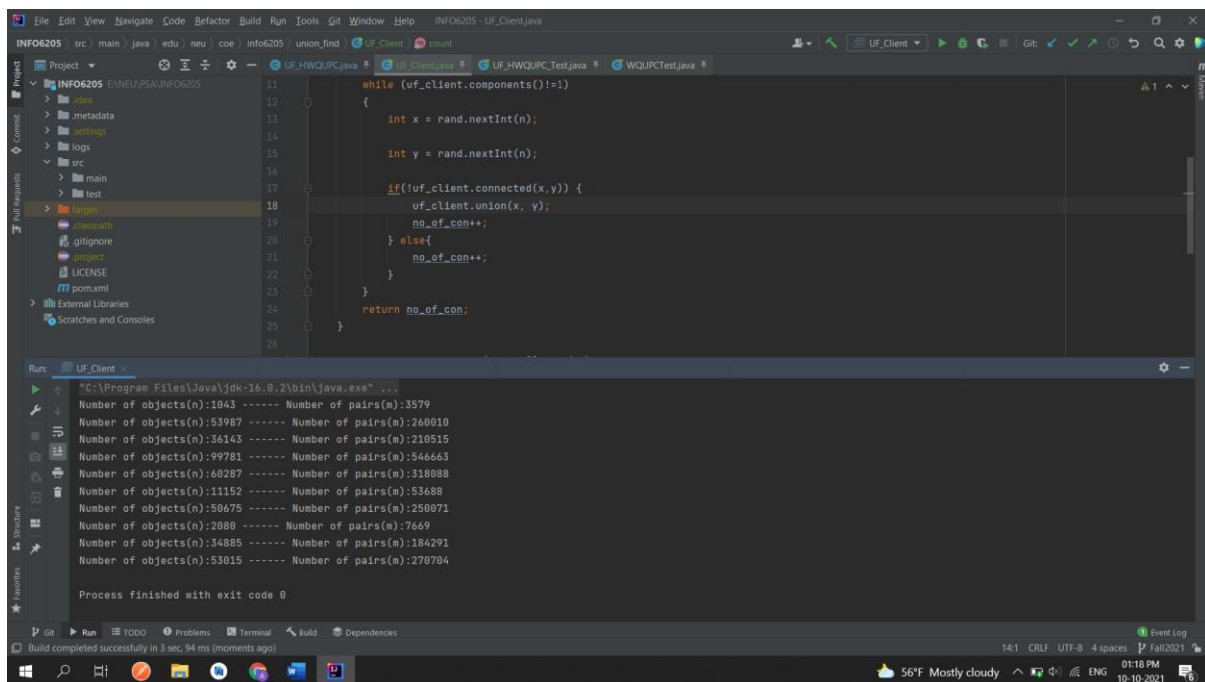
Program Structures and Algorithms (6205)

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Assignment No – 3

Output -



The screenshot shows an IDE with a project named 'INFO6205'. The code in 'UF_Client.java' is a loop that generates random integers and counts the number of objects and pairs. The output window shows the results of the program execution.

```
while (uf_client.components() != 1)
{
    int x = rand.nextInt(n);
    int y = rand.nextInt(n);
    if (uf_client.connected(x, y)) {
        uf_client.union(x, y);
        no_of_con++;
    } else {
        no_of_con++;
    }
    return no_of_con;
}
```

Run: UF_Client

```
"C:\Program Files\Java\jdk-16.0.2\bin\java.exe" ...
Number of objects(n):1043 ----- Number of pairs(m):3579
Number of objects(n):53987 ----- Number of pairs(m):260010
Number of objects(n):36143 ----- Number of pairs(m):210515
Number of objects(n):99781 ----- Number of pairs(m):546663
Number of objects(n):60287 ----- Number of pairs(m):318088
Number of objects(n):11152 ----- Number of pairs(m):53688
Number of objects(n):50675 ----- Number of pairs(m):250071
Number of objects(n):2080 ----- Number of pairs(m):7669
Number of objects(n):34885 ----- Number of pairs(m):184291
Number of objects(n):53015 ----- Number of pairs(m):270704

Process finished with exit code 0
```

Number of objects(n):1043 ----- Number of pairs(m):3579

Number of objects(n):53987 ----- Number of pairs(m):260010

Number of objects(n):36143 ----- Number of pairs(m):210515

Number of objects(n):99781 ----- Number of pairs(m):546663

Number of objects(n):60287 ----- Number of pairs(m):318088

Number of objects(n):11152 ----- Number of pairs(m):53688

Number of objects(n):50675 ----- Number of pairs(m):250071

Number of objects(n):2080 ----- Number of pairs(m):7669

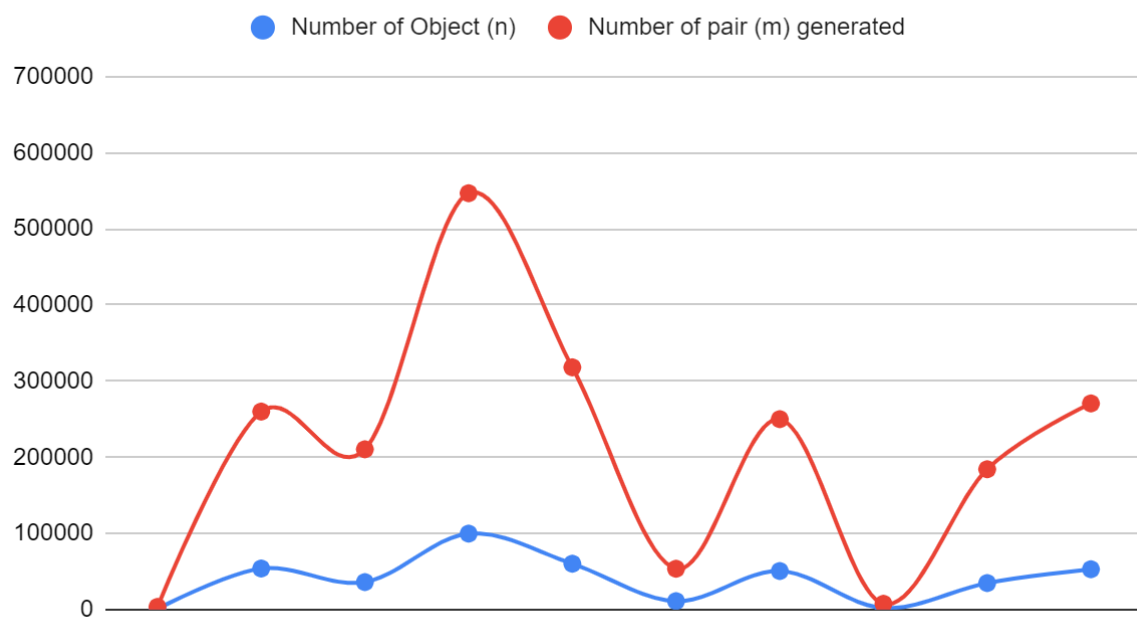
Number of objects(n):34885 ----- Number of pairs(m):184291

Number of objects(n):53015 ----- Number of pairs(m):270704

Relationship Conclusion –

Number of Object (n)	Number of pair (m) generated
1043	3579
53987	260010
36143	210515
99781	546663
60287	318088
11152	53688
50675	250071
2080	7669
34885	184291
53015	270704

Number of pair (m) generated vs. Number of Object (n)



From the results mentioned above, the number of pairs(m) generated are proportional to the number of objects provided as input i.e $m \sim 5 * n$

Passed Unit Test –

