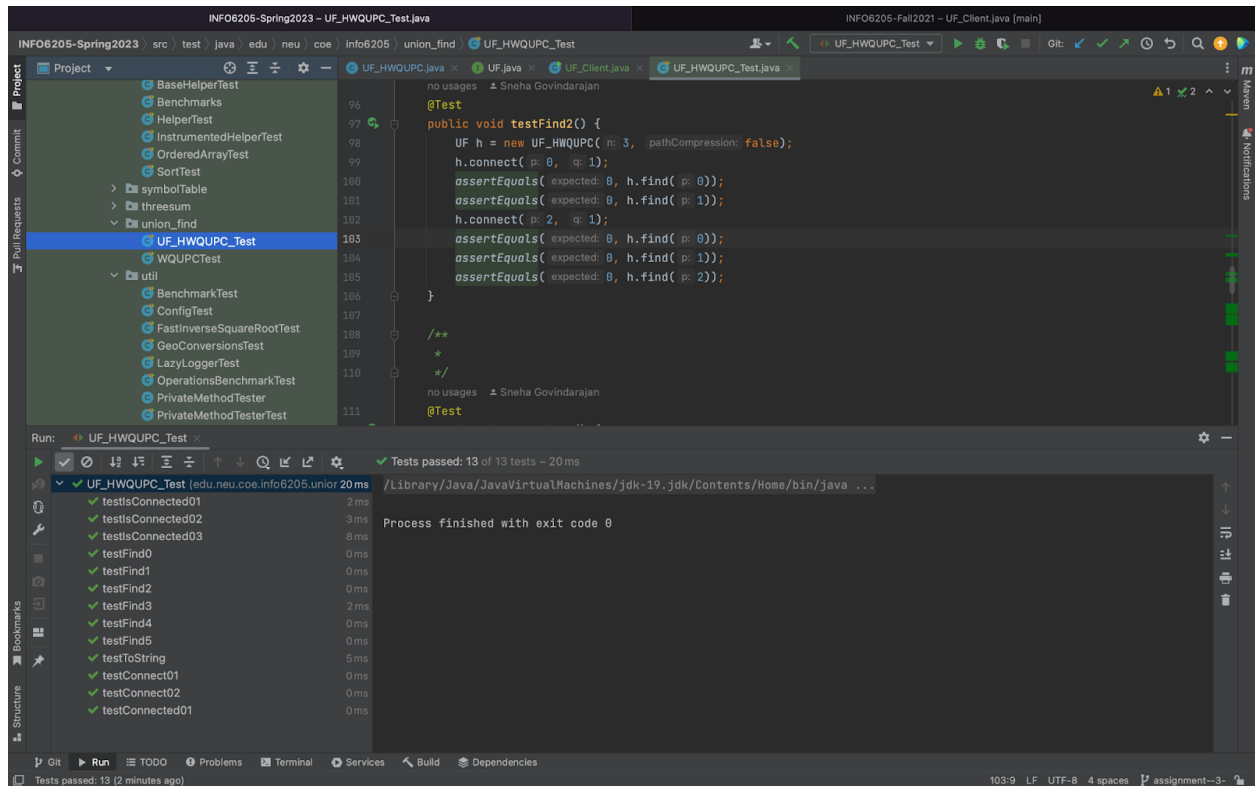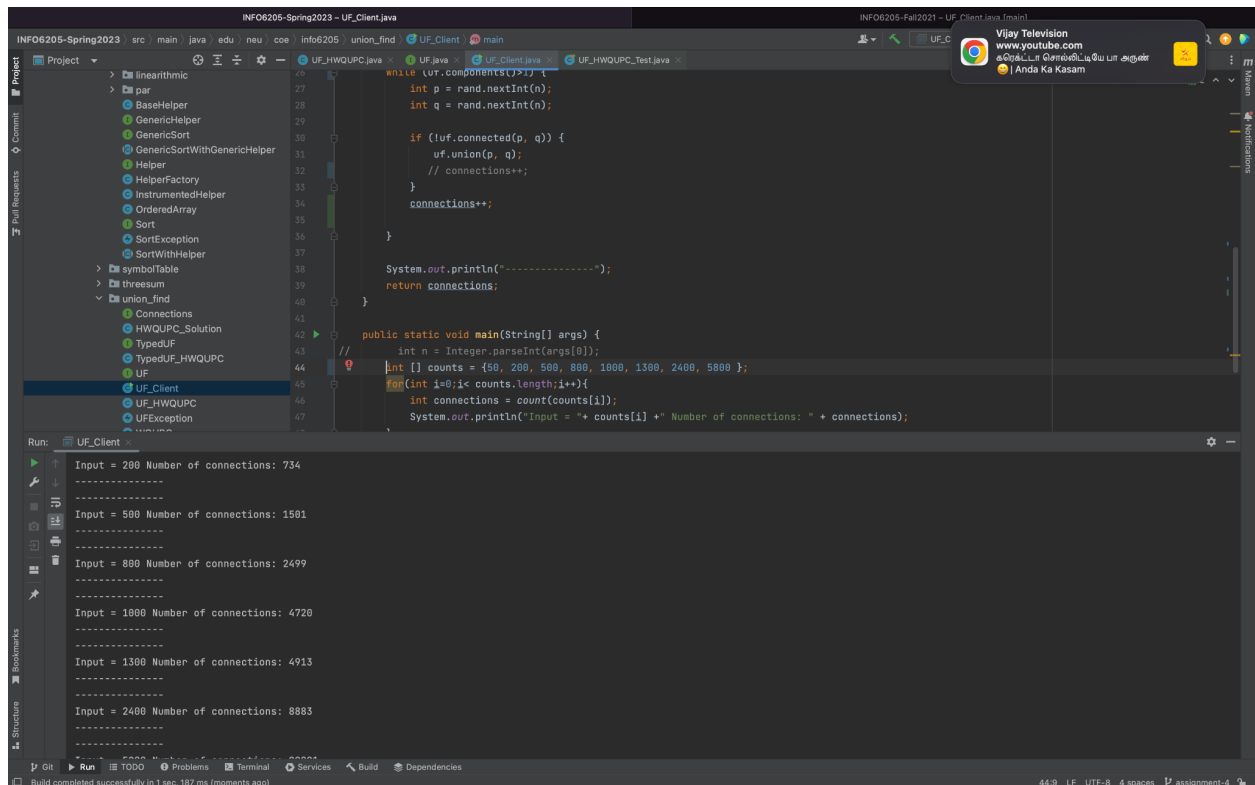# Assignment 4 - WQUPC

1) Screenshot for UF_HWQUPC

2) Evidence for UF_Client

Assignment 4 - WQUPC
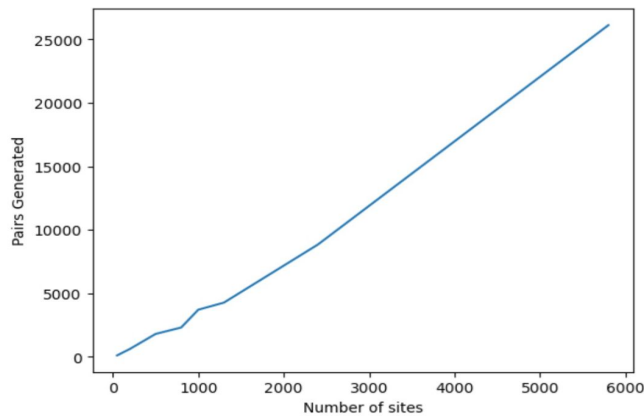
3) **relationship between the number of objects (*n*) and the number of pairs (*m*)**

The "counts" array contains the values of n, and the "result" array contains the corresponding values of m. This data can be plotted on a graph to visualize the relationship between n and m.

```
In [3]: import matplotlib.pyplot as plt

        xpoints = [50, 200, 500, 800, 1000, 1300, 2400, 5800]
        ypoints = [106, 616, 1796, 2304, 3706, 4264, 8838, 26115 ]

        plt.plot(xpoints, ypoints)
        plt.xlabel("Number of sites")
        plt.ylabel("Pairs Generated")
        plt.show()
```


The given arrays, "counts" and "result", represent a set of data points that show the relationship between the number of objects (n) and the number of pairs (m) required to reduce the number of components using the union-find algorithm.

It is difficult to determine the exact relationship between n and m from this data alone, as it depends on the specific implementation of the union-find algorithm and the method used to generate the pairs. However, based on the logarithmic relationship described earlier, it can be expected that the graph would show an increase in m as n increases, but with a slower rate of increase as n becomes larger. Therefore, the relationship increases exponentially.