**Program Structures & Algorithms**

**Spring 2022**

**Assignment No. 2**

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* **Task:** To improve the weighted find using path compression and find the relation between a number of sites and a number of pairs generated.
* **Output screenshot:**

**Table

Description automatically generated**

* **Relationship Conclusion:**

Through this experiment, we can conclude that the number of random pairs generated is directly proportional to the number of sites given by the user.

**n is directly proportional to m,**

**where n = number of sites, and m = number of pairs generated**

* **Evidence / Graph**

|  |  |
| --- | --- |
| **Number of sites** | **Pairs generated** |
| 100 | 225 |
| 200 | 427 |
| 400 | 1115 |
| 800 | 2397 |
| 1600 | 6700 |
| 3200 | 13671 |
| 6400 | 28858 |
| 12800 | 63180 |
| 25600 | 131269 |
| 51200 | 319005 |

**Graphical representation**

As per the above data and graphical representation, it can be concluded that

N = N log2 N + c, where N is the number of sites.

* **Unit tests result**

Graphical user interface, application, Word

Description automatically generated