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**Program Structures & Algorithms**

**Spring 2021**

**Assignment No. 3**

* **Task :**

--Implement height-weighted Quick Union

--Develop a UF client that takes an integer value n and determines the number of “sites”

--Determine the relationship between n and m

* **Output:**

-- The given relationship between number of given objects(n) and total pairs generated(m) is:

total pairs generated(m)=number of given objects(n)-number of trees created at the end(count).

-- When implementing the Union find client to form a single tree at the end, the total pairs generated(m) at the end is number of given objects(n)-1, since the number of trees created is 1 at the end.

-- When implementing the Union find client to form multiple tree at the end, the total pairs generated(m) at the end is number of given objects(n)-number of trees created(i.e. count).

* **Relationship Conclusion:**

-- The given relationship between number of given objects(n) and total pairs generated(m) is:

total pairs generated(m)=number of given objects(n)-number of trees created at the end(count).

* **Graphical representation:**

A picture containing text, monitor, screenshot, electronics

Description automatically generated

* **Unit tests result:**

--Attached below is a screenshot of all the unit test case running successfully.

For

UF\_HWQUPC\_Test.java

Graphical user interface

Description automatically generated