Chandrakanth Chittappa (001300076)

INFO 6205

Make up Assignment for top hat quizzes and attendances.

**Task**

I want you to implement the "two-pass" method of path compression and compare its performance with using the "one-pass" method. All you have to do is to run the assignment 3 experiment again with two-pass. Compare the total times.  Run the comparison at least 10 times.  Send me your code, write your conclusions up in the report, and submit as usual. I will "make you whole" again regarding the things you missed.

**My Implementation of the “two-pass” method of path compression**

***Code:***

**Graphical user interface, text

Description automatically generated**

***Console output for the above implementation:***

**Text

Description automatically generated**

**Implementation of the “one-pass” method of path compression**

***Code:***

**Graphical user interface, text, application

Description automatically generated**

**Text

Description automatically generated with medium confidence**

***Console output for the above implementation:***

Table

Description automatically generated

**Comparing the results of one-pass vs two-pass find() method:Chart, line chart

Description automatically generated**

The above graph is drawn by population the values of the console output of the one-pass and the two-pass solution of the find method.

As, we can see from the above graph the number of connections/pairs generated to reduce the number of components from n to 1 for two-pass solution is higher than the one-pass solution. Thus, we can conclude that two-pass solution to find the root and compressing the path is **slower** than the one-pass solution to find the root and compressing the path.

**Comparing the test case results:**

***Test case result of one-pass solution:***

Graphical user interface, text, application

Description automatically generated

***Test case result of two-pass solution:***

Graphical user interface, text, application, email

Description automatically generated

**testFind3** is failing for the two-pass solution for path compression!