

Mid Exam - Questions: 12 & Time: 30 Minutes

* Required

MCQs

The worst-case time (M union-find operations on a set of N objects) for a Weighted Quick Union with path compression is

$N + M \lg^* N$

Weighted Quick Union with path compression improves/effect which of the following method?

Find()

In binary search, we have an array $A = [0,1,2,3,4,5,6]$. Suppose we want to find "5". In how many iterations, we can find the value "5"?

2



Linus Torvalds created the following

- ☒ Linux
- ☐ Git
- ☐ Java
- ☐ BitBucket
- ☒ Github

We are running a Weighted Quick Union on three billion nodes. What will be the maximum depth of the tree?

Less than 3 billion / $\log(2)$ ▼

We assume "is connected to" is an equivalence relation. Choose all the correct options.

- ☐ Reflexive: p is connected to q
- ☐ Symmetric: if p is connected to q, then q is connected to q
- ☐ Transitive: if p is connected to q and q is connected to r, then q is connected to r
- ☒ Reflexive: p is connected to p
- ☒ Transitive: if p is connected to q and q is connected to r, then p is connected to r
- ☒ Symmetric: if p is connected to q, then q is connected to p



What are the rules to describe a recursive method? Choose all the correct options?

- ☐ Recursive methods do not need a return statement
- ☒ It has a base case
- ☒ Its calls should not address subproblems that overlap.
- ☒ Its calls must address subproblems that are smaller

Quick Find is based on which approach? *

Eager ▼

If the depth of the tree in Weighted Quick Union is four, what is the minimum number of nodes in the network?

16 ▼

When we call a static method, its object is created automatically.

True ▼

One of the following is used to make the Program's output to be the input of another program.



Key building blocks of the Java program? Choose all the correct options.

- ☒ Statements
- ☒ Pointers
- ☒ Primitive data types
- ☒ Expressions
- ☒ Arrays
- ☒ Static methods
- ☒ Strings
- ☒ Data Abstractions
- ☒ Input/Output

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