1.3in1.3in* 1.3in1.3in*

Dynamic transitive closure problem for unweighted directed graphs

20095039 : Troels Leth Jensen
20094924 : Jens Olaf Svanholm Fogh
20022362 : Morten Krogh-Jespersen

Supervisor: Gudmund Skovbjerg Frandsen,
Department of Computer Science, Aarhus Universitet
October 3, 2013

Contents

Introduction
needs content
Binary heaps
needs content

1 Binary heap with array

needs content

2 Implementing decrease key

needs content

3 Time-complexity for binary heap with array

4 Binary heap with pointers

needs content

5 Implementing decrease key

needs content

6 Time-complexity for binary heap with pointers

7 Testing correctness of Binary Heaps

needs content

Fibonacci heaps

In this chapter we focus on Fibonacci heaps, which is a data structure that has a forest of rooted trees as opposed to a binary heap that only has one tree [?]. The data structure was invented by Michael L. Fredman and Robert Endre Tarjan and was published in the Journal of ACM in 1989. It has it name because the size of any subtree in a Fibonacci heap will be lower bounded by F_{k+2} where k is the degree of the root.

8 Fibonacci heap version 1

9 Worst case time-complexity for fib-v1

needs content

10 Fibonacci heap version 2

needs content

11 Worst case time-complexity for fib-v2

needs content

12 Testing correctness of Fibonacci Heaps

needs content

Test-results

needs content

Dijkstra

needs content

Binary heap vs Fibonacci heap s needs content

Test-results

needs content

Conlusion

needs contents