

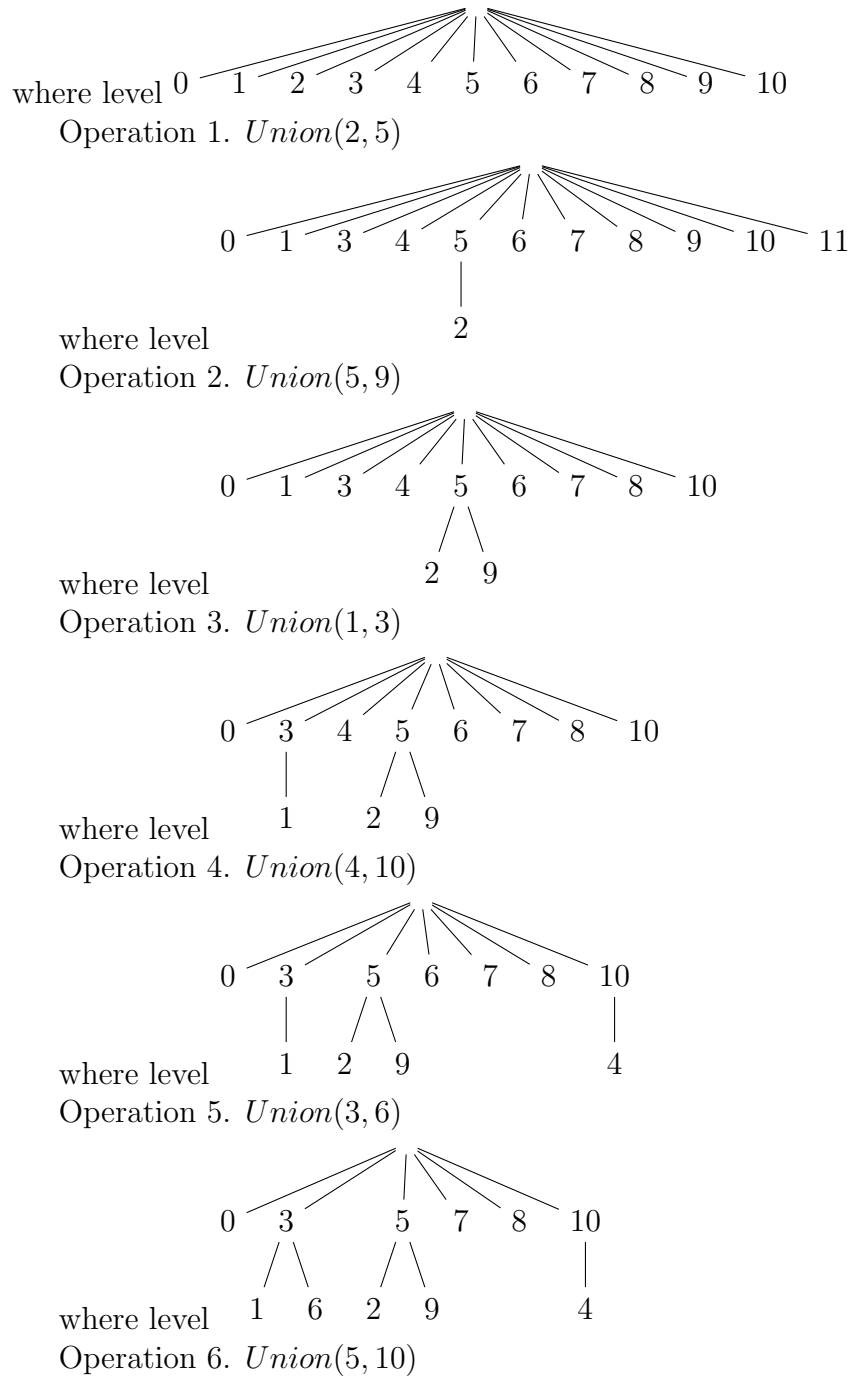
Code Task 1

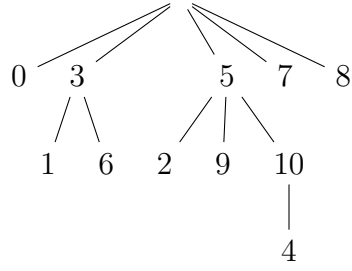
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February 25, 2025

Abstract

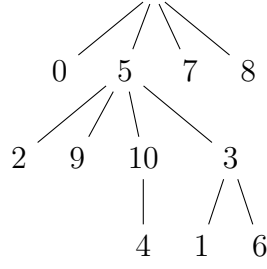
1 Union-Find Data Structure





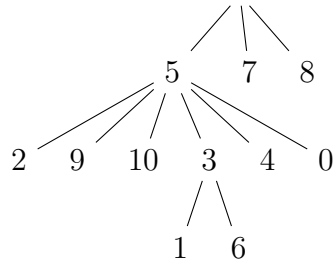
where level

Operation 7. $Union(1,2)$



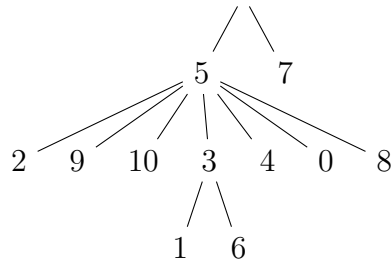
where level

Operation 8. $Union(4,0)$



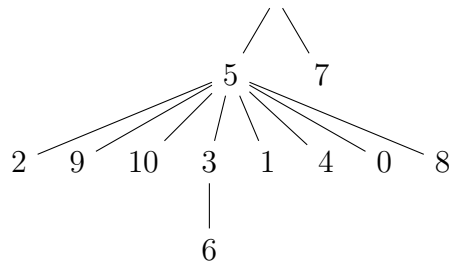
where level

Operation 9. $Union(4,8)$



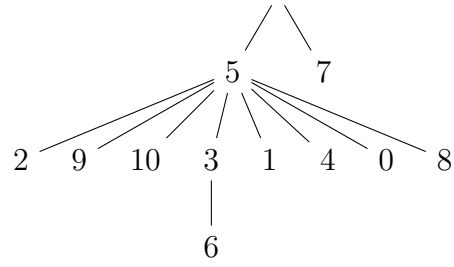
where level

Operation 10. $Union(1,8)$



where level

Operation 11. $Union(2,0)$



where level

2 Problem Solving

3 Algorithm Analysis

4 Additional Task

Possible optimizations: Create an index for head and tail and move those rather than shifting the whole array