

# Algorithm Analysis and Data Structures

## CS 5343.001: Homework #8

Due on Monday November 28, 2016 at 11:59pm

*Professor Greg Ozbirn*

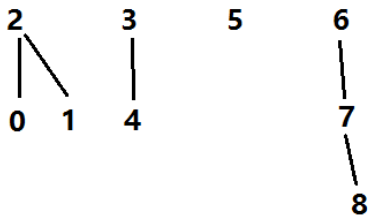
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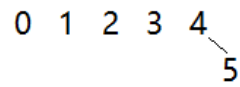
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## Problem 1

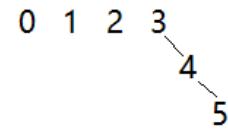


## Problem 2

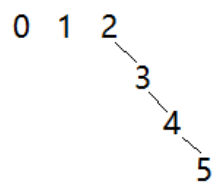
union(4, 5)



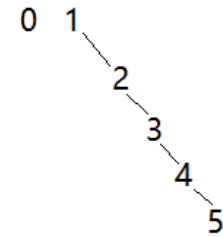
union(3, 4)



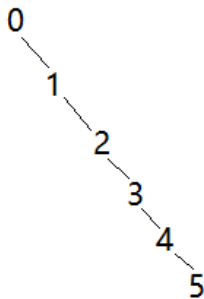
union(2, 3)



union(1, 2)

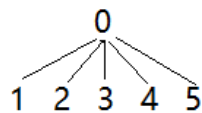


union(0, 1)

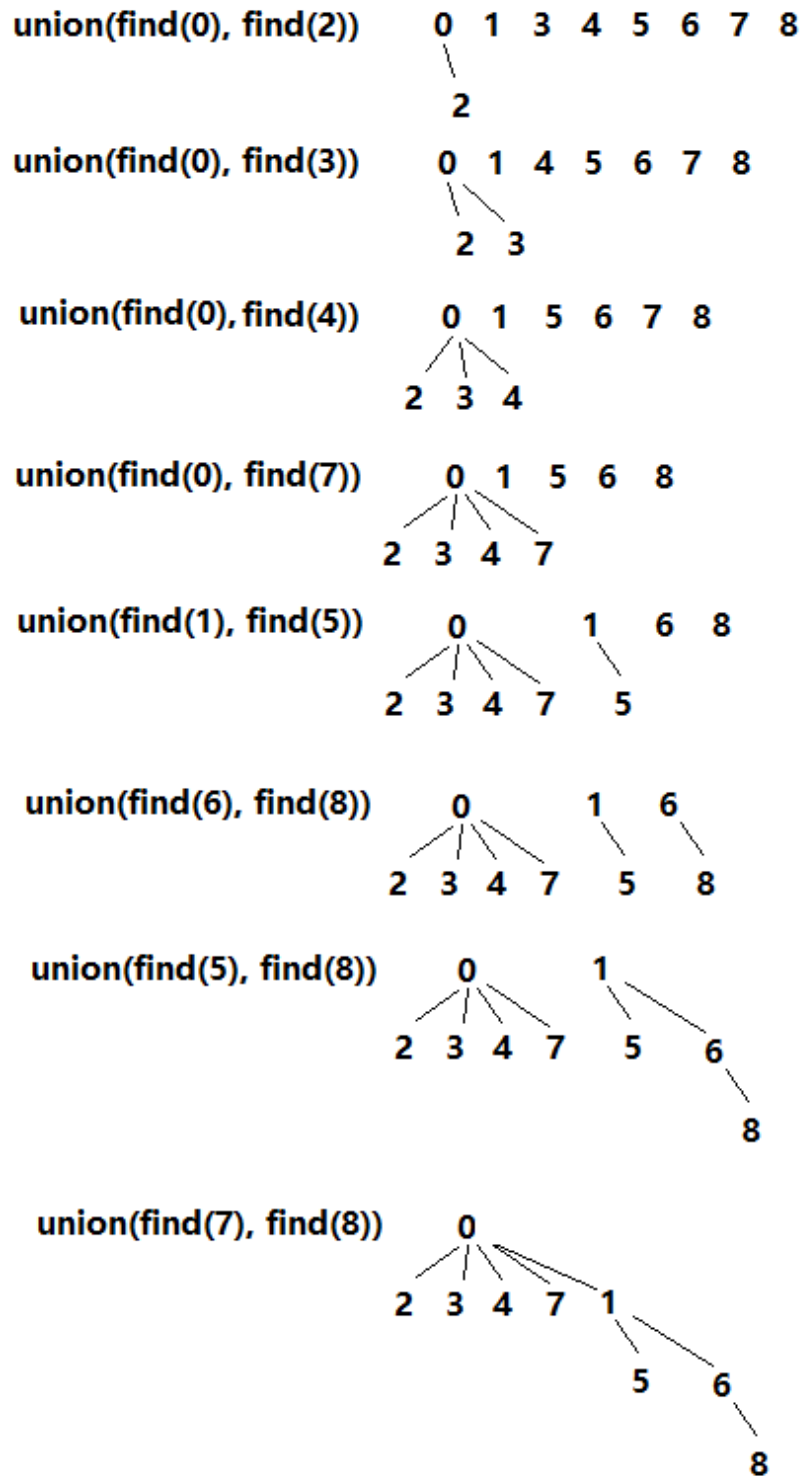


If use this union function to make a merge, it might result in a long and slim tree

find(5)



## Problem 3



## Problem 4

-9	0	0	0	0	1	1	0	6
0	1	2	3	4	5	6	7	8

## Problem 5

**union(find(0), find(2))**    0 1 3 4 5 6 7 8

2

**union(find(0), find(3))**    0 1 4 5 6 7

2 3

**union(find(0), find(4))**    0 1 5 6 7 8

2 3 4

**union(find(0), find(7))**    0 1 5 6 8

2 3 4 7

**union(find(1), find(5))**    0 1 6 8

2 3 4 7 5

**union(find(6), find(8))**

0 1 6  
2 3 4 7 5 8

**union(find(5), find(8))**

0 1  
2 3 4 7 5 6  
8

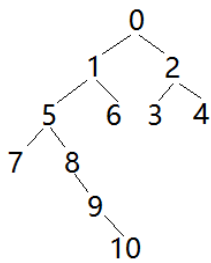
**union(find(7), find(8))**

1  
5 6 8  
0 2 3 4 7

## Problem 6

1	-3	0	0	0	1	1	0	6
0	1	2	3	4	5	6	7	8

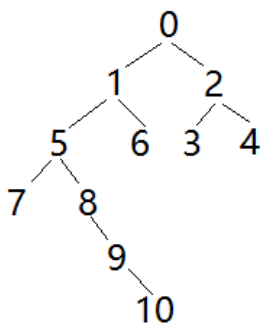
## Problem 7



after find ( 10 )

-1	0	0	2	2	0	1	5	0	0	0
0	1	2	3	4	5	6	7	8	9	10

## Problem 8



after find ( 10 )

