

Identification of Connected Components Using Parallel Versions of Breadth First Search and Label Propagation

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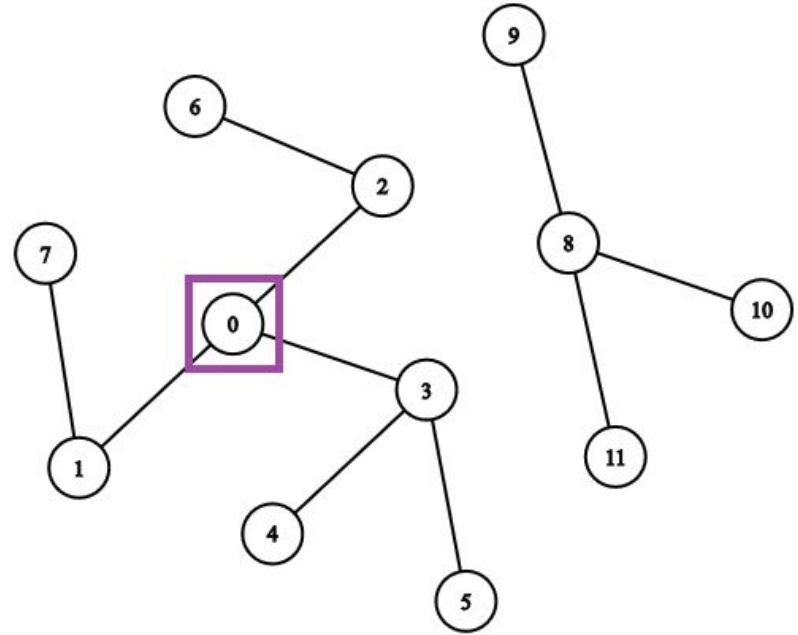
Walk-through of Parallel BFS

Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0}

Frontier: {}

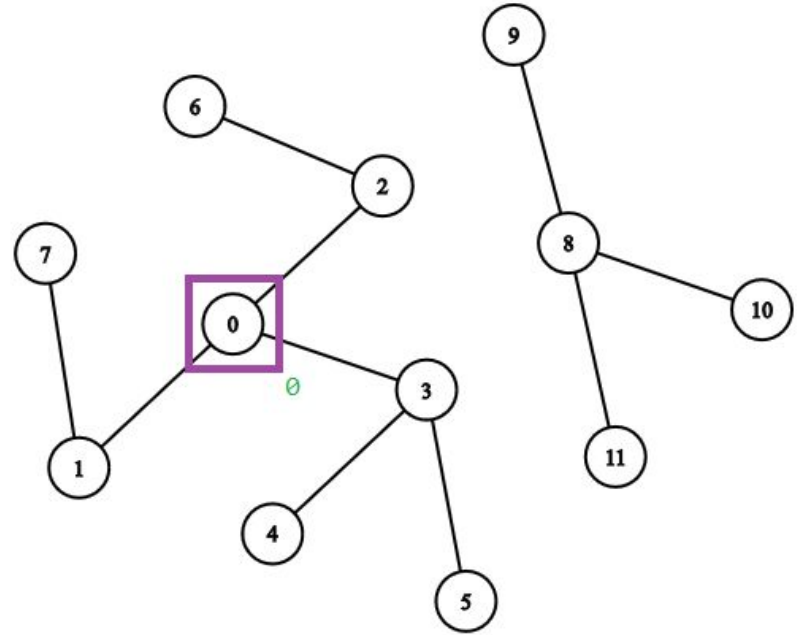


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0}

Frontier: {0}

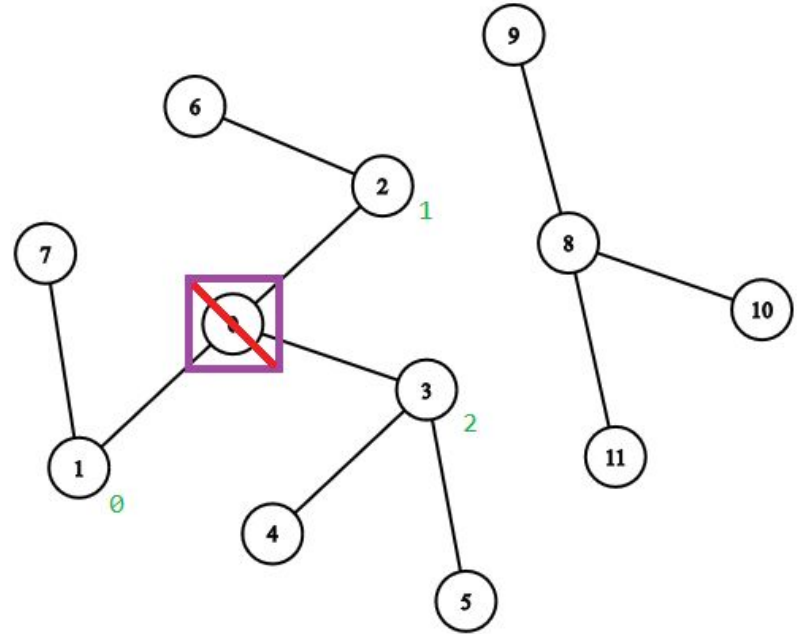


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0}

Frontier: {1,2,3}

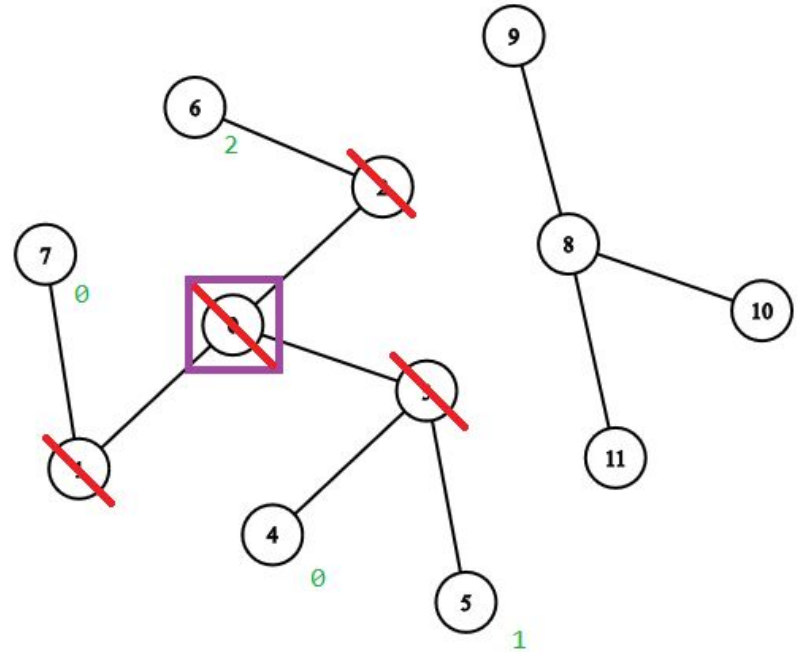


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0}

Frontier: {4,5,6,7}

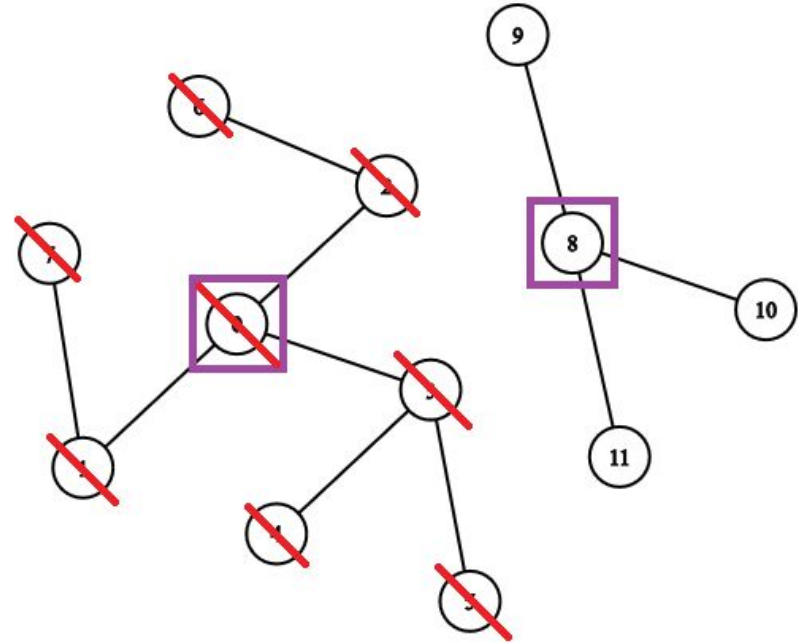


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0, 8}

Frontier: {}

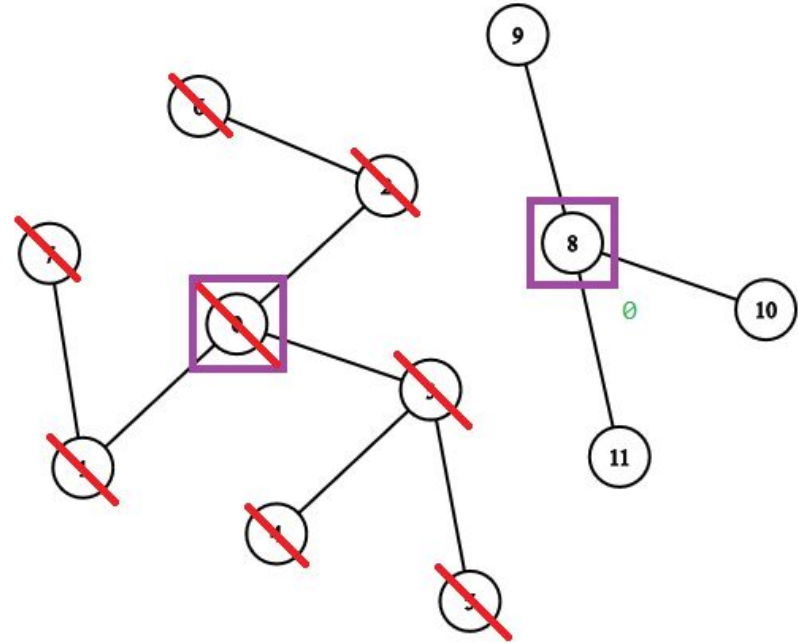


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0, 8}

Frontier: {8}

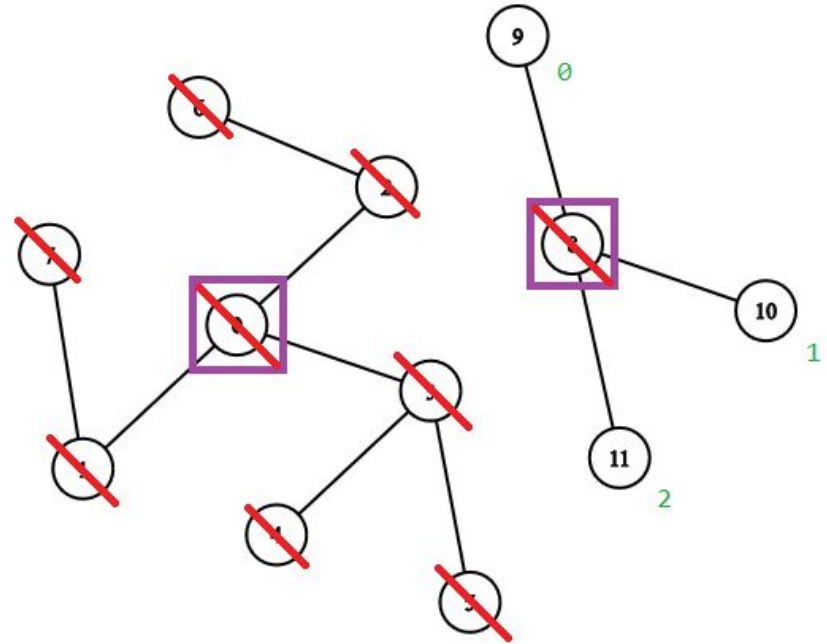


Parallel BFS (3 Threads)

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Connected Components:{0, 8}

Frontier: {9,10,11}

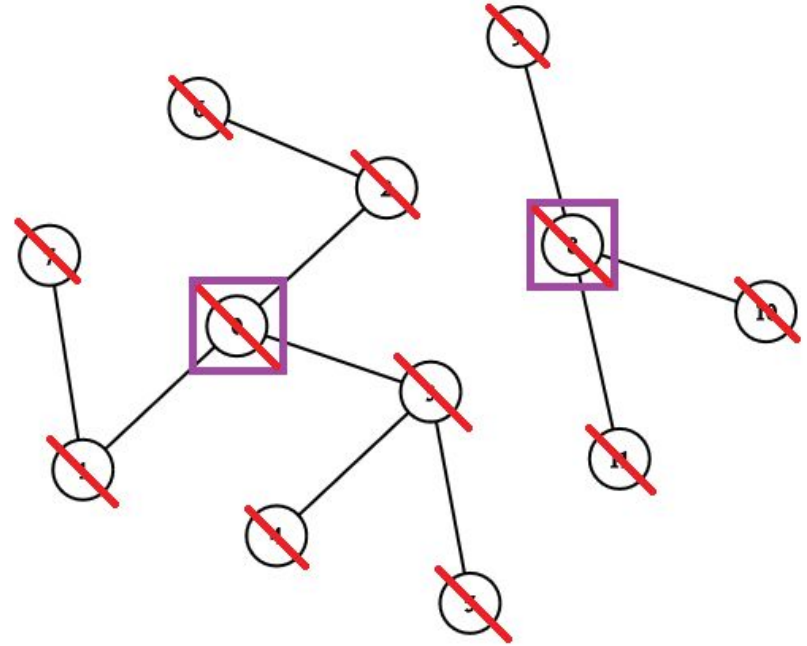


Parallel BFS (3 Threads)

Vertices: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}

Connected Components: {0, 8}

Frontier: {}

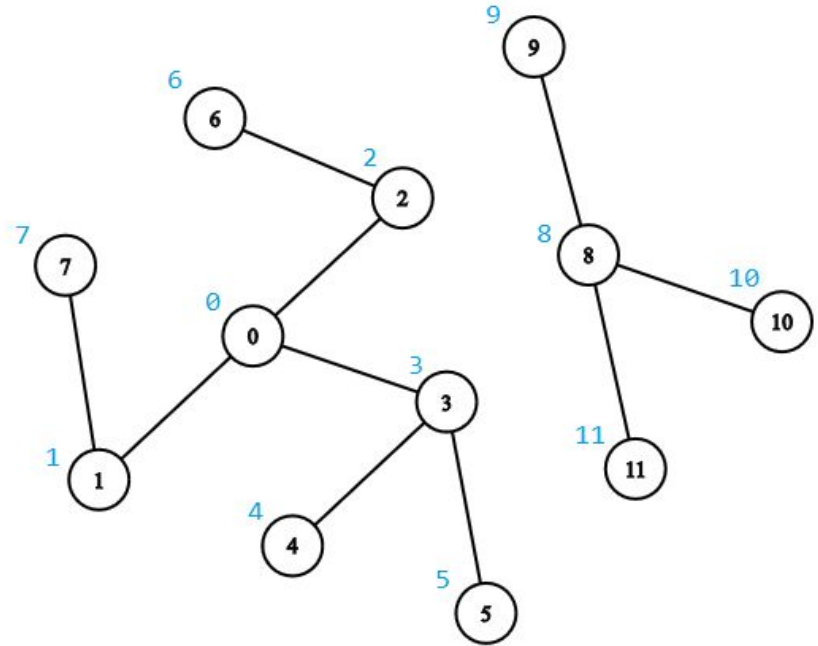


Walk-through of a Modified Label Propagation (Serialized)

Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

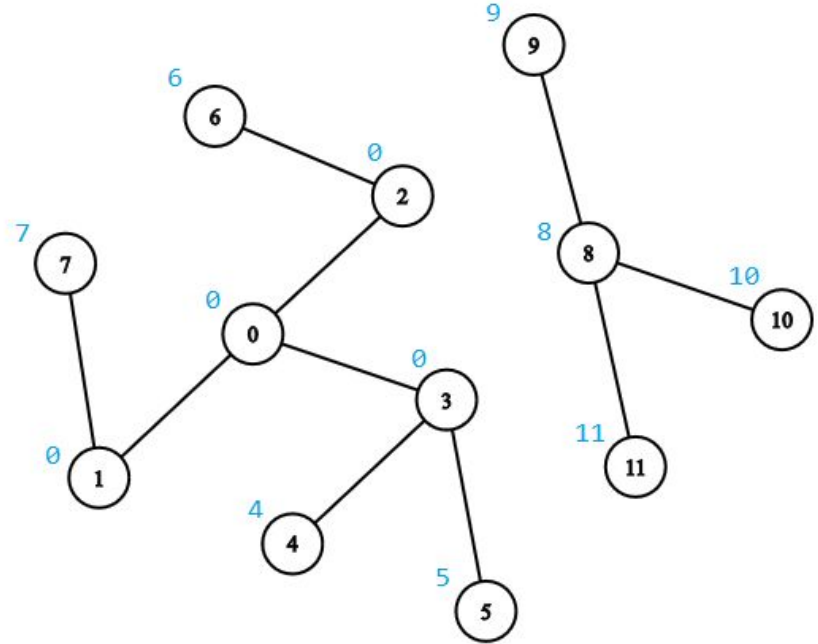
Label: {0,1,2,3,4,5,6,7,8,9,10,11}



Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

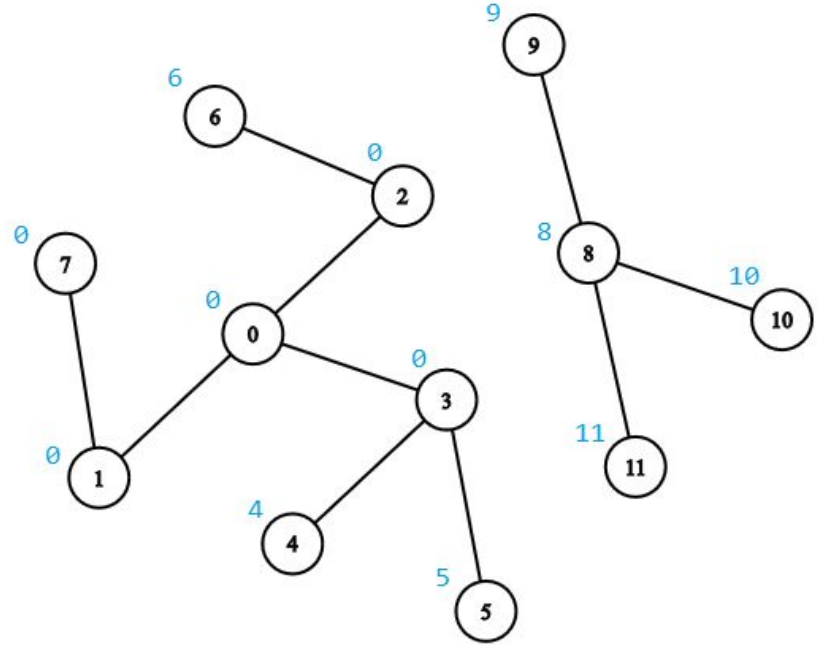
Label: {0,0,0,0,4,5,6,7,8,9,10,11}



Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

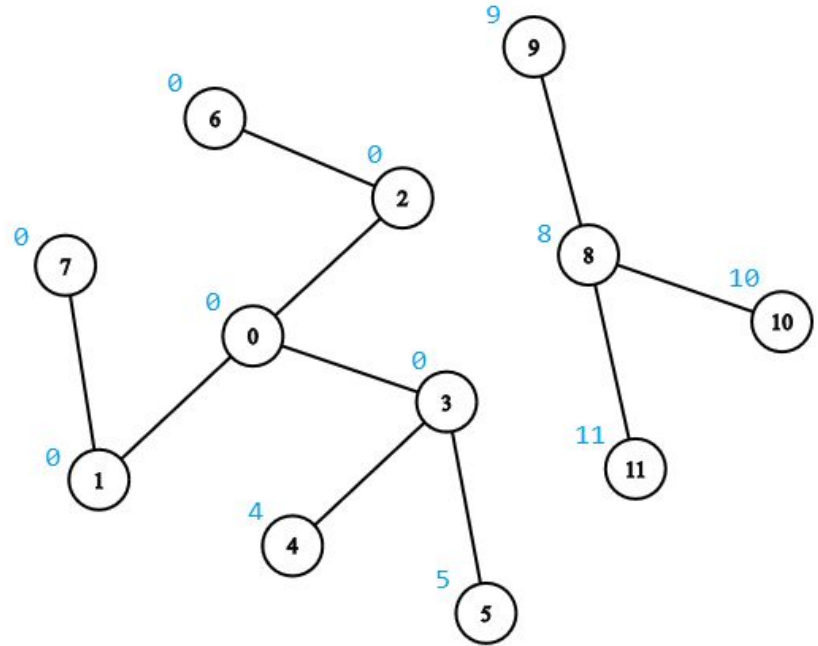
Label: {0,0,0,0,4,5,7,0,8,9,10,11}



Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

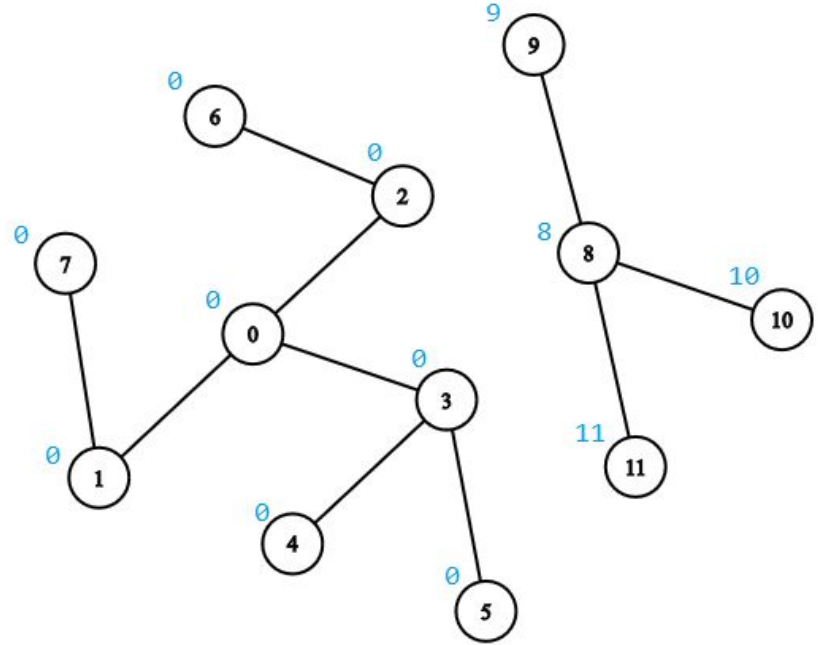
Label: {0,0,0,0,4,5,0,0,8,9,10,11}



Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Label: {0,0,0,0,0,0,0,0,8,9,10,11}

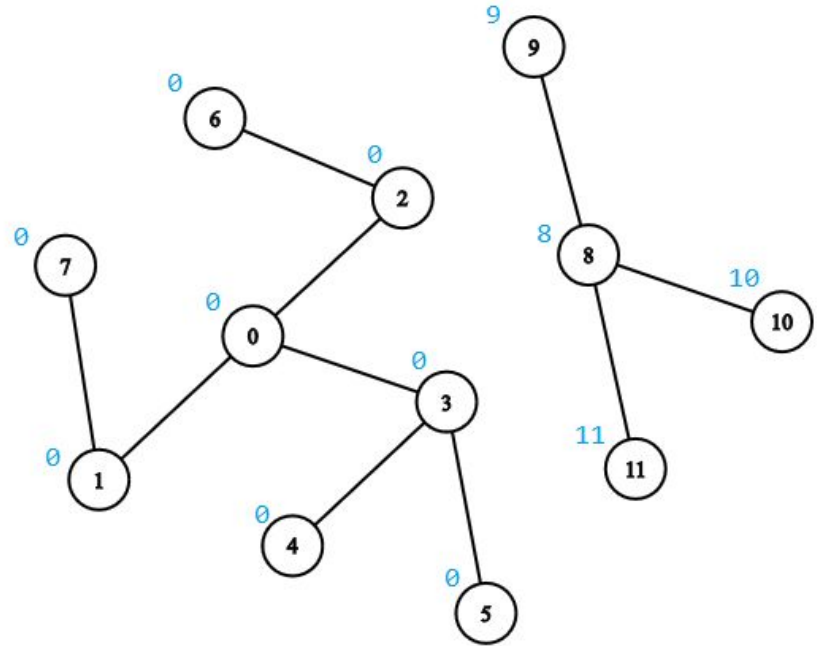


Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Label: {0,0,0,0,0,0,0,0,8,9,10,11}

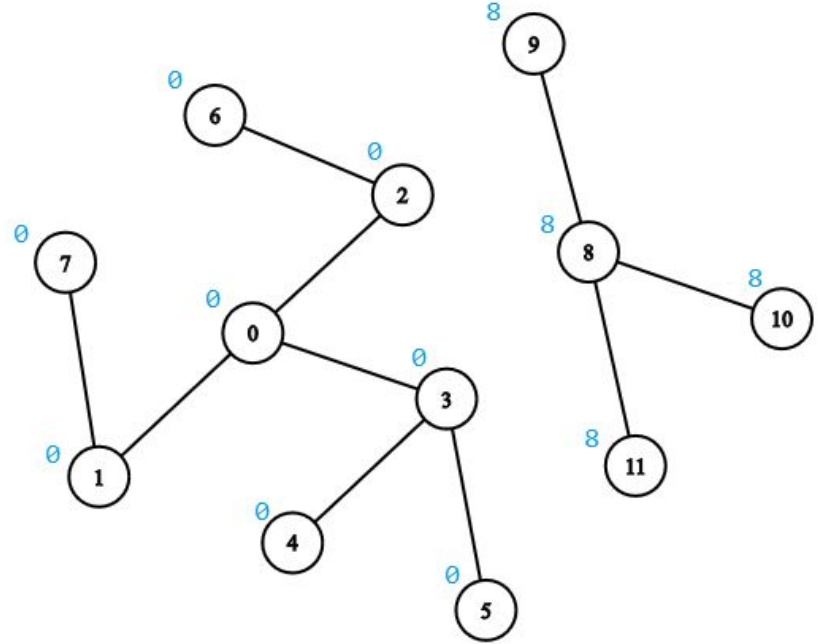
There is not change for the next 4 nodes: 4, 5, 6, and 7.



Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Label: {0,0,0,0,0,0,0,0,0,8,8,8,8}

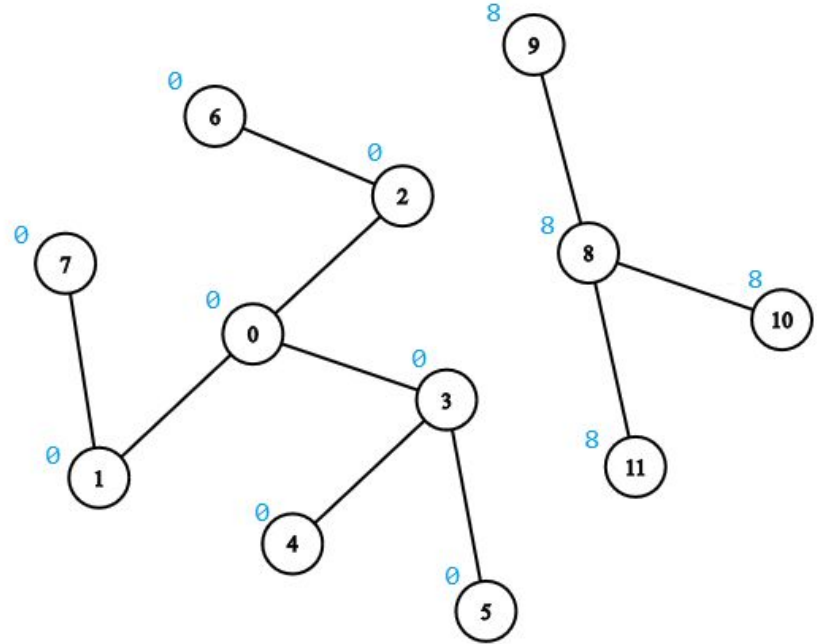


Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Label: {0,0,0,0,0,0,0,0,0,8,8,8,8}

There is not change for the next 3 nodes: 9, 10, and 11.

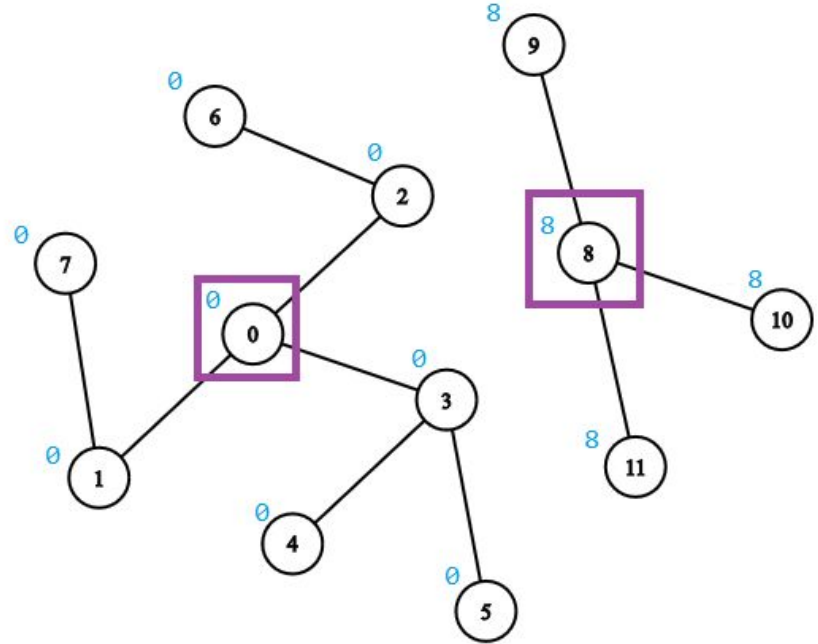


Label Propagation

Vertices: {0,1,2,3,4,5,6,7,8,9,10,11}

Label: {0,0,0,0,0,0,0,0,8,8,8,8}

Connected Components:{0, 8}



Discussion of Experiment

Discussion of Results

Questions?