Announcements

• Wednesday
  • Huffman
• Friday
  • APT set 7
  • Extra credit

• All assignments MUST be submitted by 5:00pm on Friday
Announcements

• Wednesday
  • Yes, we have class

• Friday
  • No, we do not have recitation
  • Use this time to study

• Tuesday, Dec 10
  • Final
    • 2:00 – 5:00pm

Today

• Graphs!
  • Examples
  • DFS
  • BFS
  • Dijkstra’s Algorithm
Facebook

- Graph Search
  - https://www.facebook.com/about/graphsearch

PageRank

- Google web search algorithm for measuring importance
PageRank

- Google web search algorithm for measuring importance
  - Named for inventor Larry Page

Today

- Graphs!
  - Examples
  - DFS
  - BFS
  - Dijkstra’s Algorithm
private void dfs(String vertex, Set<String> visited){
    if(visited.contains(vertex)) return;
    visited.add(vertex);
    System.out.print(vertex + " ");
    for(String adj: myGraph.get(vertex)){
        dfs(adj, visited);
    }
}
private void bfs(String vertex, Queue<String> q){
    Set<String> visited = new TreeSet<String>();
    q.add(vertex);
    visited.add(vertex);

    while(!q.isEmpty()){
        String v = q.remove();
        System.out.print(v + " ");
        for(String adj : myGraph.get(v)){
            if(!visited.contains(adj)){
                q.add(adj);
                visited.add(adj);
            }
        }
    }
}
What is the shortest path from The Wall to Qarth?

Dijkstra’s Algorithm

- Solve shortest-path problem from A to B for non-negative path weights.
What is the shortest path from The Wall to Qarth?
What is the shortest path from The Wall to Qarth?
What is the shortest path from The Wall to Qarth?

The Wall

Winterfell

The Twins

Riverrun

Qarth

Harrenhal

King's Landing

What is the shortest path from The Wall to Qarth?

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What is the shortest path from The Wall to Qarth?
What is the shortest path from The Wall to Qarth?

The diagram shows a network of cities connected by roads with distances indicated. The shortest path from The Wall to Qarth is 27 units.
What is the shortest path from The Wall to Qarth?

The Wall → Winterfell (4)
Winterfell → The Twins (10)
The Twins → Harrenhal (4)
Harrenhal → King's Landing (17)
King's Landing → Qarth (34)
What is the shortest path from The Wall to Qarth?

The wall → Winterfell (4)
Winterfell → The Twins (10)
The Twins → Harrenhal (4)
Harrenhal → King's Landing (19)
King's Landing → Qarth (34)

12/2/13
Your turn. What is the shortest path from Riverrun to Qarth?

Riverrun — The Twins — Winterfell — The wall

Riverrun — Harrenhal — King’s Landing — Qarth

How confident are you with arrays?

How confident are you with linked-lists?

How confident are you with lists?

How confident are you with trees?

How confident are you with maps?

How confident are you with sorting algorithms?
Letters to the editor: go to statement considered harmful

Full Text:  [PDF](#)

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