

Greedy Algorithms

Agenda

- Discuss SHA256 - How do you use a hash function in practice, how do you use it in projects?
- Greedy Algs

SHA256

Demo in Java (functions are all the same in C++)

Greedy Algorithms

- We often have multiple possible choices to make at points in a program
- Graph search
 - Greedily select closest unexplored edge → Dijkstra
- Approximate Traveling Salesman problem
- Question: How do we know a greedy algorithm is accurate
- If it isn't perfect, just how bad is it?

Slides

- A few example greedy algorithms and analysis from Kleinberg and Tardos
- <http://www.cs.princeton.edu/~wayne/kleinberg-tardos/pdf/04GreedyAlgorithmsI.pdf>
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Takeaways

- Greedy algorithms make locally optimal choices to create a global solution
- To show it is correct, compare it to a theoretical perfect solution in a proof
- Can place bounds on how bad they can get