Routing continued/ Class 16

- There may be a diagram of vertices A,B,C and D. These vertices can be represented as networks of devices/computers.

These vertices share one common table which is their routing table. It keeps track of the shortest/available paths to other vertices.

bellman ford Equation

- Driver for BF based algorithms like distance vector used to tell algorithms which path to take.

Bellman-Ford is a Shortest Path algorithm that operates in O(|V|*|E|) time.

Bellman-Ford calculates the shortest distance from a starting node to every other accessible node on the graph.

How to find the shortest path

- To find the shortest path from x to y:
    - For each vertex v connected to x: calculate how much it costs to go from x to v (take 1 step), then calculate the shortest cost from v to y recursively add the two together.
    - Choose the vertex with the smallest sum.

Count to infinity problem occurs when device A tells another device B it has a path, B is unsure if that path includes itself because distance vectors dont share the intermediate paths. This causes a routing loop (which is usually capped at 16 or infinity).

Split hroizon: Instead of sending the same distance vectors to neighbors, send unique distance vectors to neighbors which prevents looping.

Reverse poison: When a link breaks, update path to cost infinity and send a distance vector to tell neighbors.