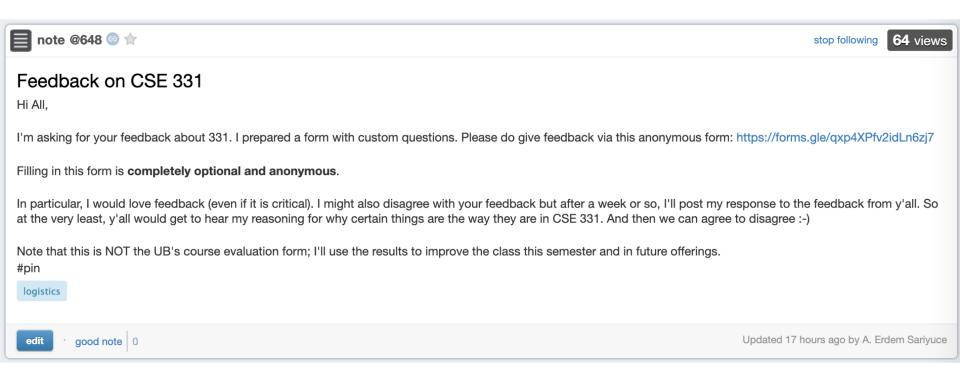
### Lecture 33

CSE 331 Apr 22, 2020

#### Give feedback!

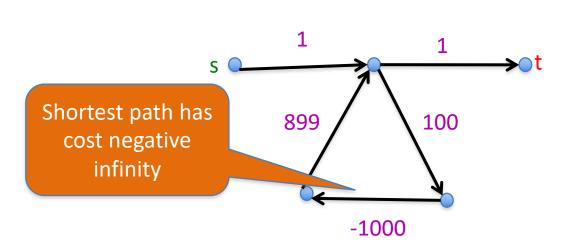


#### **Shortest Path Problem**

Input: (Directed) Graph G=(V,E) and for every edge e has a cost  $c_e$  (can be <0)

t in V

Output: Shortest path from every s to t





## When to use Dynamic Programming

There are polynomially many sub-problems



Richard Bellman

Optimal solution can be computed from solutions to sub-problems

There is an ordering among sub-problem that allows for iterative solution

# Today's agenda

Bellman-Ford algorithm