

Oct 7

Shortest path problem

Input:

Directed

graph

$$G = (V, E)$$

$$s \in V$$

'lengths'

$$l_e \geq 0 \quad \forall e \in E$$

integers *needed for Dijkstra's*

Output:

$$\forall t \in V$$

, output a shortest

s-t path.

$$l(P) = \sum_{e \in P} l_e$$

distance of from s to t in G

Simpler version:

Output

$$d(t) \in V$$

len of any shortest s-t path

Special case:

$$l_e = 1$$

$$\forall e \in E$$

HW3 Q3

$$O(m+n) \text{ time}$$