Oct 11

# Shortest Path problem

**Input:** Directed graph $G = (V, E)$

$s \in V$

"lengths" $l_e \geq 0$ $\forall e \in E$

(int; required Dijkstra's algo)

**Output:** $\forall t \in V$, output a shortest $s$-$t$ path

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

**Simpler version:** Output $d(t)$ $\forall t \in V$ (distance from $s$ to $t$ (in $G$))

($=$ len of any shortest $s$-$t$ path)

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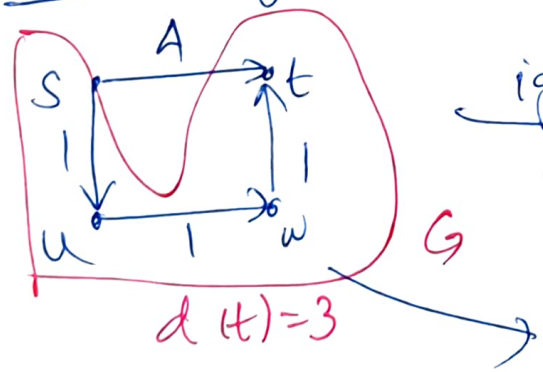
**Special case:** $l_e = 1$ $\forall e \in E$ (also works when $l_e = L$ $\forall e$)

Use HW3 Q3 algo (while ignoring the edge length)

**General case:**

**Algo idea:** Reduce the general case to case of $l_e = 1$ $\forall e \in E$

**Idea 1:** Ignore all edge length.




ignore $l_e$