ALG - 11/12/23 DIJKSTRA

$G = (V, E)$ $w : E \to \mathbb{R}^+$ $s \in V$

$\forall v \in V$ $\delta(v) =$ PESO MIN CAMMINO DA v A s

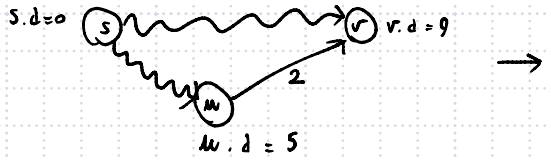
SI COSTRUISCE ALBERO CAMMINI MINIMI CON RADICE s

$G' = (V', E')$ $V' \subseteq V$ $E' \subseteq E$ E.C.

1) V' VERTICI RAGGIUNGIBILI DA s
2) G' ALBERO CON RADICE s
3) $\forall v \in V'$ L'UNICO CAMMINO (s, v) IN G' È MINIMO

RILASSAMENTO

$\forall v \in V$ $v.d =$ UPPERBOUND CAMMINO MINIMO $\delta(v) \leq v.d$



$v.d > w.d + w(w, v)$

$\to$ $v.d = w.d + w(w, v)$

$v.\pi = w$

DIJ (G, w, s)

INIT.

FOR v IN V
  $v.d = \infty$
  $v.\pi =$ NIL
$s.d = 0$

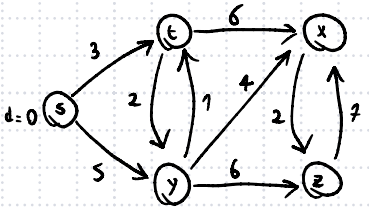
$V' = \emptyset$
$Q = V$ (QUEUE)

WHILE $Q \neq \emptyset$

$w =$ EXTRACT-MIN (Q)
$V' = V' \cup \{w\}$

FOR v IN ADJ[w]
  RELAX (w, v, w)

$Q = \overset{0}{s}\ \overset{\infty}{t}\ \overset{\infty}{x}\ \overset{\infty}{y}\ \overset{\infty}{z}$



(I) RELAX (s, t, w) → t.d=3 ...

$Q = \overset{3}{t}\ \overset{5}{y}\ \overset{\infty}{x}\ \overset{\infty}{z}$

(II) RELAX (t, x, w) ...

$Q = \overset{5}{y}\ \overset{9}{x}\ \overset{\infty}{z}$

(III) RELAX (y, ...

$Q = \overset{9}{x}\ \overset{11}{z}$

(IV) RELAX (x, z, w)

$Q = \overset{11}{z}$

$z.d \overset{11}{>} x.d \overset{9}{+} w(x,z) \overset{2}{?}$

→ z. d = 11

(V) RELAX (z, x, w)

$Q = \emptyset$