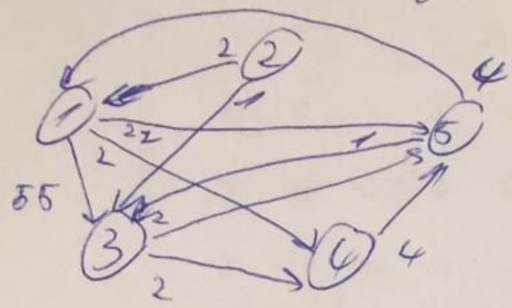
Floyd - Warshall alg.:



$$D_0 = \begin{pmatrix} 0 & \infty & 55 & 2 & 27 \\ 2 & 0 & 1 & \infty & \infty \\ \infty & \infty & 0 & 2 & 2 \\ \infty & \infty & \infty & 0 & 4 \\ 4 & \infty & 1 & \infty & 0 \end{pmatrix}$$

$$P_0 = \begin{pmatrix} 0 & 0 & 1 & 1 & 1 \\ 2 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 0 & 4 \\ 5 & 0 & 5 & 0 & 0 \end{pmatrix}$$

$k = 1$

$$D_1 = \begin{pmatrix} 0 & \infty & 55 & 2 & 27 \\ 2 & 0 & 1 & \boxed{4} & \boxed{29} \\ \infty & \infty & 0 & 2 & 2 \\ \infty & \infty & \infty & 0 & 4 \\ 4 & \infty & 1 & \boxed{6} & 0 \end{pmatrix} \quad P_1 = \begin{pmatrix} 0 & 0 & 1 & 1 & 1 \\ 2 & 0 & 2 & \boxed{1} & \boxed{1} \\ 0 & 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 0 & 4 \\ 5 & 0 & 5 & \boxed{1} & 0 \end{pmatrix}$$

$k = 2$

$$D_2 = \begin{pmatrix} 0 & \infty & 55 & 2 & 27 \\ 2 & 0 & 1 & 4 & 29 \\ \infty & \infty & 0 & 2 & 2 \\ \infty & \infty & \infty & 0 & 4 \\ 4 & \infty & 1 & 6 & 0 \end{pmatrix} \quad P_2 = \begin{pmatrix} 0 & 0 & 1 & 1 & 1 \\ 2 & 0 & 2 & 1 & 1 \\ 0 & 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 0 & 4 \\ 5 & 0 & 5 & 1 & 0 \end{pmatrix}$$

$k = 3$

$$D_3 = \begin{pmatrix} 0 & \infty & 55 & 2 & 27 \\ 2 & 0 & 1 & \boxed{3} & \boxed{3} \\ \infty & \infty & 0 & 2 & 2 \\ \infty & \infty & \infty & 0 & 4 \\ 4 & \infty & 1 & \boxed{3} & 0 \end{pmatrix} \quad P_3 = \begin{pmatrix} 0 & 0 & 1 & 1 & 1 \\ 2 & 0 & 2 & \boxed{3} & \boxed{3} \\ 0 & 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 0 & 4 \\ 5 & 0 & 5 & \boxed{3} & 0 \end{pmatrix}$$

$k = 4$

$$D_4 = \begin{pmatrix} 0 & \infty & 55 & 2 & \boxed{6} \\ 2 & 0 & 1 & 3 & 3 \\ \infty & \infty & 0 & 2 & 2 \\ \infty & \infty & \infty & 0 & 4 \\ 4 & \infty & 1 & 3 & 0 \end{pmatrix} \quad P_4 = \begin{pmatrix} 0 & 0 & 1 & 1 & \boxed{4} \\ 2 & 0 & 2 & 3 & 3 \\ 0 & 0 & 0 & 3 & 3 \\ 0 & 0 & 0 & 0 & 4 \\ 5 & 0 & 5 & 3 & 0 \end{pmatrix}$$

$k = 5$

$$D_5 = \begin{pmatrix} 0 & \infty & \boxed{7} & 2 & 6 \\ 2 & 0 & 1 & 3 & 3 \\ \boxed{6} & \infty & 0 & 2 & 2 \\ \boxed{8} & \infty & \boxed{5} & 0 & 4 \\ 4 & \infty & 1 & 3 & 0 \end{pmatrix} \quad P_5 = \begin{pmatrix} 0 & 0 & \boxed{5} & 1 & 4 \\ 2 & 0 & 2 & 3 & 3 \\ \boxed{5} & 0 & 0 & 3 & 3 \\ \boxed{5} & 0 & \boxed{5} & 0 & 4 \\ 5 & 0 & 5 & 3 & 0 \end{pmatrix}$$

$D_4(4,2) = \infty \Rightarrow$ there is no walk from 4 to 2

The minimum cost walk from 1 to 3 has the cost
$D_4(1,3) = 7$ and it is obtained from P_4 by using line 1

$\Rightarrow t=3,\ P_4(1,3) = \underline{5},\ P_4(1,5) = \underline{4},\ P_4(1,4) = \underline{1 = s \Rightarrow}$

$\Rightarrow$ The min. cost walk from 1 to 3 is: $1 \to 4 \to 5 \to 3$