

# All Pairs Shortest Path

- ▶ Input: graph  $G = (V, E)$ ,  $V = \{v_1, v_2, \dots, v_n\}$ , and edge weights given by  $w : E \rightarrow \mathbb{R}^+$ . (Hence  $w(e)$  is the weight of edge  $e$ .)
- ▶ Output:  $D$ , an  $n \times n$  matrix, so that  $D[i, j]$  is the length of the shortest path from  $v_i$  to  $v_j$ . Note we set  $D[i, i] = 0$  for all  $i = 1, 2, \dots, n$ .