All Pairs Shortest Path

The input is an undirected graph $G = (V, E)$ with positive edge weights on the edges.

Given a path P between two vertices v_i and v_j, the **cost** (or **length**) of P is the sum of the weights on the edges in the path. We write this as $Cost(P)$.

A shortest path between two vertices is one with minimum cost.

We want to find the length of the shortest path between every pair of vertices, and store this in an $n \times n$ matrix (where $n = |V|$).