

Floyd-Warshall Algorithm

Algorithm:

- ▶ %Set base cases:
- ▶ $M[i, i, 0] := 0$
- ▶ For $i \neq j$, if $(v_i, v_j) \in E$ then $M[i, j, 0] := w(v_i, v_j)$, else $M[i, j, 0] := \infty$
- ▶ For $k = 1$ up to n DO:
 - ▶ For all $i = 1, 2, \dots, n$, $M[i, i, k] := 0$
 - ▶ For all pairs i, j with $i \neq j$,
 $M[i, j, k] := \min\{M[i, j, k-1], M[i, k, k-1] + M[k, j, k-1]\}$

Easy to see this is $O(n^3)$ (in fact, $\Theta(n^3)$).