ECS 122A
Algorithm Design and Analysis

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Agenda

• Union-find data structure
• Introduction to dynamic programming
Last time

- **Transitive closure**
  - $t_{ij} \leftarrow t_{ij} \lor (t_{ik} \land t_{kj})$, where $T$ is a Boolean matrix, $\lor$ is logic “or” and $\land$ is logic “and”.

- **Transitive closure (a better algorithm)**
  - $Q$ essentially contains a pairs of nodes
    - $Q = \{(1,2), (5,6), (7,2) \ldots\}$
      - $t_{ij}$ (implicitly) represent the pair $(i, j)$
      - A perhaps better way is to have
        - $Q \leftarrow \text{Enqueue} \left((i,j)\right)$
        - $(i,j) \leftarrow \text{Dequeue}(Q)$
The End