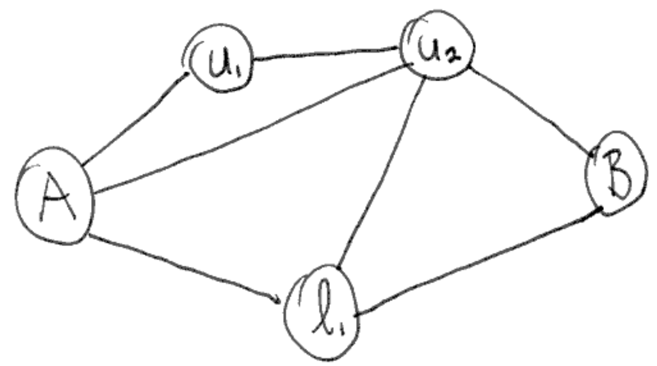
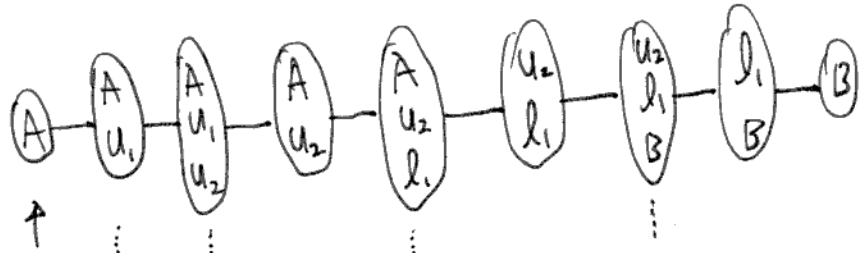
Intended Solution

- iterate over bags X_j
- at each "introduce" bag, compute $d(x, v)$ for v the new node and x each node in X_j, current bag
- then compute, for each $y \in G$ already visited:

$$d(y, v) = \min_{x \in X_j} \left(d(y, x) + d(x, v) \right) \qquad O(k \cdot n) \text{ per bag.}$$



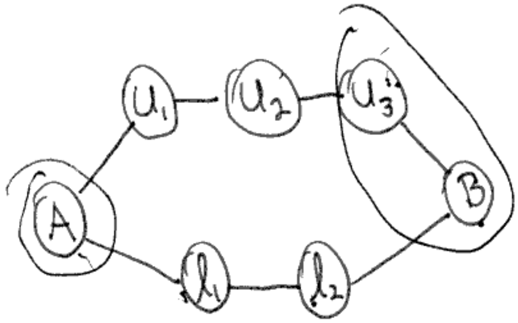
Nice Path Decomposition:



New node: A u_1 u_2 l_1 B

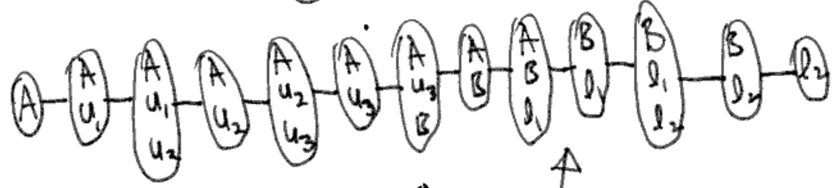
A path paved with good intentions

When does this break?



distances computed

A, u_1	$= 1$	✓
A, u_2	$= 2$	✓
⋮		
A, B	$= 4$	✗



✗

A forgotten here, we never check $A \sim l_1 \sim B$ = length 3 path.

If it's broke, fix it

Lessons:

- research is hard and involves a lot of trial and error
- when something doesn't work, try fixing by checking your assumptions!
  - did I assume something I didn't realize?
  - can we introduce an assumption that makes things work?

↳ it worked when every bag told you the true distances between all nodes in that bag — every bag was a clique, so we got distance = 1 easily for nodes in a bag together.