

Summer 2008:

4. Prove that the **SET PACKING** problem is NP-complete (15 points).

Hint 1: There is a straightforward reduction from **K-CLIQUE**.

Hint 2: It is often helpful to give an example of the reduction used.

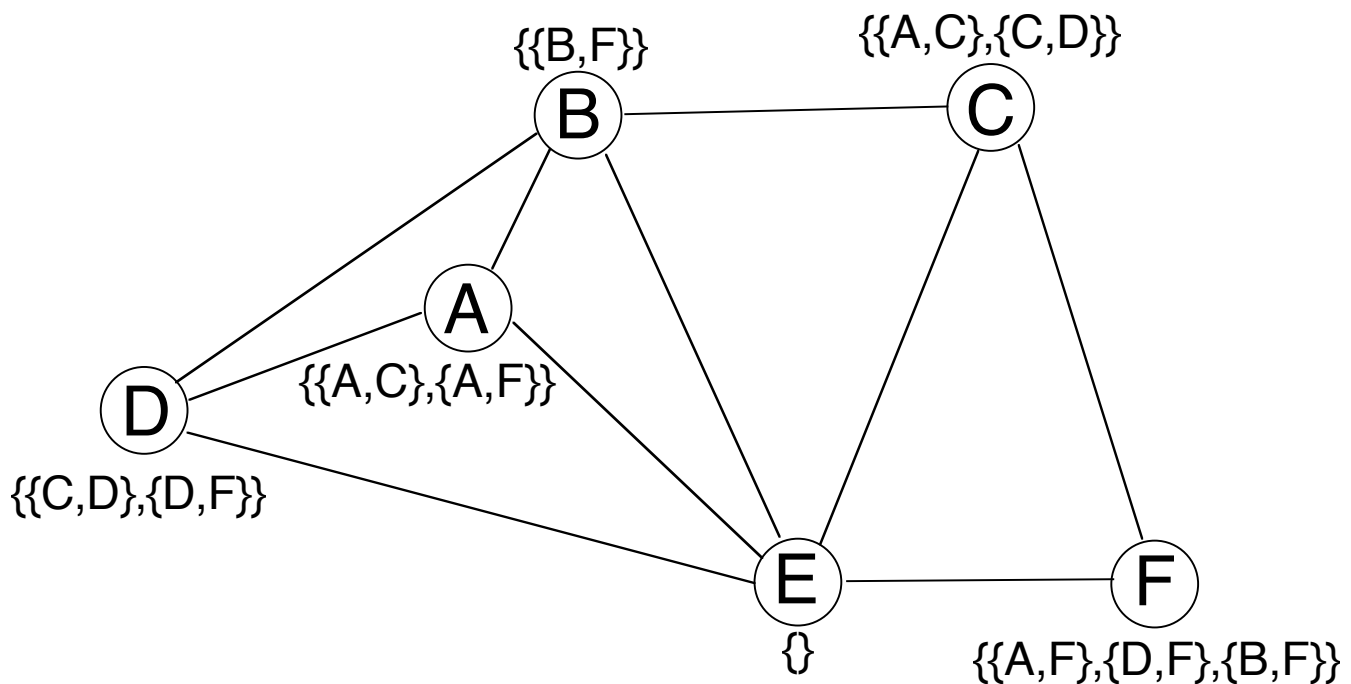
INSTANCE: Collection C of finite sets, positive integer $K \leq |C|$.

QUESTION: Does C contain at least K mutually (i.e. pairwise) disjoint sets?

In NP: A proposed solution with K subsets is easily tested for the pairwise disjointness property.

Complete: If vertices x and y are not adjacent, put $\{x, y\}$ into the sets for vertices x and y . These sets form C and the same K is used for both problems.

Example:



K is 3.