

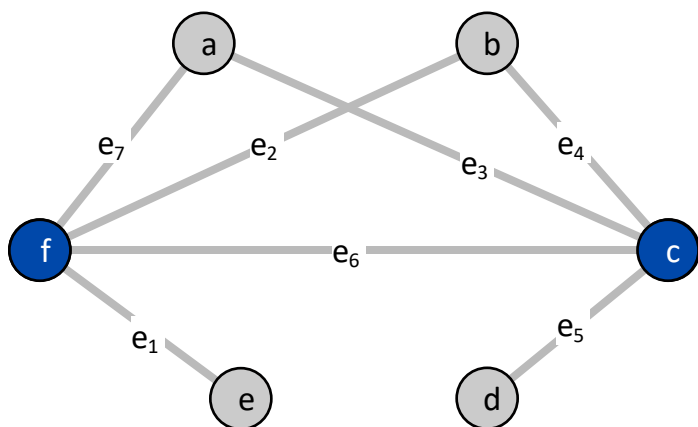
Vertex cover reduces to set cover

Lemma. $G = (V, E)$ contains a vertex cover of size k iff (U, S, k) contains a set cover of size k .

That is, $VC(i) = \text{yes} \iff SC(f(i)) = \text{yes}$

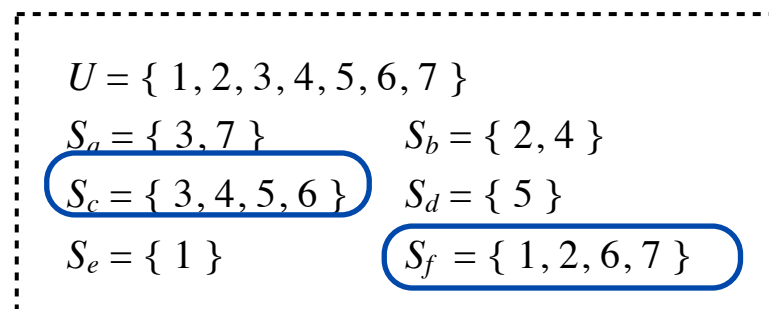
Pf. \Rightarrow Let $X \subseteq V$ be a vertex cover of size k in G .

Then $Y = \{ S_v : v \in X \}$ is a set cover of size k . ■



$k = 2$

vertex cover
instance ($k = 2$)



set cover instance
($k = 2$)