Integer Linear Prog. Formulation
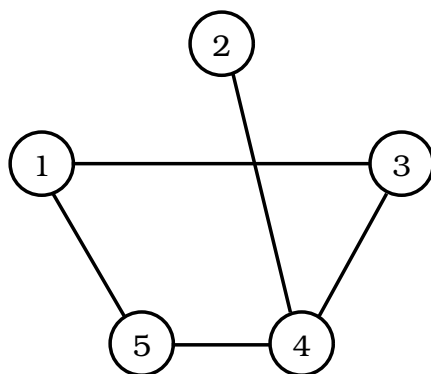
ILP: Maximize $\sum x_i$

    Subject to $x_i + x_j \le 1$ for every $\{i, j\} \in E$

                   $x_i = 0,$ or 1, for $1 \le i \le n$.

In this case: Max $x_1 + x_2 + x_3 + x_4 + x_5$

$$x_1 + x_3 \le 1, \quad x_1 + x_5 \le 1, \quad x_2 + x_4 \le 1$$

$$x_3 + x_4 \le 1, \quad \text{and} \quad x_4 + x_5 \le 1.$$

$$x_i = 0 \text{ or } 1$$