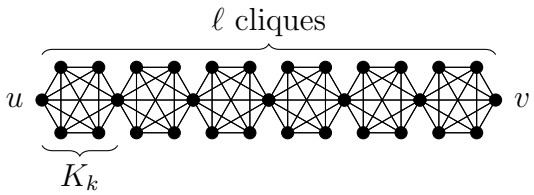
Homework 9

Randomized Algorithms

Due Friday, November 10

1. Consider the graph $G_{k,\ell}$ consisting of a series of ℓ different k-cliques arranged in a chain:



   (a) What is the hitting time $h_{u,v}$, for u and v on opposite ends? Give an exact answer.

   (b) Give upper and lower bounds on the cover time $C(G)$ that are within $O(\log(kl))$ of each other.

   (c) [This problem is somewhat tricky.] Suppose that $k = \ell^c$ for some constant $c \in (0, \infty)$. Give a bound on the cover time $C(G)$ that is tight up to *constant* factors. Hint (rot13): Svefg fubj gung n fgnaqneq enaqbz jnyx ba gur yratgu-n yvar jvyy juc ivfvg rirel iregrk znal gvzrf va $O(n^2)$ fgrcf.