**CS 3824 HOMEWORK**

1. Consider the graph in Figure 1. Consider the SIR model with node $v_1$ initially infected, and a probability $p$ of transmission on each edge. What are all the possible final configurations, along with their probabilities? What is the expected size of the outbreak?

2. For the graph $G = (P, L, E)$ in Figure 2, what is the smallest set of sensors that will cover all people? What is the solution picked by the Greedy algorithm? Specify the order in which nodes are picked by the Greedy algorithm.

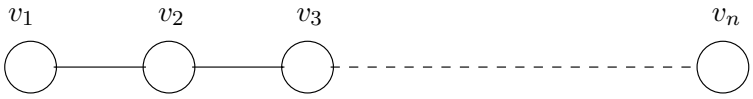


FIGURE 1. Node $v_1$ is initially infected, and the transmission probability on each edge is $p$.

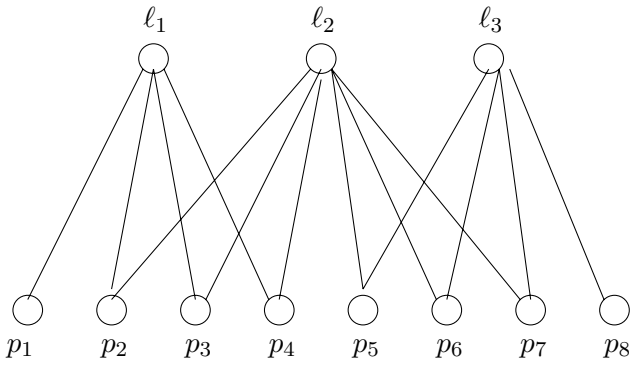


FIGURE 2. A bipartite graph showing people and the locations they visit.