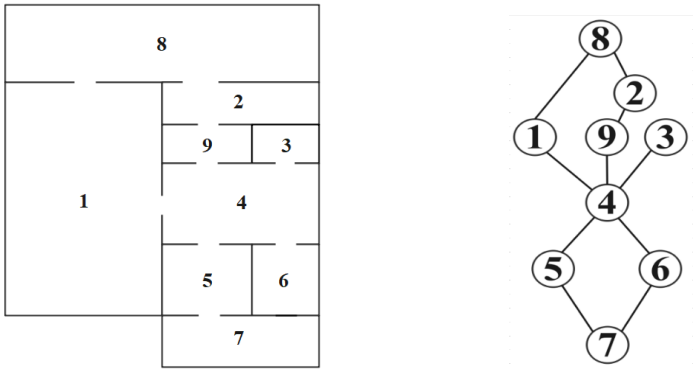
Appendix B: Transition Probability Matrix Calculation Example

For any given π_i, one can derive the transition probability matrix $\boldsymbol{P}$. Let's take the HOUSE environment (Fig. 1(a) and Fig. 1(b) show the environment and topology respectively.) as an example, suppose that π_i is simply equally distributing probabilities to available edges, *e.g.*, $\pi_i(2|9) = \pi_i(4|9) = 0.5$, and $\pi_i(1|4) = \pi_i(3|4) = \pi_i(5|4) = \pi_i(6|4) = \pi_i(9|4) = 0.2$.



(a) 'HOUSE' Environment (b) HOUSE Topo.

Figure 1: Example of the HOUSE Environment

Then, we have the transition probability matrix

$$\boldsymbol{P} = \begin{bmatrix} 0 & 0 & 0 & 0 & 0.5 & 0 & 0 & 0.5 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.5 & 0.5 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0.2 & 0 & 0.2 & 0 & 0.2 & 0.2 & 0 & 0 & 0.2 \\ 0 & 0 & 0 & 0.5 & 0 & 0 & 0.5 & 0 & 0 \\ 0 & 0 & 0 & 0.5 & 0 & 0 & 0.5 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0.5 & 0.5 & 0 & 0 & 0 \\ 0.5 & 0.5 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0.5 & 0 & 0.5 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

This is an example, showing that when given π_i, how we can obtain the transition probability matrix ($\boldsymbol{P}$).