

- Source random variable $X \sim \{p_1, p_2, \dots, p_m\}$
- Expected length of \mathcal{C} :

$$L = \sum_i p_i l_i$$

- Intuitively, for a uniquely decodable code \mathcal{C} ,

$$H_D(X) \leq L$$

because each D -ary symbol can carry at most 1 D -it of information.