Symbol code:

\[ a, b, c \rightarrow 0, 1 \]

Original alphabet: \( \{ a, b, c \} \)
Destination alphabet: \( \{ 0, 1 \} \)

- \( c(a) \rightarrow 01 \)
- \( c(b) \rightarrow 10 \)
- \( c(c) \rightarrow 11 \)

Block code:

- \( c(ab) \rightarrow 001 \)

"ab" is considered as a new symbol.

New alphabet has bigger size:

Ex: \( (a, a), (b, b), (c, c), (a, b), (b, c), (c, b), (a, c), (b, a), (c, a), (a, a), (a, b) \)

\[ p(a) = 0.5 \quad p(b) = 0.25 \quad p(c) = 0.25 \]
\[ p(aa) = 0.25 \quad p(ab) = 0.125 \]
Ex: $a, b^3, P(a) = 0.99, P(b) = 0.01$

Huffman

$$E[C] = (0.99)1 + (0.01)1 = 1$$

$$P(aa) = (0.99)(0.99) = 0.9801$$
$$P(ab) = (0.99)(0.01) = 0.0099$$
$$P(ba) = (0.01)(0.99) = 0.0099$$
$$P(bb) = (0.01)(0.01) = 0.0001$$

$$E[C'] = (0.9801)1 + (0.0099)(3)$$(0.0001)3 + (0.009)(2)$$