

$$3 \Rightarrow \begin{array}{cc} 1 & 1 \\ \uparrow & \uparrow \\ \dots & 2^2 & 2^1 & 2^0 \end{array} \quad \begin{array}{c} \times \\ \downarrow \\ 2 + 1 \\ 2 + 1 \Rightarrow 3 \end{array}$$

$$\begin{array}{cccccc} 1 & 1 & 0 & 0 & 1 & 1 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 \end{array} \quad \begin{array}{c} \times \\ \downarrow \\ 2^1 \end{array}$$

$$32 + 16 + 0 + 0 + 2 + 1 \Rightarrow \underline{71}$$

$$A \Rightarrow 1100110$$

$$B \Rightarrow 0011010$$

$$A \& B \Rightarrow \text{And}$$

$$A | B \Rightarrow \text{or}$$

$$\sim A = \text{Not}$$

$$A \ll n \Rightarrow \text{number of shift}$$

$$B \gg n \Rightarrow \text{" " "}$$

$$A \& B$$

$$\begin{array}{r} \text{And} = \text{Add} \\ \hline A \& B \end{array}$$

$$\begin{array}{l} 1 \Rightarrow T + T \Rightarrow T(1) \\ 1 \Rightarrow T + F \Rightarrow 1T \\ 0 \Rightarrow F + T \Rightarrow 1T \\ 0 \Rightarrow F + F \Rightarrow 0F \end{array}$$

$$\begin{array}{r} 1100110 \\ 0011010 \\ \hline 1111110 \end{array}$$

$$\begin{array}{l} \text{True} = 1 \\ \text{False} = 0 \end{array}$$

$$\begin{array}{c} 11 \\ (x) \text{ or } A | B \end{array}$$

$$\begin{array}{l} A \Rightarrow 10101 \\ B \Rightarrow 01101 \end{array}$$

$$A | B \Rightarrow \underline{00101}$$

$$\begin{array}{l} \text{or} \\ A \times B \\ \hline 1T \quad T(1) = 1T \\ 1T \times F(0) = 0F \\ 0F \times T(1) = 0F \\ 0F \times F(0) = 0F \end{array}$$

$$\text{Not}$$

$$A \Rightarrow 101011$$

$$\sim A \Rightarrow 010100$$

$$\begin{array}{l} 1 \Rightarrow 0 \\ 0 \Rightarrow 1 \end{array}$$

$$\text{Left Shift}$$

$$A \Rightarrow 1010110 \rightarrow \sim$$

$$A \ll 2 \Rightarrow \underline{101011000} \rightarrow \sim$$

$$\begin{array}{l} A \Rightarrow 4 \text{ left shift} \\ \Rightarrow 4 \times 2^2 \end{array}$$

$$\begin{array}{l} \Rightarrow 4 \times 2^2 \\ \Rightarrow 4 \times 4 \end{array}$$

$$\Rightarrow \underline{16}$$

$$\Rightarrow \text{Right Shift}$$

$$A \gg 2$$

$$A \Rightarrow 101011 \rightarrow \sim$$

$$B \Rightarrow 001101 \rightarrow \sim$$

$$A \Rightarrow 16 \text{ Right Shift } 2(\text{bit})$$

$$\Rightarrow 16 \times 2^{(-n)}$$

$$\Rightarrow 16 \div 2^n$$

$$\Rightarrow 16 \div 2^2 \Rightarrow 16 \div 4 \Rightarrow 4$$