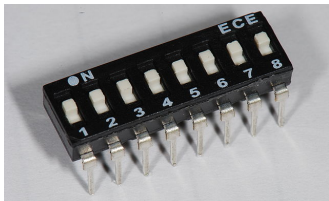


Побитови операции

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Логически битови операции

Конюнкция

| & | 0 | 1 |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 1 |

Дизюнкция

| | 0 | 1 |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 1 | 1 |

Изключващо или

| ^ | 0 | 1 |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 1 | 0 |

Отрицание

| ~ | |
|---|---|
| 0 | 1 |
| 1 | 0 |

Побитови операции

$$\begin{array}{r}
 \& \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \\
 \quad 1 \ 0 \ 1 \ 0 \ 0 \ 0 \ 1 \ 1 \\
 \hline
 \quad 0 \ 0 \ 1 \ 0 \ 0 \ 0 \ 1 \ 0
 \end{array}$$

$$\begin{array}{r}
 | \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \\
 \quad 1 \ 0 \ 1 \ 0 \ 0 \ 0 \ 1 \ 1 \\
 \hline
 \quad 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 1
 \end{array}$$

$$\begin{array}{r}
 \sim \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \\
 \quad 1 \ 0 \ 1 \ 0 \ 0 \ 0 \ 1 \ 1 \\
 \hline
 \sim \quad 1 \ 0 \ 0 \ 0 \ 1 \ 0 \ 0 \ 1 \\
 \quad 1 \ 0 \ 1 \ 0 \ 0 \ 0 \ 1 \ 1 \\
 \hline
 \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0
 \end{array}$$

$$\begin{array}{r}
 \sim \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \\
 \sim \quad 1 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \\
 \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0
 \end{array}$$

Побитово изместване

$$\begin{array}{r} \gg 2 \quad 1 \ 0 \ 1 \ 0 \ 1 \ 1 \ 0 \ 1 \\ \hline \quad \quad 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 1 \end{array}$$

$$a \gg x \quad \longleftrightarrow \quad a / 2^x$$

$$\begin{array}{r} \ll 2 \quad 1 \ 0 \ 1 \ 0 \ 1 \ 1 \ 0 \ 1 \\ \hline \quad \quad 1 \ 0 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \end{array}$$

$$a \ll x \quad \longleftrightarrow \quad a * 2^x \% 2^8$$

Маски

Записване на битове

$$\begin{array}{r}
 \& \begin{array}{cccccc} 0 & 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 \end{array} \\
 \hline
 \begin{array}{cccccc} 0 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \end{array}
 \end{array}
 \qquad
 \begin{array}{r}
 | \begin{array}{cccccc} 0 & 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \end{array} \\
 \hline
 \begin{array}{cccccc} 0 & 0 & 1 & 1 & 1 & 1 & 1 & 0 \end{array}
 \end{array}$$

Прочитане на битове

$$\begin{array}{r}
 \& \begin{array}{cccccc} 0 & 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{array} \\
 \hline
 \begin{array}{cccccc} 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{array}
 \end{array}
 \qquad
 \begin{array}{r}
 \& \begin{array}{cccccc} 0 & 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \end{array} \\
 \hline
 \begin{array}{cccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}
 \end{array}$$

Операции с маски

Конструирание на маски

$$\begin{array}{r}
 \ll 3 \quad 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 1 \\
 \hline
 \sim \quad 0 \ 0 \ 0 \ 0 \ 1 \ 0 \ 0 \ 0 \ 0 \\
 \hline
 1 \ 1 \ 1 \ 1 \ 0 \ 1 \ 1 \ 1
 \end{array}$$

$$\begin{array}{r}
 \ll 3 \quad 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 1 \\
 \hline
 -1 \quad 0 \ 0 \ 0 \ 0 \ 1 \ 0 \ 0 \ 0 \ 0 \\
 \hline
 \sim \quad 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 1 \ 1 \ 1 \\
 \hline
 1 \ 1 \ 1 \ 1 \ 1 \ 0 \ 0 \ 0
 \end{array}$$

Комбиниране на маски

$$\begin{array}{r}
 | \quad 0 \ 0 \ 0 \ 0 \ 1 \ 0 \ 0 \ 0 \\
 \quad 0 \ 0 \ 1 \ 0 \ 0 \ 0 \ 0 \ 0 \\
 \hline
 0 \ 0 \ 1 \ 0 \ 1 \ 0 \ 0 \ 0
 \end{array}$$

$$\begin{array}{r}
 \& \quad 1 \ 1 \ 0 \ 1 \ 1 \ 1 \ 1 \ 1 \\
 \quad 1 \ 1 \ 1 \ 1 \ 1 \ 0 \ 1 \ 1 \\
 \hline
 1 \ 1 \ 0 \ 1 \ 1 \ 0 \ 1 \ 1
 \end{array}$$