

calc_logic_example

Student Group

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example for a simplification with the rule for boolean algebra

$$\begin{array}{ll} \overline{a \vee (b \wedge (\bar{a} \vee c) \wedge 1) \vee a} & \\ \quad \quad \quad \& \quad \quad \quad \end{array}$$

At first we will switch the representation to the following:

$$\begin{array}{ll} \overline{a \vee (b \wedge (\bar{a} \vee c) \wedge 1) \vee a} & \& \\ \overline{ab} & \& \\ & \& \end{array}$$

At first we will switch the representation to the following:

$$\frac{1}{(a + (b \cdot (a + c) \cdot 1) + a) \cdot \overline{ab}}$$

1. `$\color{blue}\{\text{Neutral Element}\}$`

$$\begin{array}{ll} \textcolor{blue}{(a + (b \cdot (a + c) \cdot 1) + a) \cdot \overline{ab}} & \\ \textcolor{white}{\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad} & \\ \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad & \end{array}$$

1. `$\color{blue}\{\text{Neutral Element}\}$`

$$\begin{array}{ll} \text{\textcolor{white}{\overline{ab}}} & \\ \text{\quad\quad\quad\quad\quad\quad\quad\quad} & \text{\quad\quad\quad\quad\quad\quad\quad\quad} \end{array}$$

2. $\text{\color{blue}}\{\text{\text{Commutative Law}}\}$

$$\frac{(a + b \cdot (a + c) + a)}{\overline{ab}} \quad \quad \quad$$

2. $\text{\color{blue}}\{\text{\text{Commutative Law}}\}$

$$\frac{1}{(a + a + (b \cdot (a + c)))} \text{ and } \overline{ab}$$

3. $\text{\color{blue}}\{\text{\texttt{\textcolor{blue}{Idempotence}}}\}$

$$\begin{array}{l} \text{\color{blue}\overline{(a + a)} + (b \cdot (a + c))} \\ \text{\color{white}\overline{ab}} \end{array}$$

3. $\text{\color{blue}\text{\text{Idempotence}}}$

$$\frac{1}{(a + b \cdot (a + c))} \cdot \overline{ab}$$

4. $\text{\color{blue}}\{\text{\text{Distributive Law}}\}$

$$\begin{array}{ll} (a \quad + \quad (\textcolor{blue}{b \cdot (a + c)})) & \& \\ \textcolor{white}{\overline{ab}} & \backslash \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \& \\ & \text{quad} \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \text{quad} \quad \backslash \quad \end{array} \quad \end{align*}$$

4. $\text{\color{blue}\{\text{\text{Distributive Law}}\}}$

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