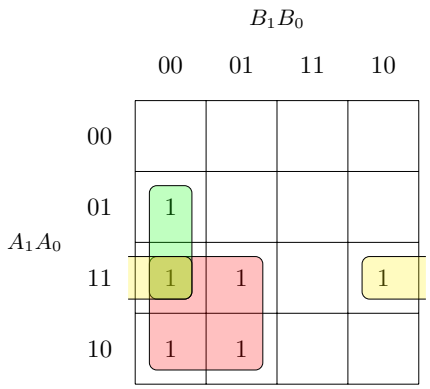
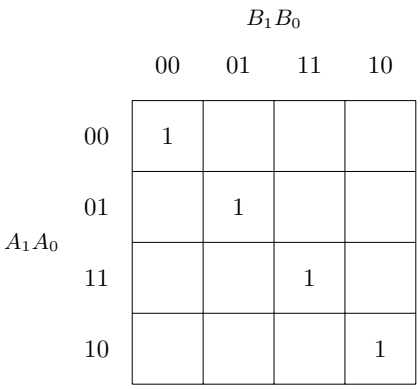
Truth Table

A_1	A_0	B_1	B_0	$A > B$	$A = B$	$A < B$
0	0	0	0	0	1	0
0	0	0	1	0	0	1
0	0	1	0	0	0	1
0	0	1	1	0	0	1
0	1	0	0	1	0	0
0	1	0	1	0	1	0
0	1	1	0	0	0	1
0	1	1	1	0	0	1
1	0	0	0	1	0	0
1	0	0	1	1	0	0
1	0	1	0	0	1	0
1	0	1	1	0	0	1
1	1	0	0	1	0	0
1	1	0	1	1	0	0
1	1	1	0	1	0	0
1	1	1	1	0	1	0

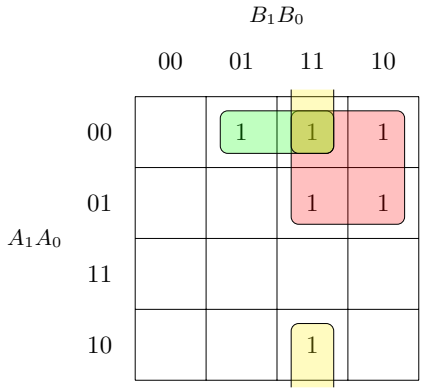
Karnaugh Maps



$$(A > B) = A_1\overline{B_1} + A_0\overline{B_1}\,\overline{B_0} + A_1A_0\overline{B_0}$$



$$\begin{aligned}(A = B) &= \overline{A_1}\,\overline{A_0}\,\overline{B_1}\,\overline{B_0} + \overline{A_1}A_0\overline{B_1}B_0 + A_1\overline{A_0}B_1\overline{B_0} + A_1A_0B_1B_0 \\ &= (A_1 \oplus B_1)(A_0 \oplus B_0)\end{aligned}$$



$$\begin{aligned}(A < B) &= \overline{A_1}B_0 + \overline{A_1}\,\overline{A_0}B_0 + \overline{A_0}B_1B_0 \\ &= \overline{(A > B) + (A = B)}\end{aligned}$$