M Tu W Th F Sa Su

date / /

Not Binary, decimal for Later

$x_1 = 100110$
$x_2 = 010100$

$\neg x_1 = 1$

$x_1 = 1\ 0\ 0\ 1\ 1\ 0$
$\neg x_1 = 1\ 0\ 0\ 0\ 0\ 1$

$x_2 = 0\ 1\ 0\ 1\ 0$

$\neg x_2\ \ 0\ 1\ 0\ 0\ 0$

$x_3 =$

$x_1 = 10010110$
$\neg x_1 = 10000000$

$x_2 = 01011000$
$\neg x_2 = 01000000$

$x_3 = 00101110$
$\neg x_3 = 00010001$

if 1 Variable satisfies
add (+1) (+2) $\Rightarrow$ 4
2 Vars (+2) $\Rightarrow$ 4
3 Vars (+1) $\Rightarrow$ 4
0 Vars (+1) (+2) $\Rightarrow$ 3 ∅

$(x_1 \vee x_2 \vee x_3) \vee (x_2 \vee \neg x_3) \wedge (x_2 \vee x_3) \wedge (x_1 \vee x_3) \wedge \neg x_3$

1 1 1 1

$(x_1 \vee x_2)$

$1 + 1$

$x_1 = 1$
$x_2 = 1$
$x_3 = 0\ \ 0$

3-kNF

The Solution to this Problem

each klausel can be satisfied by 1, 2 or 3 Variables but we want at least 1
We can't have OR in the RUCKSACK Algo so we add Variables that round the number of variables that make true (add 1 or 2 to the klausel lane)
But there needs to be at least 1 variable (+1) to reach 4