

PB19051175_梁峻滔_HW5

1. Construct a formula in CNF

i.	p	q	r	ϕ	$p \vee \neg q \vee r$	$\neg p \vee q \vee r$	$p \vee q \vee r$	$\neg p \vee \neg q \vee r$	$\neg p \vee q \vee \neg r$
1	1	1	1	1	1	1	1	1	1
2	1	1	0	0	1	1	1	0	1
3	1	0	1	0	1	1	1	1	0
4	0	1	1	1	1	1	1	1	1
5	1	0	0	0	1	0	1	1	1
6	0	1	0	0	0	1	1	1	1
7	0	0	1	1	1	1	1	1	1
8	0	0	0	0	1	1	0	1	1

所以 $(p \vee \neg q \vee r) \wedge (\neg p \vee q \vee r) \wedge (p \vee q \vee r) \wedge (\neg p \vee \neg q \vee r) \wedge (\neg p \vee q \vee \neg r)$ 等价于 ϕ

2. Apply HORN algorithm to the following formulas

(1) $(p \wedge q \wedge s \rightarrow \perp) \wedge (q \wedge r \rightarrow p) \wedge (T \rightarrow s)$

Marked: T s return 'satisfiable'

(2) $(p5 \rightarrow p11) \wedge (p2 \wedge p3 \wedge p5 \rightarrow p13) \wedge (T \rightarrow p5) \wedge (p5 \wedge p11 \rightarrow \perp)$

Marked: T p5 p11 \perp return 'unsatisfiable'

(3) $(T \rightarrow q) \wedge (T \rightarrow s) \wedge (w \rightarrow \perp) \wedge (p \wedge q \wedge s \rightarrow \perp) \wedge (v \rightarrow s) \wedge (T \rightarrow s) \wedge (r \rightarrow p)$

Marked: T q s return 'satisfiable'