

Exercise 2. - Analysis of Decision Tables

(i) T is complete, when $\models \bigvee_{r \in T} F_{pre}(r)$

Table 1:

$$F(R_1) = C_1 \wedge \neg C_2 \wedge 1 = C_1 \wedge \neg C_2$$

$$F(R_2) = \neg C_1 \wedge 1 \wedge \neg C_3 = \neg C_1 \wedge \neg C_3$$

$$F(R_3) = 1 \wedge C_2 \wedge 1 = C_2$$

$C_1 C_2 C_3$	$\neg C_1 \wedge \neg C_3$	$C_1 \wedge \neg C_2$	f	$\neg(\neg C_1 \wedge \neg C_2)$
0 0 0	1	0	1	0
0 0 1	0	0	0	0
0 1 0	1	0	1	1
0 1 1	0	0	1	1
1 0 0	0	1	1	1
1 0 1	0	1	1	1
1 1 0	0	0	1	1
1 1 1	0	0	1	1

$f = (C_1 \wedge \neg C_2) \vee (\neg C_1 \wedge \neg C_3) \vee C_2$ - not a tautology

f without $\neg(\neg C_1 \wedge \neg C_2)$ is not complete,

but with $\neg(\neg C_1 \wedge \neg C_2)$ condition it is complete \Rightarrow

\Rightarrow Table 1 is complete.

Table 2.

$$F(R_1) = C_2$$

$$F(R_3) = \neg C_1 \wedge \neg C_2 \wedge \neg C_3$$

$$F(R_2) = \neg C_2 \wedge C_3$$

$$F(R_4) = C_1 \wedge \neg C_2 \wedge \neg C_3$$

$\models C_2 \vee (\neg C_2 \wedge C_3) \vee (\neg C_1 \wedge \neg C_2 \wedge \neg C_3) \vee (C_1 \wedge \neg C_2 \wedge \neg C_3)$ - is a tautology.

$C_1 C_2 C_3$	$\neg C_2 \wedge C_3$	$\neg C_1 \wedge \neg C_2 \wedge \neg C_3$	$C_1 \wedge \neg C_2 \wedge \neg C_3$	f
0 0 0	0	1	0	1
0 0 1	1	0	0	1
0 1 0	0	0	0	1
0 1 1	0	0	0	1
1 0 0	0	0	1	1
1 0 1	1	0	0	1
1 1 0	0	0	0	1
1 1 1	0	0	0	1

Table 2 is complete