REVIEW

Wednesday, March 16, 2011

Regular class

MIDTERM

Open book and notes

Saturday, March 19, 2010

8:00 am - 12:00 pm (4 hours)

Room will be announced later.

Assignment 6. Due: 03/07/11

14. Consider a modified grammar of Zones. The only difference is the definition of function *ALPHA*:

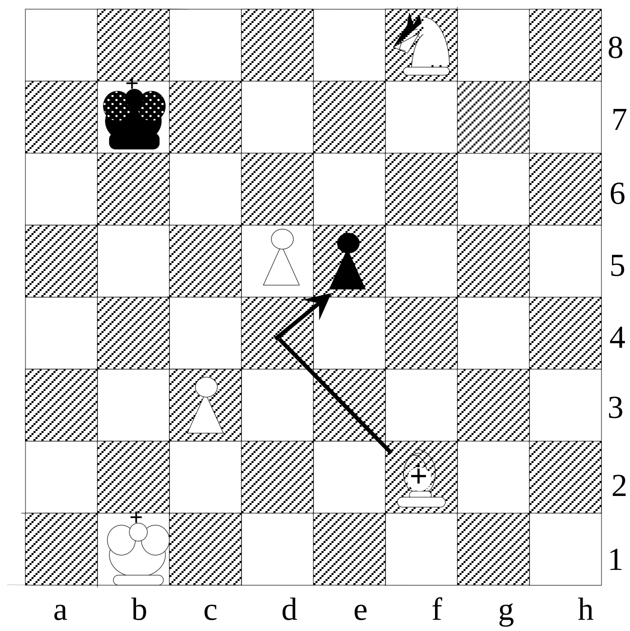
$$D(\boldsymbol{ALPHA}) = X \times P \times \mathbf{L_t}^{l_0}(S) \times \mathbf{Z_+}$$

$$\boldsymbol{ALPHA}(x, p_o, t_o, k) = \begin{cases} \boldsymbol{min}(NEXTTIME(x), k), & \text{if } \boldsymbol{DIST}(x, p_o, t_o) < 2n, \\ NEXTTIME(x), & \text{if } \boldsymbol{DIST}(x, p_o, t_o) = 2n. \end{cases}$$

What is the impact of this new definition on the Zones to be generated by this grammar? Show examples of such Zones. Explain.

<u>Extra Credit</u>.
Do we have to change function *timer* in this case? See "Translations of Languages" in the textbook on LG. Explain.

Second Negation



1	Q_1	$S(u, v, w) \to A(u, v, w)$		*two*	ø
2_i	Q_2	$A(u, v, w) \to t(h_i^o(u), l_o+1)$ $A((0,0,0), g(h_i^o(u),w), zero)$	TIME(z)=$DIST(z, h_i^o(u))$	3	ø
3	Q_3	$A(u, v, w) \to A(f(u, v), v, w)$	NEXTTIME(z)= $init(u$, NEXTTIME(z))	*four*	5
4_j	Q_4	$A(u, v, w) \to t(h_j(u)$, TIME(y))) $A(u, v, g(h_j(u), w))$	NEXTTIME(z)= $ALPHA(z, h_j(u)$, TIME(y) – l_j+1)	3	3
5	Q_5	$A(u, v, w) \to A((0, 0, 0), w, zero)$	TIME(z) = NEXTTIME(z)	3	6
6	Q_6	$A(u, v, w) \to e$		ø	ø

$Q_1(u) = (\mathrm{ON}(p_o) = x) \wedge (\mathrm{MAP}_{x,p_o}(y) \le l \le l_o) \wedge (\exists q\, ((\mathrm{ON}(q) = y) \wedge (\mathrm{OPPOSE}(p_o, q))))$

$Q_2(u) = T$; $Q_3(u) = (x \ne n) \vee (y \ne n)$

$Q_4(u) = (\exists p\, ((\mathrm{ON}(p) = x) \wedge (l > 0) \wedge (x \ne x_o) \wedge (x \ne y_o)) \wedge ((\neg \mathrm{OPPOSE}(p_o, p) \wedge (\mathrm{MAP}_{x,p}(y) = 1)) \vee (\mathrm{OPPOSE}(p_o, p) \wedge (\mathrm{MAP}_{x,p}(y) \le l)))$ $Q_5(w) = (w \ne zero)$; $Q_6 = T$

$$init(u, r) = \begin{cases} 2n, & \text{if } u = (0,0,0), \\ r, & \text{if } u \ne (0,0,0). \end{cases}$$

$$f(u, v) = \begin{cases} (x+1, y, l), & \text{if } ((x \ne n) \wedge (l > 0)) \vee ((y = n) \wedge (l \le 0)) \\ (1, y+1, TIME(y+1) \times v_{y+1}), & \text{if } (x = n) \vee ((l \le 0) \wedge (y \ne n)). \end{cases}$$

Let $t_o \in \mathbf{L_t}^{l_o}(S)$, $t_o = a(z_o)a(z_1)...a(z_m)$, $t_o \in t_{p_o}(z_o, z_m, m)$;

If $((z_m = y_o) \wedge (p = p_o) \wedge (\exists\, k\, (1 \le k \le m) \wedge (x = z_k))) \vee$
$(((z_m \ne y_o) \vee (p \ne p_o)) \wedge (\exists\, k\, (1 \le k \le m - 1) \wedge (x = z_k)))$
then $DIST(x, p_o, t_o) = k+1$ **else** $DIST(x, p_o, t_o) = 2n$

$$ALPHA(x, p_o, t_o, k) = \begin{cases} max(NEXTTIME(x), k), & \text{if } (DIST(x, p_o, t_o) \ne 2n) \wedge (NEXTTIME(x) \ne 2n); \\ k, & \text{if } DIST(x, p_o, t_o) \ne 2n) \wedge (NEXTTIME(x) = 2n); \\ NEXTTIME(x), & \text{if } DIST(x, p_o, t_o) = 2n). \end{cases}$$

$$g_r(p_o, t_o, w) = \begin{cases} 1, & \text{if } DIST(r, p_o, t_o) < 2n, \\ w_r, & \text{if } DIST(r, p_o, t_o) = 2n. \end{cases}$$

$$\mathrm{TRACKS}_{p_o} = \{p_o\} \times \left(\bigcup_{1 \le k \le l} L[\mathbf{G_t}^{(2)}(x, y, k, p_o)] \right)$$

If $\mathrm{TRACKS}_{p_o} = e$
then $h_i^o(u) = e$
else $\mathrm{TRACKS}_{p_o} = \{(p_o, t_1), (p_o, t_2), \ldots, (p_o, t_b)\}, (b \le M)$ **and** $h_i^o(u) = \begin{cases} (p_o, t_i), & \text{if } i \le b, \\ (p_o, t_b), & \text{if } i > b. \end{cases}$

$\mathrm{TRACKS} = \bigcup_{\mathrm{ON}(p)=x} \mathrm{TRACKS}_p$, where TRACKS_p is the same as for h_i^o

If TRACKS = e
then $h_i(u) = e$
else $\mathrm{TRACKS} = \{(p_1, t_1), (p_1, t_2), \ldots, (p_m, t_m)\}$, $(m \le M)$ **and** $h_i(u) = \begin{cases} (p_i, t_i), & \text{if } i \le m, \\ (p_m, t_m), & \text{if } i > m. \end{cases}$

At the beginning : $u = (x_o, y_o, l_o)$, $w = zero$, $v = zero$, $x_o \in X$, $y_o \in X$, $l_o \in \mathbf{Z}_+$, $p_o \in P$, and TIME(z)=2n, NEXTTIME(z)=2n for all z from X.