



LENGUAJES FORMALES Y AUTOMATAS

TAREA: AUTOMATA DEL LENGUAJE 4.

Universidad Nacional Autónoma de México
Facultad de Estudios Superiores Aragón
Ingeniería en Computación

Materia: Lenguaje formales y autómatas.

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Tarea: Autómata 4.

Grupo: 1507

Semestre: 2024-I

Horario: Lunes, Martes, Miércoles - 11:30 am-12:50 pm

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Facultad de
Estudios
Superiores
Aragón

Órgano oficial de información

AUTÓMATA DE PILA L4 (PUSH DOWN AUTÓMATA)

ESPECIFICACIONES:

Un lenguaje que contenga todas las palabras de los signos lógicos y matemáticos (binarios y unarios) para números base 2, de tal manera que acepte una palabra se la expresión matemático corresponde a una igualdad o desigualdad y está escrita correctamente.

$$Q_4 = (\Sigma_4, \Gamma_4, Q_4, \Gamma_4, q_4, Z_4, \delta_4, F_4)$$

$$\Sigma_4 = \{<, >, =, \lambda, \geq, \leq, +, -, (, \neq,), /, \%, *, \{, \}, [,], \sqrt{}, \wedge, |, !, \&, \oplus, 0, 1, \infty\}$$

$$\Gamma_4 = \Sigma_4 \cup \{Z_4, A, B, C\}$$

$$Q_4 = \{q_0, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8, q_9, q_{10}, q_{11}, q_{12}\}$$

$$Z_4 = Z_4$$

$$\begin{aligned} \delta_4 = \{ & q_0 x (x \lambda \rightarrow q_1 x A, q_0 x [x \lambda \rightarrow q_1 x B, q_0 x \{x \lambda \rightarrow q_1 x C, q_0 x \sqrt{x} \lambda \rightarrow q_1 x \lambda, \\ & q_0 x ; x \lambda \rightarrow q_2 x \lambda, q_0 x + x \lambda \rightarrow q_2 x \lambda, q_0 x - x \lambda \rightarrow q_2 x \lambda, \\ & q_0 x 0 x \lambda \rightarrow q_3 x \lambda, q_0 x 1 x \lambda \rightarrow q_3 x \lambda, \\ & q_1 x (x \lambda \rightarrow q_1 x A, q_1 x [x \lambda \rightarrow q_1 x B, q_1 x \{x \lambda \rightarrow q_1 x \lambda, \\ & q_1 x 0 x \lambda \rightarrow q_4 x \lambda, q_1 x 1 x \lambda \rightarrow q_4 x \lambda, \\ & q_2 x 0 x \lambda \rightarrow q_2 x \lambda, q_2 x 1 x \lambda \rightarrow q_2 x \lambda, q_2 x ^ x \lambda \rightarrow q_2 x \lambda, \\ & q_2 x (x \lambda \rightarrow q_1 x A, q_2 x [x \lambda \rightarrow q_1 x B, \\ & q_2 x + x \lambda \rightarrow q_4 x \lambda, q_2 x - x \lambda \rightarrow q_4 x \lambda, q_2 x * x \lambda \rightarrow q_4 x \lambda, \\ & q_2 x / x \lambda \rightarrow q_4 x \lambda, q_2 x \& x \lambda \rightarrow q_4 x \lambda, q_2 x | x \lambda \rightarrow q_4 x \lambda, \\ & q_2 x > x \lambda \rightarrow q_4 x \lambda, q_2 x < x \lambda \rightarrow q_4 x \lambda, \\ & q_2 x (x A \rightarrow q_5 x \lambda, q_2 x [x B \rightarrow q_5 x \lambda, q_2 x \{x C \rightarrow q_5 x \lambda, \\ & q_3 x + x \lambda \rightarrow q_2 x \lambda, q_3 x - x \lambda \rightarrow q_2 x \lambda, q_3 x * x \lambda \rightarrow q_2 x \lambda, \\ & q_3 x / x \lambda \rightarrow q_2 x \lambda, q_3 x \& x \lambda \rightarrow q_3 x \lambda, q_3 x | x \lambda \rightarrow q_2 x \lambda, q_3 x ! x \lambda \rightarrow q_2 x \lambda, \\ & q_3 x + x \lambda \rightarrow q_3 x \lambda, q_3 x - x \lambda \rightarrow q_3 x \lambda, q_3 x * x \lambda \rightarrow q_3 x \lambda, \\ & q_3 x / x \lambda \rightarrow q_3 x \lambda, q_3 x \& x \lambda \rightarrow q_3 x \lambda, q_3 x | x \lambda \rightarrow q_3 x \lambda, \\ & q_3 x 0 x \lambda \rightarrow q_3 x \lambda, q_3 x 1 x \lambda \rightarrow q_3 x \lambda, \\ & q_3 x ! = x \lambda \rightarrow q_7 x \lambda, q_3 x \geq x \lambda \rightarrow q_7 x \lambda, q_3 x \leq x \lambda \rightarrow q_7 x \lambda, \\ & q_3 x = x \lambda \rightarrow q_7 x \lambda, q_3 x < x \lambda \rightarrow q_7 x \lambda, q_3 x > x \lambda \rightarrow q_7 x \lambda, \\ & q_4 x (x A \rightarrow q_5 x \lambda, q_4 x [x B \rightarrow q_5 x \lambda, q_4 x \{x C \rightarrow q_5 x \lambda, \\ & q_4 x + x \lambda \rightarrow q_2 x \lambda, q_4 x - x \lambda \rightarrow q_2 x \lambda, q_4 x * x \lambda \rightarrow q_2 x \lambda, \\ & q_4 x / x \lambda \rightarrow q_2 x \lambda, q_4 x \& x \lambda \rightarrow q_2 x \lambda, q_4 x | x \lambda \rightarrow q_2 x \lambda, \\ & q_4 x > x \lambda \rightarrow q_2 x \lambda, q_4 x < x \lambda \rightarrow q_2 x \lambda, \\ & q_4 x (x \lambda \rightarrow q_4 x A, q_4 x [x \lambda \rightarrow q_4 x B, q_4 x \{x \lambda \rightarrow q_4 x C, \\ & q_4 x \& x \lambda \rightarrow q_4 x \lambda, q_4 x | x \lambda \rightarrow q_4 x \lambda, \\ & q_4 x 0 x \lambda \rightarrow q_4 x \lambda, q_4 x 1 x \lambda \rightarrow q_4 x \lambda, \\ & q_5 x (x A \rightarrow q_5 x \lambda, q_5 x [x B \rightarrow q_5 x \lambda, q_5 x \{x C \rightarrow q_5 x \lambda, q_5 x ^ x \lambda \rightarrow q_5 x \lambda, \end{aligned}$$

$q5\ x\ 0\ x\ \lambda \rightarrow q3\ x\ \lambda, q5\ x\ 1\ x\ \lambda \rightarrow q3\ x\ \lambda,$
 $q5\ x\ !=\ x\ \lambda \rightarrow q6\ x\ \lambda, q5\ x\ \geq\ x\ \lambda \rightarrow q6\ x\ \lambda, q5\ x\ \leq\ x\ \lambda \rightarrow q6\ x\ \lambda,$
 $q5\ x\ =\ x\ \lambda \rightarrow q6\ x\ \lambda, q5\ x\ <\ x\ \lambda \rightarrow q6\ x\ \lambda, q5\ x\ >\ x\ \lambda \rightarrow q6\ x\ \lambda,$
 $q6\ x\ (x\ \lambda \rightarrow q7\ x\ A, q6\ x\ [x\ \lambda \rightarrow q7\ x\ B, q6\ x\ \{x\ \lambda \rightarrow q7\ x\ C, q6\ x\ \sqrt{x\ \lambda} \rightarrow q7\ x\ \lambda,$
 $q6\ x\ !\ x\ \lambda \rightarrow q7\ x\ \lambda, q6\ x\ +\ x\ \lambda \rightarrow q7\ x\ \lambda, q6\ x\ -\ x\ \lambda \rightarrow q7\ x\ \lambda,$
 $q6\ x\ 0\ x\ \lambda \rightarrow q7\ x\ \lambda, q6\ x\ 1\ x\ \lambda \rightarrow q7\ x\ \lambda, q6\ x\ \infty\ x\ \lambda \rightarrow q7\ x\ \lambda,$
 $q7\ x\ (x\ \lambda \rightarrow q7\ x\ A, q7\ x\ [x\ \lambda \rightarrow q7\ x\ B, q7\ x\ \{x\ \lambda \rightarrow q7\ x\ C,$
 $q7\ x\ 0\ x\ \lambda \rightarrow q10\ x\ \lambda, q7\ x\ 1\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q7\ x\ 0\ x\ \lambda \rightarrow q11\ x\ \lambda, q7\ x\ 1\ x\ \lambda \rightarrow q11\ x\ \lambda,$
 $q8\ x\ 0\ x\ \lambda \rightarrow q8\ x\ \lambda, q8\ x\ 1\ x\ \lambda \rightarrow q8\ x\ \lambda, q8\ x\ ^\wedge\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q8\ x\ (x\ \lambda \rightarrow q7\ x\ A, q8\ x\ [x\ \lambda \rightarrow q7\ x\ B,$
 $q8\ x\ +\ x\ \lambda \rightarrow q10\ x\ \lambda, q8\ x\ -\ x\ \lambda \rightarrow q10\ x\ \lambda, q8\ x\ *\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q8\ x\ /\ x\ \lambda \rightarrow q10\ x\ \lambda, q8\ x\ \&\ x\ \lambda \rightarrow q10\ x\ \lambda, q8\ x\ |\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q8\ x\ >\ x\ \lambda \rightarrow q10\ x\ \lambda, q8\ x\ <\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q8\ x\ (x\ A \rightarrow q1\ x\ \lambda, q8\ x\ [x\ B \rightarrow q1\ x\ \lambda, q8\ x\ \{x\ C \rightarrow q1\ x\ \lambda,$
 $q9\ x\ +\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ -\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ *\ x\ \lambda \rightarrow q9\ x\ \lambda,$
 $q9\ x\ /\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ \&\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ |\ x\ \lambda \rightarrow q9\ x\ \lambda,$
 $q9\ x\ >\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ <\ x\ \lambda \rightarrow q9\ x\ \lambda,$
 $q9\ x\ 0\ x\ \lambda \rightarrow q9\ x\ \lambda, q9\ x\ 1\ x\ \lambda \rightarrow q9\ x\ \lambda,$
 $q9\ x\ +\ x\ \lambda \rightarrow q8\ x\ \lambda, q9\ x\ -\ x\ \lambda \rightarrow q8\ x\ \lambda, q9\ x\ *\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q9\ x\ /\ x\ \lambda \rightarrow q8\ x\ \lambda, q9\ x\ \&\ x\ \lambda \rightarrow q8\ x\ \lambda, q9\ x\ |\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q9\ x\ !\ x\ \lambda \rightarrow q8\ x\ \lambda, q9\ x\ Z\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q10\ x\ (x\ A \rightarrow q10\ x\ \lambda, q10\ x\ [x\ B \rightarrow q10\ x\ \lambda, q10\ x\ \{x\ C \rightarrow q10\ x\ \lambda,$
 $q10\ x\ 0\ x\ \lambda \rightarrow q10\ x\ \lambda, q4\ x\ 1\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q10\ x\ \&\ x\ \lambda \rightarrow q10\ x\ \lambda, q4\ x\ |\ x\ \lambda \rightarrow q10\ x\ \lambda,$
 $q10\ x\ +\ x\ \lambda \rightarrow q8\ x\ \lambda, q10\ x\ -\ x\ \lambda \rightarrow q10\ x\ \lambda, q10\ x\ *\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q10\ x\ /\ x\ \lambda \rightarrow q8\ x\ \lambda, q10\ x\ \&\ x\ \lambda \rightarrow q8\ x\ \lambda, q10\ x\ |\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q10\ x\ >\ x\ \lambda \rightarrow q8\ x\ \lambda, q10\ x\ <\ x\ \lambda \rightarrow q8\ x\ \lambda,$
 $q10\ x\ (x\ A \rightarrow q11\ x\ \lambda, q10\ x\ [x\ B \rightarrow q11\ x\ \lambda, q10\ x\ \{x\ C \rightarrow q11\ x\ \lambda,$
 $q11\ x\ (x\ A \rightarrow q11\ x\ \lambda, q11\ x\ [x\ B \rightarrow q11\ x\ \lambda, q11\ x\ \{x\ C \rightarrow q11\ x\ \lambda,$
 $q11\ x\ ^\wedge\ x\ \lambda \rightarrow q11\ x\ \lambda, q11\ x\ Z\ x\ \lambda \rightarrow q12\ x\ \lambda,$
 $q11\ x\ 0\ x\ \lambda \rightarrow q9\ x\ \lambda, q11\ x\ 1\ x\ \lambda \rightarrow q9\ x\ \lambda,$
 $q12\ x\ Z\ x\ \lambda \rightarrow q12\ x\ \lambda\ (final), \}$



