

PROGRAMA AUTÓMATAS FINITOS

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Asignatura:

INTRODUCCIÓN A LA TEORÍA DE LA COMPUTACIÓN

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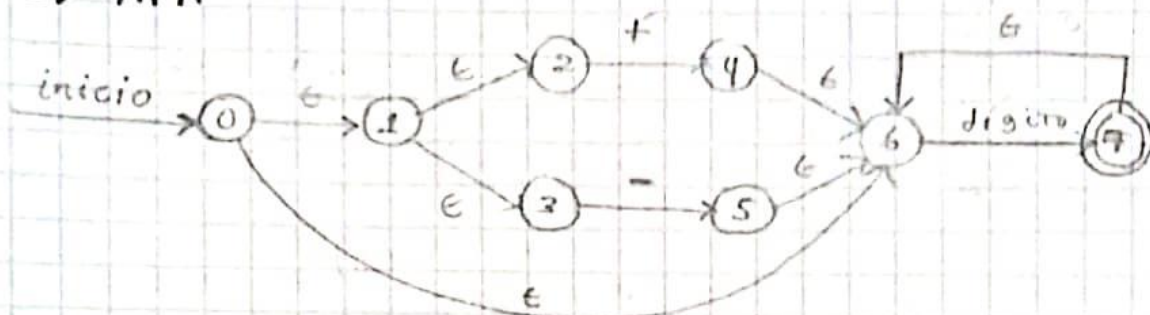
Entero

Automata entero.

a) Reg Exp.

$(+|-|\epsilon|)(\text{dígito})^+$

b) AFN



c) AFD.

$\Sigma = \{ +, -, \text{dígito} \}$, $S_0 = 0$, $A = \{ 0, 1, 2, 3 \}$

① $u = \text{cerradura}_\epsilon(\text{mueve}(A, +))$

$$\begin{cases} A' = \{ 0, 1, 2, 3, 6 \} \\ \downarrow \\ \text{mueve}(A, +) = \{ 4 \} \end{cases}$$

$$\text{Cerradura}(\{4\}) = \{4, 6\} = B$$

$u = \text{cerradura}_\epsilon(\text{mueve}(A, -))$

$$\text{Cerradura}(\{5\}) = \{5, 6\} = C$$

$u = \text{cerradura}_\epsilon(\text{mueve}(A, \text{dígito}))$

$$\text{Cerradura}(\{7\}) = \{6, 7\} = D$$

② $u = \text{cerradura } \in (\text{mueve}(B, +))$ No aplica

$u = \text{cerradura } \in (\text{mueve}(B, -))$ No aplica

$u = \text{cerradura } \in (\text{mueve}(B, \text{digito}))$

$\hookrightarrow = \text{cerradura } \in (\{7, 6\})$
 $= \{7, 6\} = D$

③ $u = \text{cerradura } \in (\text{mueve}(C, +))$ No aplica

$u = \text{cerradura } \in (\text{mueve}(C, -))$ No aplica

$u = \text{cerradura } \in (\text{mueve}(C, \text{digito}))$

$\hookrightarrow = \text{cerradura } \in (\{7\})$ $C \in \{0\}$
 $= \{6, 7\} = D$

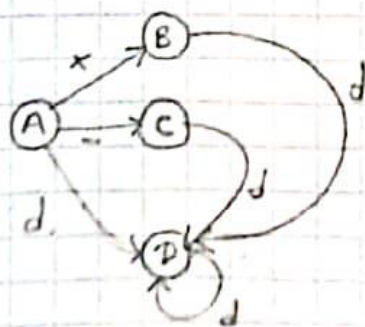
④ $u = \text{cerradura } \in (\text{mueve}(D, +))$ N/A

$u = \text{cerradura } \in (\text{mueve}(D, -))$ N/A

$u = \text{cerradura } \in (\text{mueve}(D, \text{digito}))$

$\hookrightarrow = \text{cerradura } \in (\{7\})$
 $= \{6, 7\} = D$

Gráficamente

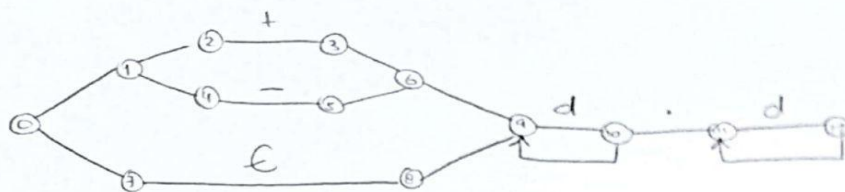


Real

Expresión Regular - Real

$(+|-|\epsilon)d^+ \cdot d^+$

ATN



AFD

$\Sigma = \{+, -, \epsilon, d, \cdot\}$, $S_0 = 0$, $A = \{0, 1, 2, 4, 7, 8, 9\}$

① $u = \text{Cerradura } \phi (\text{mueve}(A, +))$

$A = \{0, 1, 2, 4, 7, 8, 9\}$

$\text{mueve } \{3\} = \{3, 6, 9\} = B$

$u = \text{Cerradura } \phi (\text{mueve}(A, -))$

$\text{mueve } \{5\} = \{5, 6, 9\} = C$

$u = \text{Cerradura } \phi (\text{mueve}(A, \epsilon))$

No Aplica

$u = \text{Cerradura } \epsilon (\text{mueve}(A, d))$

$\text{mueve } \{7, 8\} = \{7, 8, 9\} = D$

$u = \text{Cerradura } \epsilon (\text{mueve}(A, \cdot))$

No Aplica

② $u = \text{Cerradura } \phi (\text{mueve}(B, +))$

$u = \text{Cerradura } \epsilon (\text{mueve}(B, -))$

$u = \text{Cerradura } \phi (\text{mueve}(B, \epsilon))$

$u = \text{Cerradura } \epsilon (\text{mueve}(B, d))$

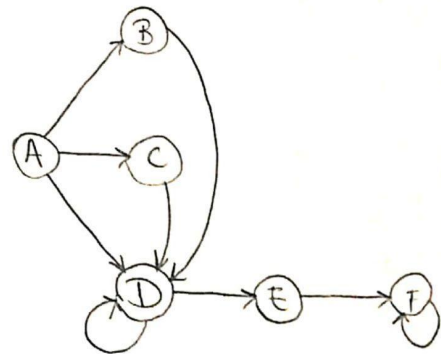
$\text{mueve } \{10\} = D$

- ③ $u = \text{Cerradura}(\text{mover}(C, +)) \times$
 $u = \text{Cerradura}(\text{mover}(C, -)) \times$
 $u = \text{Cerradura}(\text{mover}(C, e)) \times$
 $u = \text{Cerradura}(\text{mover}(C, d))$
 $\text{mover}(10) = \{10, 9\} = D$
 $u = \text{Cerradura}(\{C, \cdot\}) \times$

- ④ $u = \text{Cerradura}(\text{mover}(D, +)) \times$
 $u = \text{Cerradura}(\text{mover}(D, -)) \times$
 $u = \text{Cerradura}(\text{mover}(D, e)) \times$
 $u = \text{Cerradura}(\text{mover}(D, d)) = \{9, 10\} = D$
 $u = \text{Cerradura}(\text{mover}(D, \cdot))$
 $\text{mover}(10) = \{11\} = E$

- ⑤ $u = \text{Cerradura}(\text{mover}(E, +)) \times$
 $u = \text{Cerradura}(\text{mover}(E, -)) \times$
 $u = \text{Cerradura}(\text{mover}(E, e)) \times$
 $u = \text{Cerradura}(\text{mover}(E, d))$
 $\text{mover}(11) = \{11, 12\} = F$
 $u = \text{Cerradura}(\text{mover}(E, \cdot)) \times$

- ⑥ $u = \text{Cerradura}(\text{mover}(F, +))$
 $\text{mover}(12) = \{12, 11\} = F$
 $\text{mover}(F, -)$
 $\text{mover}(F, e)$
 $\text{mover}(F, d)$
 $\text{mover}(12) = \{12, 11\} = F$



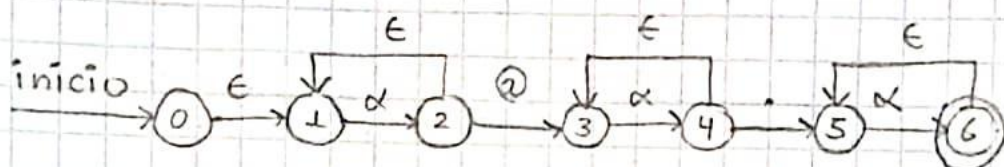
Correo electrónico

Automata correo electrónico.

a) Reg Exp-

(dígito | letra | - | _ | .) \Rightarrow α variable
 $\alpha^+ @ \alpha^+ . \alpha^+$

b) AFN



c) AFD

$\Sigma = \{\alpha, @, .\}$, $S_0 = 0$, $A = \{0, 1\}$

① $u = \text{cerradura } \epsilon (\text{mueve } (A, \alpha))$
 $= \text{cerradura } \epsilon (\{2\})$
 $= \{1, 2\} = B$

$u = \text{cerradura } \epsilon (\text{mueve } (A, @))$ N/A

$u = \text{cerradura } \epsilon (\text{mueve } (A, .))$ N/A

② $u = \text{cerradura } \epsilon (\text{mueve } (B, \alpha))$
 $= \text{cerradura } \epsilon (\{2\})$
 $= \{1, 2\} = B$

$u = \text{cerradura } \epsilon (\text{mueve } (B, @))$
 $= \text{cerradura } \epsilon (\{3\})$
 $= \{3\} = C$

$u = \text{cerradura } \epsilon (\text{mueve } (B, .))$ N/A

$$\begin{aligned} \textcircled{3} \quad u &= \text{cerradura } \epsilon (\text{mueve}(C, \alpha)) \\ &= \text{cerradura } \epsilon (\{4\}) \\ &= \{3, 4\} = D \end{aligned}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(C, @)) \quad \text{N/A}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(C, \cdot)) \quad \text{N/A}$$

$$\begin{aligned} \textcircled{4} \quad u &= \text{cerradura } \epsilon (\text{mueve}(D, \alpha)) \\ &= \text{cerradura } \epsilon (\{4\}) \\ &= \{3, 4\} = D \end{aligned}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(D, @)) \quad \text{N/A}$$

$$\begin{aligned} u &= \text{cerradura } \epsilon (\text{mueve}(D, \cdot)) \\ &= \text{cerradura } \epsilon (\{5\}) \\ &= \{5\} = E \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad u &= \text{cerradura } \epsilon (\text{mueve}(E, \alpha)) \\ &= \text{cerradura } \epsilon (\{6\}) \\ &= \{5, 6\} = F \end{aligned}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(E, @)) \quad \text{N/A}$$

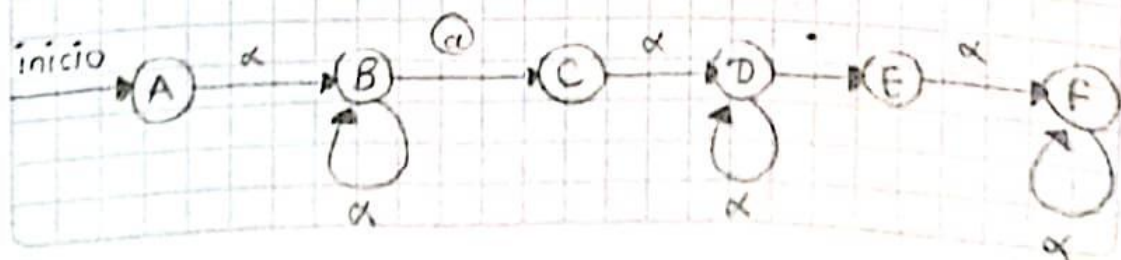
$$u = \text{cerradura } \epsilon (\text{mueve}(E, \cdot)) \quad \text{N/A}$$

$$\begin{aligned} \textcircled{6} \quad u &= \text{cerradura } \epsilon (\text{mueve}(F, \alpha)) \\ &= \text{cerradura } \epsilon (\{6\}) \\ &= \{5, 6\} = F \end{aligned}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(F, @)) \quad \text{N/A}$$

$$u = \text{cerradura } \epsilon (\text{mueve}(F, \cdot)) \quad \text{N/A}$$

Gráficamente

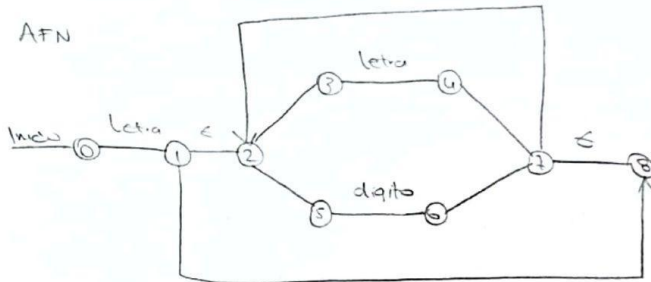


Identificador

Expresión Regular - Identificador

Letra (letra | dígito)*

AFN



AFD

$\Sigma(\text{Letra, dígito}), S_0=0, A=(0)$

① Cerradura \in (mueve (A, Letra))

mueve (1) = {1, 2, 3, 5, 8} = B

Cerradura \notin (mueve (A, dígito)) X

② $u = \text{Cerradura} \in$ (Mueve (B, Letra))

mueve (3) = {3, 4, 7} = C

$u = \text{Cerradura} \in$ (mueve (B, dígito))

mueve (5) = {5, 6, 7} = D

③ $u = \text{Cerradura} \in$ (mueve (C, Letra))

mueve (3) = {7, 3, 4} = D

$u = \text{Cerradura} \in$ (mueve (C, dígito))

mueve (5) = {7, 5, 6} = C

④ $u = \text{Cerradura} \in$ (mueve (D, Letra))

mueve (3) = {7, 3, 4} = D

$u = \text{Cerradura} \in$ (mueve (D, dígito))

mueve (5) = {7, 5, 6} = C

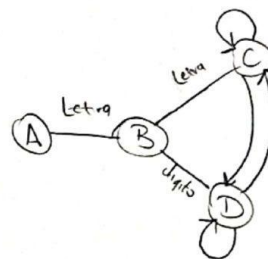


Diagrama de clases

Diagrama de clases

