

TP4 - Máquinas de Turing

Ejercicio 1

Especifique una cadena de entrada y represente las configuraciones de la máquina de Turing definida mediante:

a)

$Q = \{q_1, q_2\}$

$\Sigma = \{a, b\}$

$\Gamma = \{a, b, \text{B}\}$

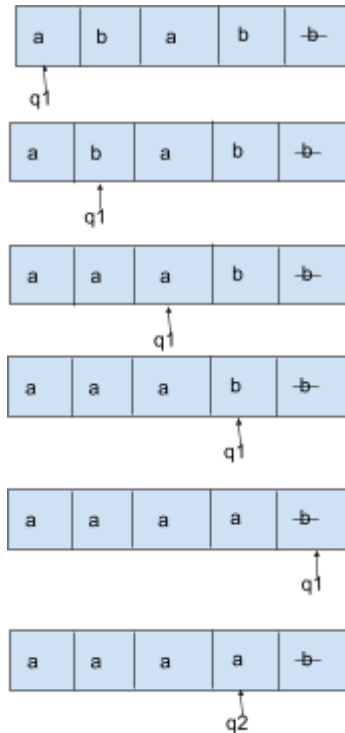
$s = q_1$

$F = \{q_2\}$

δ dado por: $\delta(q_1, a) = (q_1, a, R)$

$\delta(q_1, b) = (q_1, a, R)$

$\delta(q_1, \text{B}) = (q_2, \text{B}, L)$



b) $Q = \{q_0, q_1\}$

$\Sigma = \{0, 1\}$

$\Gamma = \{0, 1, \text{B}\}$

$s = q_0$

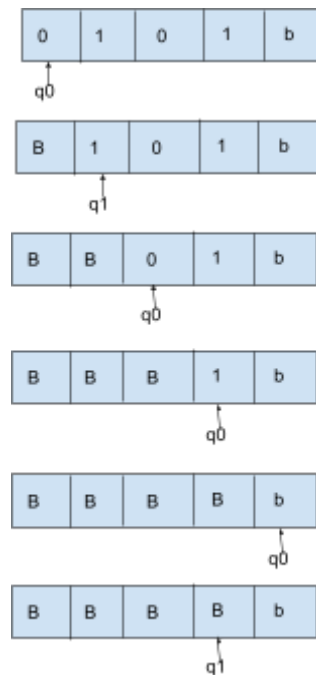
$F = \{q_1\}$

δ dado por: $\delta(q_0, 0) = (q_1, \text{B}, R)$

$\delta(q_0, 1) = (q_0, \text{B}, R)$

$\delta(q_1, 0) = (q_0, \text{B}, R)$

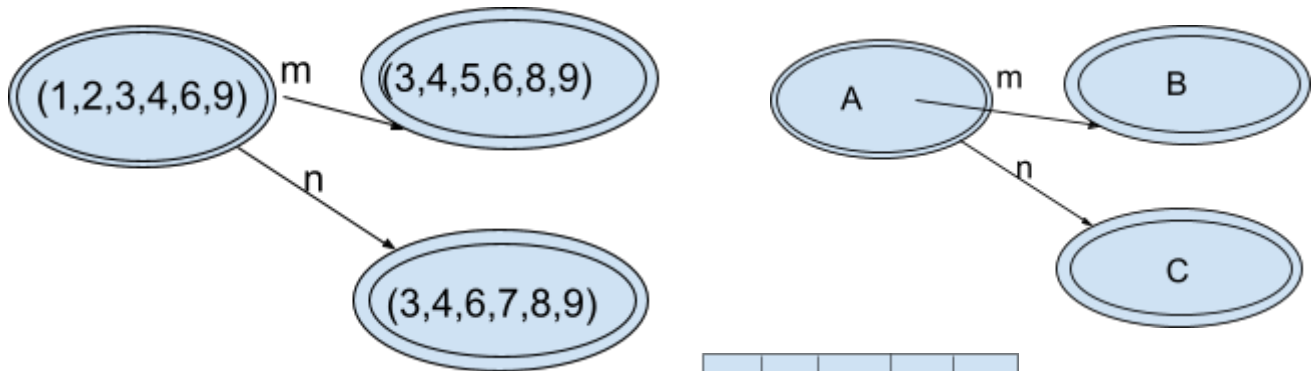
$\delta(q_1, 1) = (q_1, \text{B}, R)$



Ejercicio 2

Construya una máquina de Turing para cada uno de los AFD obtenidos en el ejercicio 2 del Trabajo Práctico N° 2. Especifique una cadena de entrada y represente las configuraciones de la máquina de Turing definidas.

a)



$Q = \{A, B, C, D\}$ estados

$\Sigma = \{m, n\}$ alfabeto

$\Gamma = \{m, n, \emptyset\}$ alfabeto de la cinta

$s = A$ estado inicial

$F = \{D\}$ estados de aceptación

δ dado por: $\delta(A, m) = (B, m, R)$

$\delta(A, n) = (C, n, R)$

$\delta(B, m) = (A, m, R)$

$\delta(C, n) = (A, n, R)$

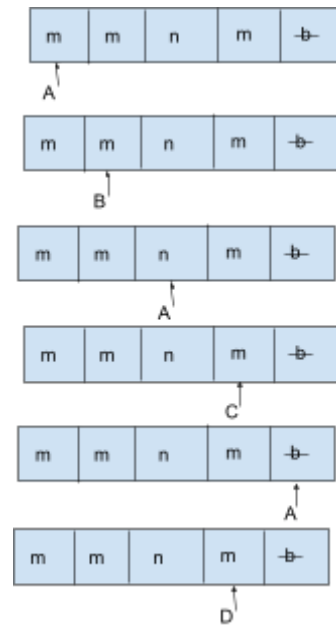
$\delta(C, m) = (A, m, R)$

$\delta(A, \emptyset) = (D, \emptyset, L)$

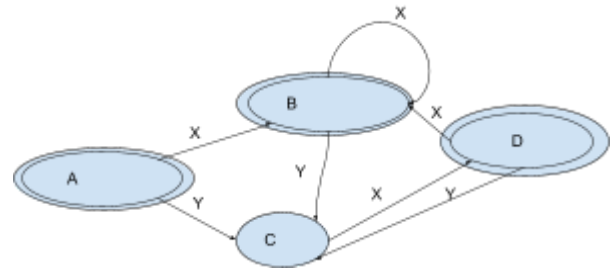
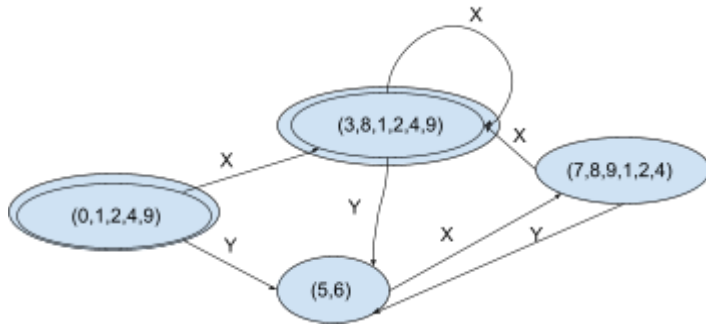
$\delta(B, \emptyset) = (D, \emptyset, L)$

$\delta(C, \emptyset) = (D, \emptyset, L)$

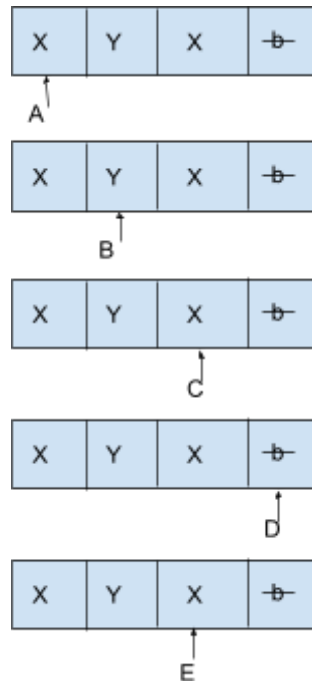
Cadena: mmnm



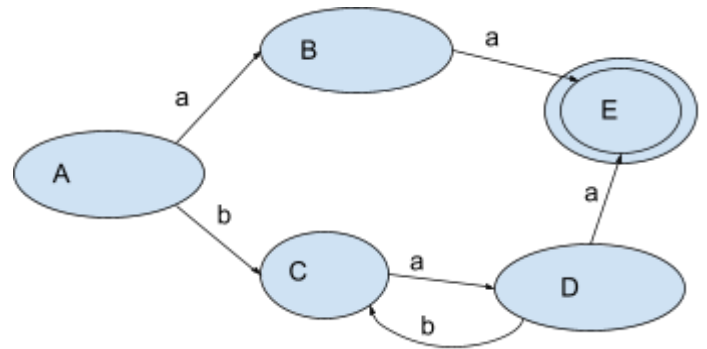
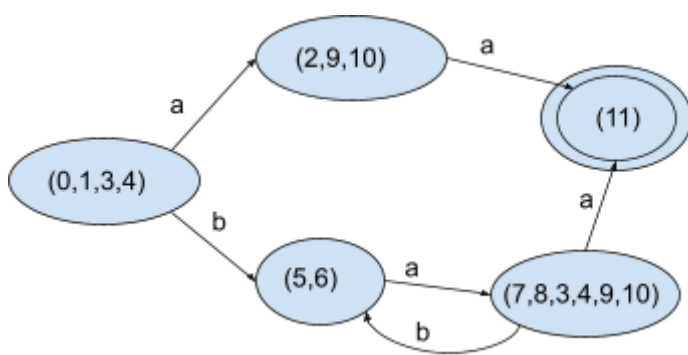
b)



$Q = \{A, B, C, D, E\}$ estados
 $\Sigma = \{x, y\}$ alfabeto
 $\Gamma = \{x, y, \text{blank}\}$ alfabeto de la cinta
 $s = A$ estado inicial
 $F = \{E\}$ estados de aceptación
 δ dado por: $\delta(A, x) = (B, x, R)$
 $\delta(A, y) = (C, y, R)$
 $\delta(B, x) = (B, x, R)$
 $\delta(B, y) = (C, y, R)$
 $\delta(C, y) = (D, y, R)$
 $\delta(D, y) = (C, y, R)$
 $\delta(D, x) = (B, x, R)$
 $\delta(A, \text{blank}) = (E, \text{blank}, L)$
 $\delta(B, \text{blank}) = (E, \text{blank}, L)$
 $\delta(D, \text{blank}) = (E, \text{blank}, L)$



c) .



$Q = \{A, B, C, D, E, F\}$ estados
 $\Sigma = \{a, b\}$ alfabeto
 $\Gamma = \{a, b, \text{␣}\}$ alfabeto de la cinta
 $s = A$ estado inicial
 $F = \{F\}$ estados de aceptación
 δ dado por: $\delta(A, a) = (B, a, R)$
 $\delta(A, b) = (C, b, R)$
 $\delta(B, a) = (E, a, R)$
 $\delta(C, a) = (D, a, R)$
 $\delta(D, a) = (E, a, R)$
 $\delta(D, b) = (C, b, R)$
 $\delta(E, \text{␣}) = (F, \text{␣}, L)$

