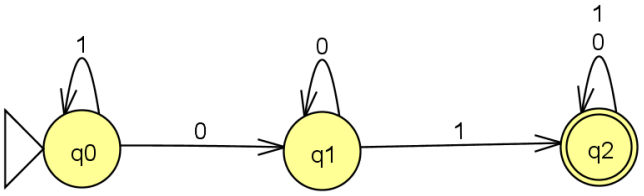
Enzo de Almeida Belfort Rizzi Di Chiara RA: 168.813
João Pedro da Silva Zampoli RA: 168.880
Luiza de Souza Ferreira RA: 170.453
Viviane Flor Park RA: 169.259

Projetos
LFA / Teoria da Computação

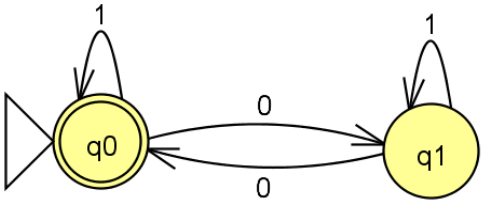
Projeto 01

.: Projetar um DFA para as seguintes linguagens (considere Σ = {0,1}).

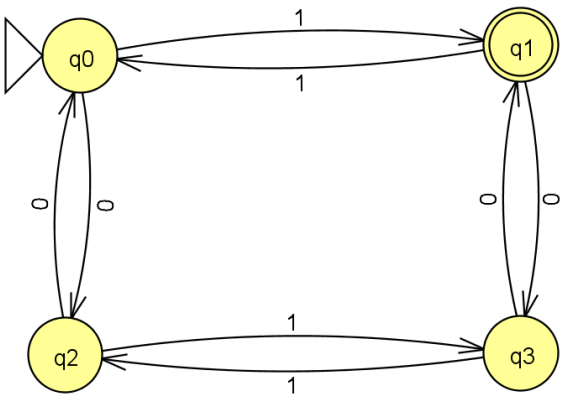
A) L_1 = {w | w é da forma x01y e x e y são quaisquer strings de 0's e 1's}



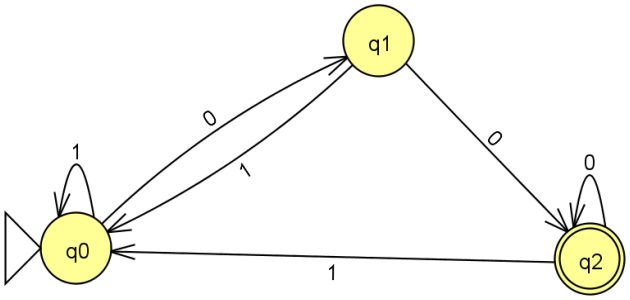
B) L_2 = {w | w possui um número par de 0's}



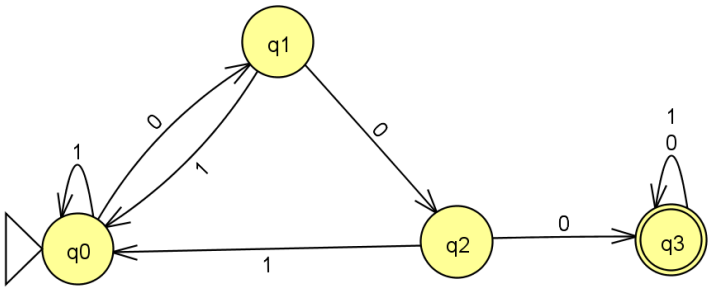
C) L_3 = {w | w possui ao mesmo tempo um número par de 0's e um número ímpar de 1's}



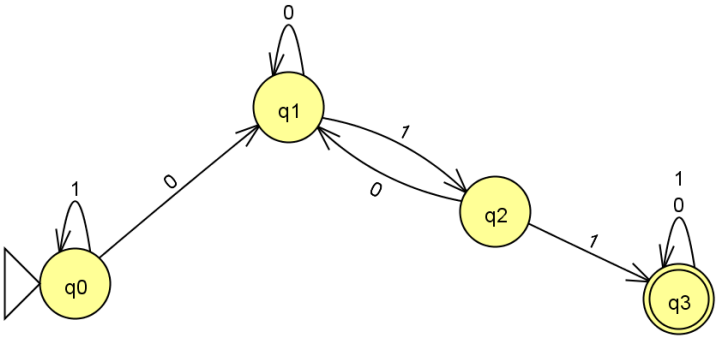
D) L_4 = {w | w termina em 00}



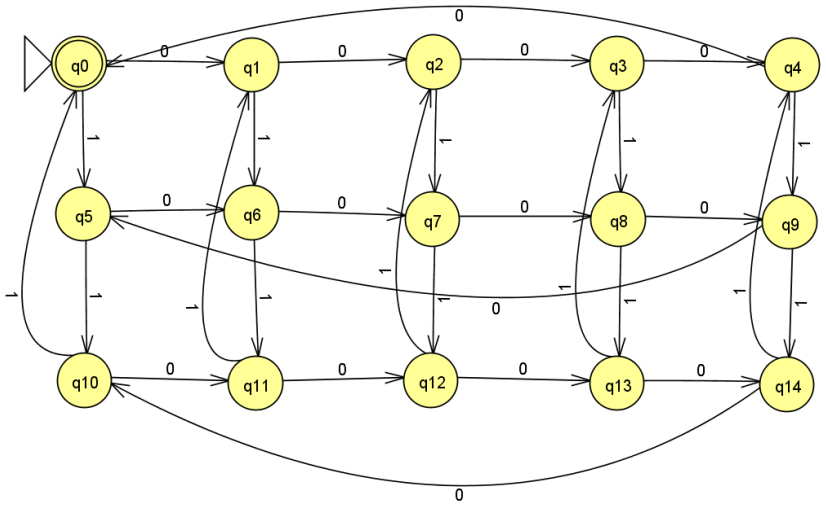
E) L_5 = {w | w contém três 0's consecutivos}



F) L_6 = {w | w contém a substring 011}



G) L_7 = {w | w possui número de 0's divisível por 5 e número de 1's divisível por 3}



Link para as implementações no JFlap: [Projetos/Aula 02 · JoaoPedroZampoli/LFA-Unifesp]

.: Função de Transição Estendida para DFAs
Para cada string, aplicar a função de transição estendida para verificar se a string pertence à linguagem.

A) L1 => 01, 1110
$\hat{\delta}(q0, 01) = \delta(\hat{\delta}(q0, 0), 1) = q2$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = q1$
$\hat{\delta}(q0, \epsilon) = q0$
✅ Aceito

$\hat{\delta}(q0, 1110) = \delta(\hat{\delta}(q0, 111), 0) = q1$
$\hat{\delta}(q0, 111) = \delta(\hat{\delta}(q0, 11), 1) = q0$
$\hat{\delta}(q0, 11) = \delta(\hat{\delta}(q0, 1), 1) = q0$
$\hat{\delta}(q0, 1) = \delta(\hat{\delta}(q0, \epsilon), 1) = q0$
$\hat{\delta}(q0, \epsilon) = q0$
❌ Não Aceito

B) L2 => 0011, 000
$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q1, 0) = q0$
$\hat{\delta}(q0, 001) = \delta(\hat{\delta}(q0, 00), 1) = \delta(q0, 1) = q0$
$\hat{\delta}(q0, 0011) = \delta(\hat{\delta}(q0, 001), 1) = \delta(q0, 1) = q0$
✅ Aceito

$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q1, 0) = q0$
$\hat{\delta}(q0, 000) = \delta(\hat{\delta}(q0, 00), 0) = \delta(q0, 0) = q1$
❌ Não Aceito

C) L3 => 001, 0101
$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q2$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q2, 0) = q0$
$\hat{\delta}(q0, 001) = \delta(\hat{\delta}(q0, 00), 1) = \delta(q0, 1) = q1$
✅ Aceito

$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q2$
$\hat{\delta}(q0, 01) = \delta(\hat{\delta}(q0, 0), 1) = \delta(q2, 1) = q3$
$\hat{\delta}(q0, 010) = \delta(\hat{\delta}(q0, 01), 0) = \delta(q3, 0) = q1$
$\hat{\delta}(q0, 0101) = \delta(\hat{\delta}(q0, 010), 1) = \delta(q1, 1) = q0$
❌ Não Aceito

D) L4 => 0001, 100
$\hat{\delta}(q0, 0001) = \delta(\hat{\delta}(q0, 000), 1) = \delta(q2, 1) = q0$
$\hat{\delta}(q0, 000) = \delta(\hat{\delta}(q0, 00), 0) = \delta(q2, 0) = q2$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q1, 0) = q2$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, \epsilon) = q0$

❌ Não Aceito

$\hat{\delta}(q0, 100) = \delta(\hat{\delta}(q0, 10), 0) = \delta(q1, 0) = q2$
$\hat{\delta}(q0, 10) = \delta(\hat{\delta}(q0, 1), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 1) = \delta(\hat{\delta}(q0, \epsilon), 1) = \delta(q0, 1) = q0$
$\hat{\delta}(q0, \epsilon) = q0$
✅ Aceito

E) L5 => 0001, 010101
$\hat{\delta}(q0, 0001) = \delta(\hat{\delta}(q0, 000), 1) = \delta(q3, 1) = q3$
$\hat{\delta}(q0, 000) = \delta(\hat{\delta}(q0, 00), 0) = \delta(q2, 0) = q3$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q1, 0) = q2$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, \epsilon) = q0$
✅ Aceito

$\hat{\delta}(q0, 010101) = \delta(\hat{\delta}(q0, 01010), 1) = \delta(q1, 1) = q0$
$\hat{\delta}(q0, 01010) = \delta(\hat{\delta}(q0, 0101), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 0101) = \delta(\hat{\delta}(q0, 010), 1) = \delta(q1, 1) = q0=$
$\hat{\delta}(q0, 010) = \delta(\hat{\delta}(q0, 01), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 01) = \delta(\hat{\delta}(q0, 0), 1) = \delta(q1, 1) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, \epsilon) = q0$
❌ Não Aceito

F) L6 => 1011, 0101
$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 1) = \delta(\hat{\delta}(q0, \epsilon), 1) = \delta(q0, 1) = q0$
$\hat{\delta}(q0, 10) = \delta(\hat{\delta}(q0, 1), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 101) = \delta(\hat{\delta}(q0, 10), 1) = \delta(q1, 1) = q2$
$\hat{\delta}(q0, 1011) = \delta(\hat{\delta}(q0, 101), 1) = \delta(q2, 1) = q3$
✅ Aceito

$\hat{\delta}(q0, \epsilon) = q0$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, 01) = \delta(\hat{\delta}(q0, 0), 1) = \delta(q1, 1) = q2$
$\hat{\delta}(q0, 010) = \delta(\hat{\delta}(q0, 01), 0) = \delta(q2, 0) = q1$
$\hat{\delta}(q0, 0101) = \delta(\hat{\delta}(q0, 010), 1) = \delta(q1, 1) = q2$
❌ Não Aceito

G) L7 => 00011001, 00101
$\hat{\delta}(q0, 00011001) = \delta(\hat{\delta}(q0, 0001100), 1) = \delta(q10, 1) = q0$
$\hat{\delta}(q0, 0001100) = \delta(\hat{\delta}(q0, 000110), 0) = \delta(q14, 0) = q10$
$\hat{\delta}(q0, 000110) = \delta(\hat{\delta}(q0, 00011), 0) = \delta(q13, 0) = q14$
$\hat{\delta}(q0, 00011) = \delta(\hat{\delta}(q0, 0001), 1) = \delta(q8, 1) = q13$
$\hat{\delta}(q0, 0001) = \delta(\hat{\delta}(q0, 000), 1) = \delta(q3, 1) = q8$
$\hat{\delta}(q0, 000) = \delta(\hat{\delta}(q0, 00), 0) = \delta(q2, 0) = q3$
$\hat{\delta}(q0, 00) = \delta(\hat{\delta}(q0, 0), 0) = \delta(q1, 0) = q2$
$\hat{\delta}(q0, 0) = \delta(\hat{\delta}(q0, \epsilon), 0) = \delta(q0, 0) = q1$
$\hat{\delta}(q0, \epsilon) = q0$

✅ Aceito

$\hat{\delta}\,(q0,\ 00101)\ =\ \delta(\hat{\delta}\,(q0,\ 0010),\ 1)\ =\ \delta(q8,\ 1)\ =\ q13$
$\hat{\delta}\,(q0,\ 0010)\ =\ \delta(\hat{\delta}\,(q0,\ 001),\ 0)\ =\ \delta(q7,\ 0)\ =\ q8$
$\hat{\delta}\,(q0,\ 001)\ =\ \delta(\hat{\delta}\,(q0,\ 00),\ 1)\ =\ \delta(q2,\ 1)\ =\ q7$
$\hat{\delta}\,(q0,\ 00)\ =\ \delta(\hat{\delta}\,(q0,\ 0),\ 0)\ =\ \delta(q1,\ 0)\ =\ q2$
$\hat{\delta}\,(q0,\ 0)\ =\ \delta(\hat{\delta}\,(q0,\ \epsilon),\ 0)\ =\ \delta(q0,\ 0)\ =\ q1$
$\hat{\delta}\,(q0,\ \epsilon)\ =\ q0$
❌ Não Aceito