Alunos: Daniel Sucupira Lima, Eliakim e Felipe

Professor: Bonfim Amaro Júnior

Disciplina: Teoria da Computação

Curso: Mestrado/Doutorado Acadêmico em Ciências da Computação

Programa: PPGCC-UECE

Tema 7: Autômato de pilha

Exemplos

Fortaleza, 23 de outubro de 2023

Stack Automaton Examples

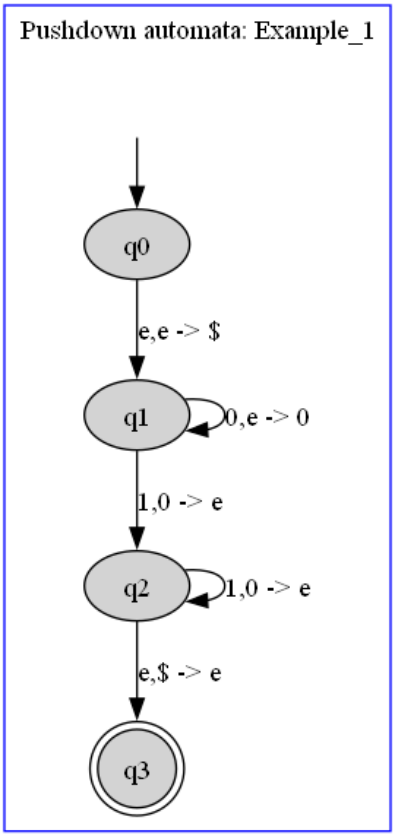
1) Language $\{0^n1^n \mid n > 0\}$.
2) Language $\{ww^R \mid w \in \{0,1\}^*\}$
3) Language $\{0^i1^j2^k \mid i=j \text{ ou } i=k \text{ com } n >= 1\}$
4) Language $\{0^n1^n \mid n >= 0\}$.
5) Language $\{w \in \{a,b\}^* \mid w=a^nb^n \text{ ou } w=b^na^n \text{ com } n >= 0\}$
6) Language $\{w \in \{a,b\}^* \mid$the quantity of 'a' symbols is equal to the quantity of 'b' symbols$\}$
7) Language $L = \{a^nb^ma^{n+m} | n \geq 0, m \geq 0\}$

Stack Automaton Examples

1) Language $\{0^n1^n \mid n > 0\}$.

Test cases:

Test ID	Word	Expected result	Obtained Result
1	01	Accept	Accepted
2	0011	Accept	Accepted
3	000111	Accept	Accepted
4	0	Reject	Rejected
5	1	Reject	Rejected
6	001	Reject	Rejected
7	011	Reject	Rejected

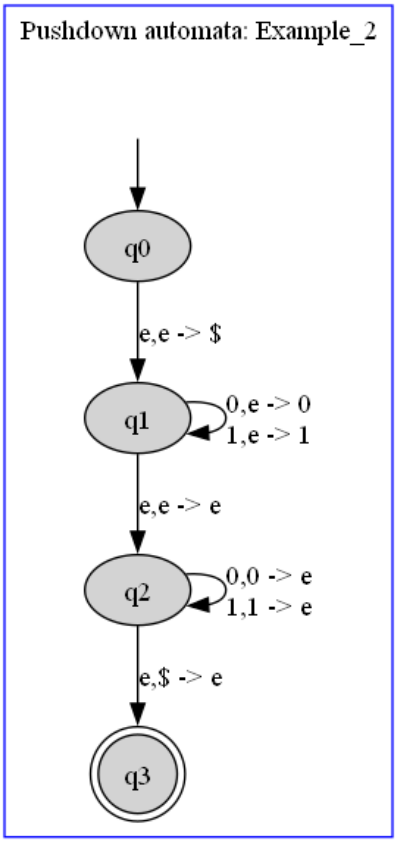


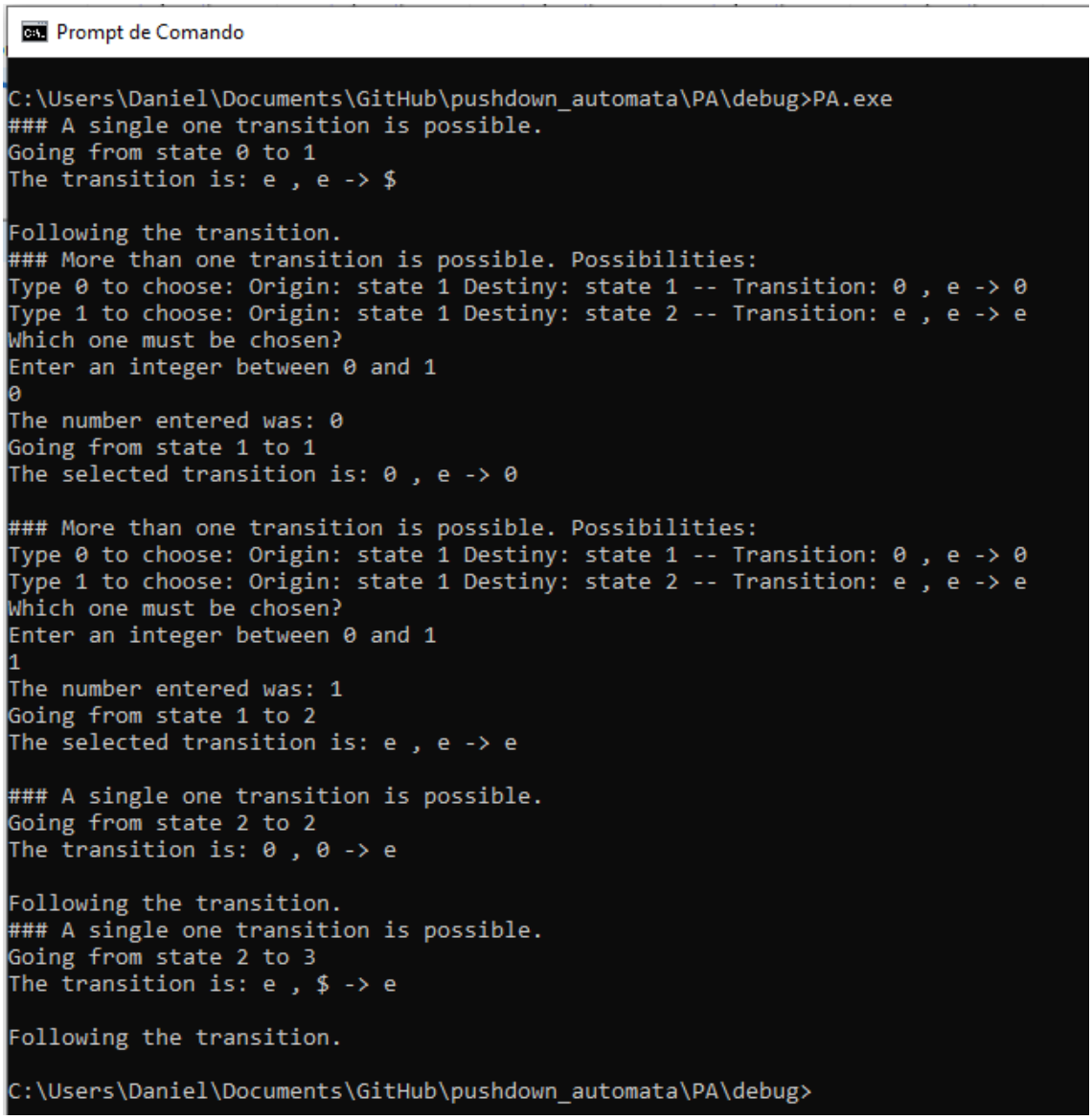

```
Prompt de Comando
C:\Users\Daniel\Documents\GitHub\pushdown_automata\PA\debug>PA.exe
### A single one transition is possible.
Going from state 0 to 1
The transition is: e , e -> $

Following the transition.
### A single one transition is possible.
Going from state 1 to 1
The transition is: 0 , e -> 0

Following the transition.
### A single one transition is possible.
Going from state 1 to 2
The transition is: 1 , 0 -> e

Following the transition.
### A single one transition is possible.
Going from state 2 to 3
The transition is: e , $ -> e

Following the transition.

C:\Users\Daniel\Documents\GitHub\pushdown_automata\PA\debug>
```

2) Language $\{ww^R \mid w \in \{0,1\}^*\}$

Test cases:

Test ID	Word	Expected result	Obtained Result
1	00	Accept	Accepted
2	0110	Accept	Accepted
3	010010	Accept	Accepted
4	01	Reject	Rejected
5	001	Reject	Rejected
6	010	Reject	Rejected
7	0101	Reject	Rejected



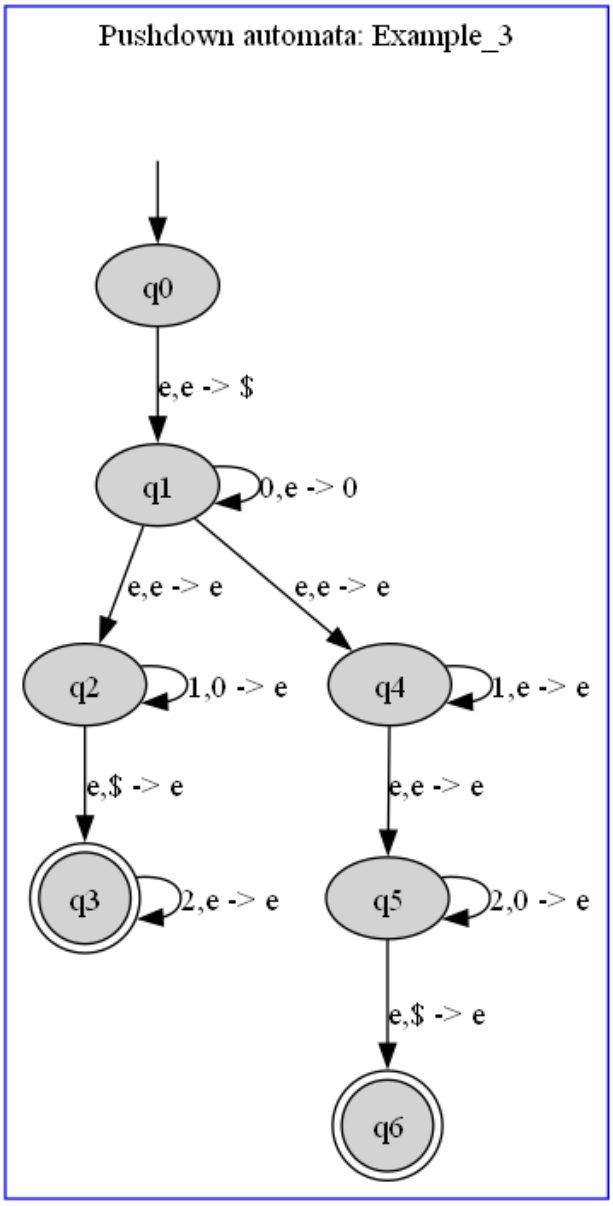


3) Language $\{0^i1^j2^k \mid i=j \text{ ou } i=k \text{ com } n >= 1\}$

Test cases:

Test ID	Word	Expected result	Obtained Result
1	012	Accept	Accepted
2	001122	Accept	Accepted
3	000111222	Accept	Accepted
4	01	Accept	Accepted
5	02	Accept	Accepted

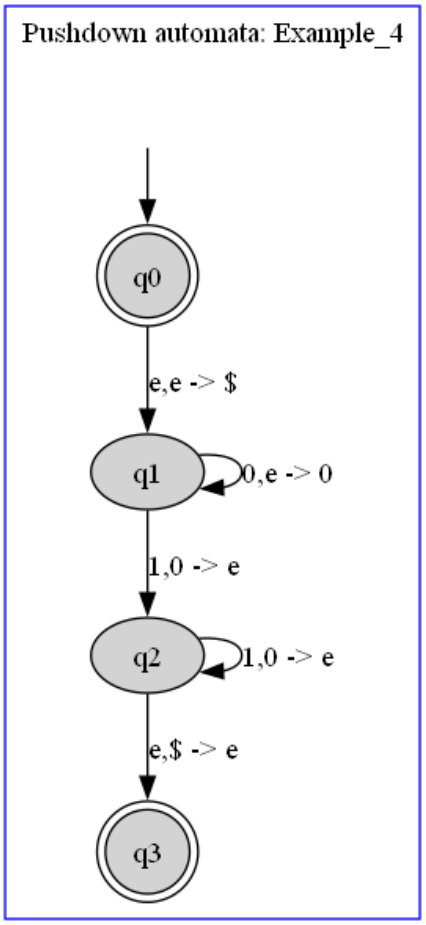
6	0012	Reject	Reject
7	011222	Reject	Rejected



4) Language $\{0^n1^n \mid n >= 0\}$.

Test cases:

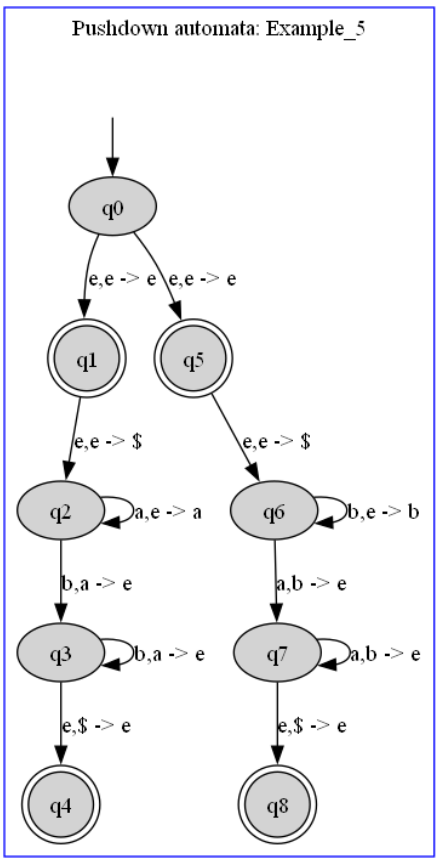
Test ID	Word	Expected result	Obtained Result
1	01	Accept	Accepted
2	0011	Accept	Accepted
3	000111	Accept	Accepted
4	0	Reject	Rejected
5	1	Reject	Rejected
6	001	Reject	Rejected
7		Accept	Accepted



5) Language $\{w \in \{a,b\}^* \mid w=a^nb^n \text{ ou } w=b^na^n \text{ com } n >= 0\}$

Test cases:

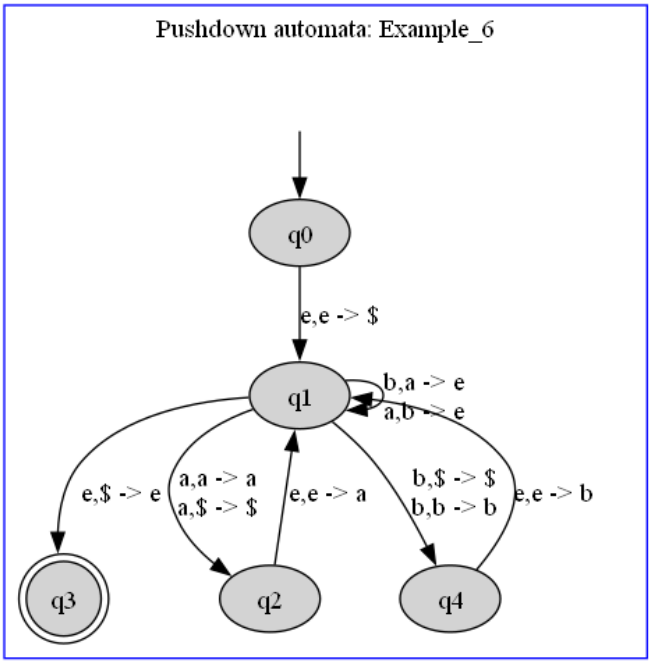
Test ID	Word	Expected result	Obtained Result
1		Accept	Accepted
2	ab	Accept	Accepted
3	ba	Accept	Accepted
4	aabb	Accept	Accepted
5	bbaa	Accept	Accepted
6	aab	Reject	Rejected
7	abaa	Reject	Rejected



6) Language {w ∈ {a,b}* |the quantity of ‘a’ symbols is equal to the quantity of ‘b’ symbols}

Test cases:

Test ID	Word	Expected result	Obtained Result
1		Accept	Accepted
2	ab	Accept	Accepted
3	ba	Accept	Accepted
4	aabb	Accept	Accepted
5	bbaa	Accept	Accepted
6	aab	Reject	Rejected
7	abaa	Reject	Rejected



7) Language $L = \{a^n b^m a^{n+m} | n \geq 0, m \geq 0\}$

Test cases:

Test ID	Word	Expected result	Obtained Result
1		Accept	Accepted
2	abaa	Accept	Accepted
3	aabbaaaa	Accept	Accepted
4	ab	Reject	Rejected
5	aba	Reject	Rejected
6	ba	Accept	Accepted
7	baa	Reject	Rejected