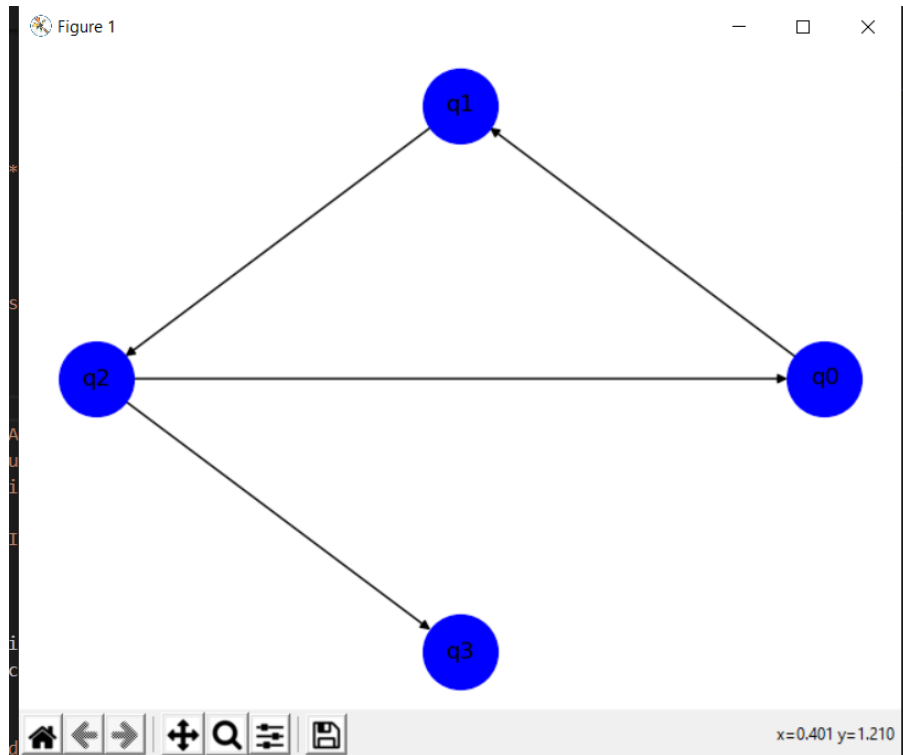


2.1 {w | w no contiene la sub-cadena "010"}



TEST 1: 0000

```
*** EVALUANDO ***

TEST: 0000
Alfabeto: ['0' '1']
Estados: ['q0' 'q1' 'q2' 'q3']
Estado inicial: q0
Estado final: ['q0' 'q1' 'q2']
Transiciones:
[['q0' '1' 'q0']
 ['q0' '0' 'q1']
 ['q1' '0' 'q1']
 ['q1' '1' 'q2']
 ['q2' '1' 'q0']
 ['q2' '0' 'q3']]
Pertenece a L(M)

Tiempo de Ejecucion: 4.0212216377 segundos.
```

TEST 2: 0101

```
*** E V A L U A N D O ***

TEST: 0101
Alfabeto: ['0' '1']
Estados: ['q0' 'q1' 'q2' 'q3']
Estado inicial: q0
Estado final: ['q0' 'q1' 'q2']
Transiciones:
[['q0' '1' 'q0']
 ['q0' '0' 'q1']
 ['q1' '0' 'q1']
 ['q1' '1' 'q2']
 ['q2' '1' 'q0']
 ['q2' '0' 'q3']]
No pertenece a L(M)
```

TEST 3: 1111

```
*** E V A L U A N D O ***

TEST: 1111
Alfabeto: ['0' '1']
Estados: ['q0' 'q1' 'q2' 'q3']
Estado inicial: q0
Estado final: ['q0' 'q1' 'q2']
Transiciones:
[['q0' '1' 'q0']
 ['q0' '0' 'q1']
 ['q1' '0' 'q1']
 ['q1' '1' 'q2']
 ['q2' '1' 'q0']
 ['q2' '0' 'q3']]
Pertenece a L(M)

Tiempo de Ejecucion: 3.7905652523 segundos.
```

TEST 4: 0001

```
*** E V A L U A N D O ***

TEST: 0001
Alfabeto: ['0' '1']
Estados: ['q0' 'q1' 'q2' 'q3']
Estado inicial: q0
Estado final: ['q0' 'q1' 'q2']
Transiciones:
[['q0' '1' 'q0']
 ['q0' '0' 'q1']
 ['q1' '0' 'q1']
 ['q1' '1' 'q2']
 ['q2' '1' 'q0']
 ['q2' '0' 'q3']]
Pertenece a L(M)

Tiempo de Ejecucion: 4.9812390804 segundos.
```

TEST 5: 1100

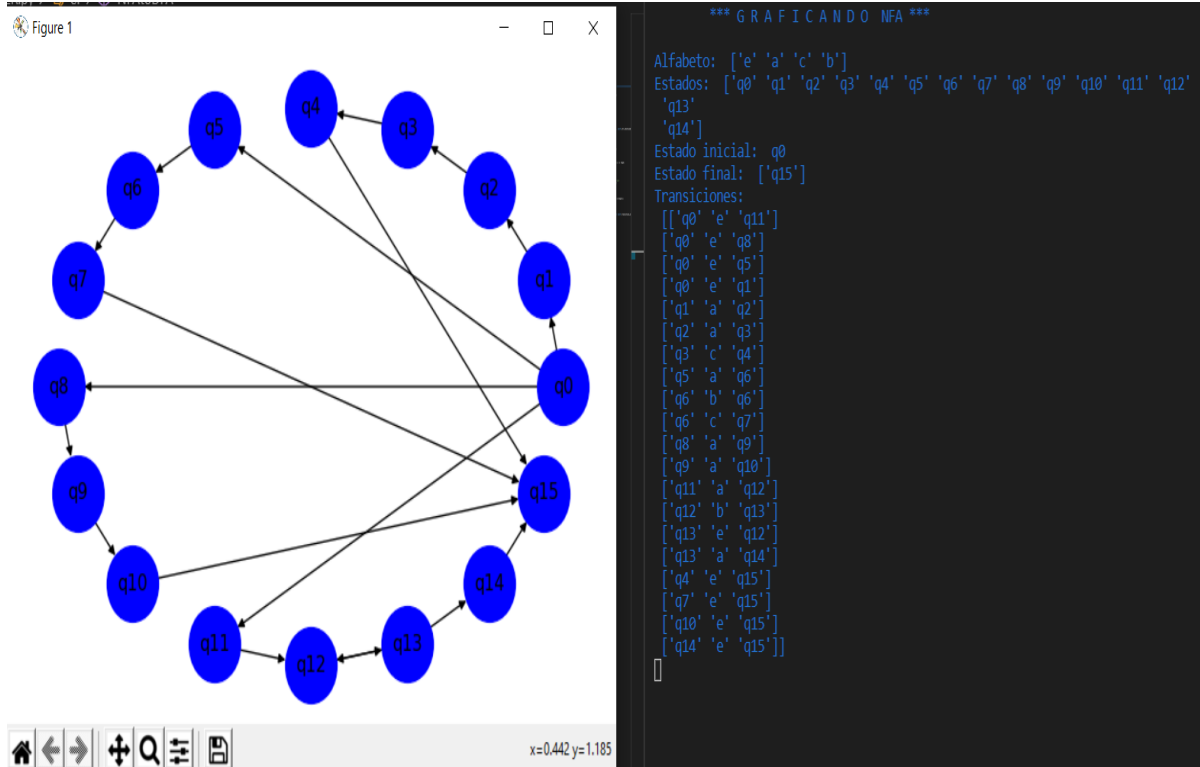
```
*** E V A L U A N D O ***

TEST: 1100
Alfabeto: ['0' '1']
Estados: ['q0' 'q1' 'q2' 'q3']
Estado inicial: q0
Estado final: ['q0' 'q1' 'q2']
Transiciones:
[['q0' '1' 'q0']
 ['q0' '0' 'q1']
 ['q1' '0' 'q1']
 ['q1' '1' 'q2']
 ['q2' '1' 'q0']
 ['q2' '0' 'q3']]
Pertenece a L(M)

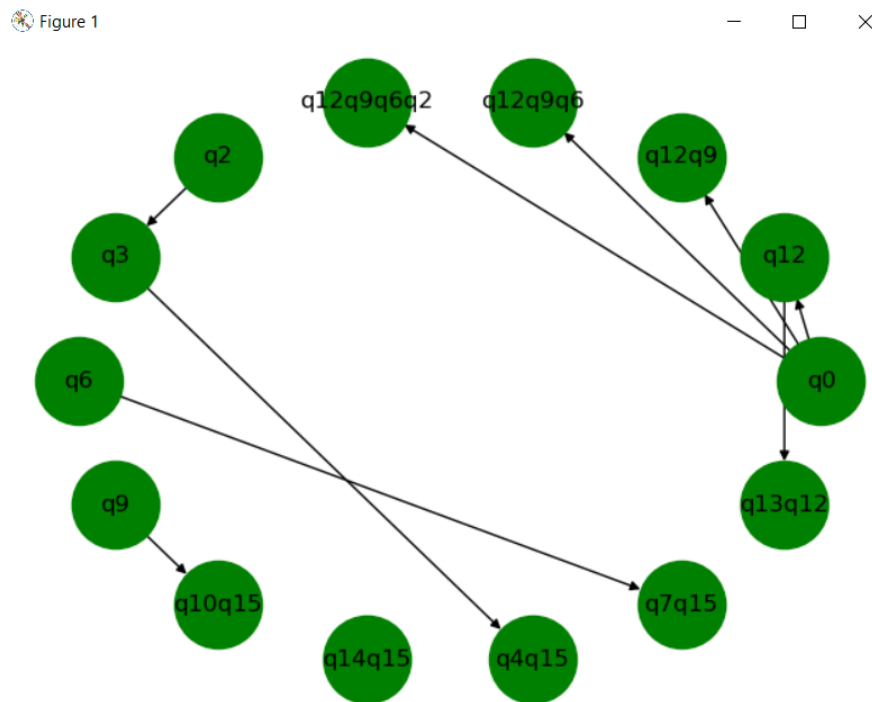
Tiempo de Ejecucion: 4.1890821457 segundos.
```

2.2 $aac \mid ab^*c \mid aa \mid ab+a$

NFA-e



DFA



TEST 1: **ab**

```
*** E V A L U A N D O NFA-E to DFA ***
Expresion regular: aac|ab*c|aa|ab+a
Alfabeto: ['a' 'c' 'b']
Estados:
['q0']
['q13' 'q12']
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
['q9']
['q6']
['q3']
['q2']
['q12' 'q9' 'q6' 'q2']
['q12' 'q9' 'q6']
['q12' 'q9']
['q12']
Estado inicial: q0
Estado final:
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
Transiciones:
[['q0'], ['a'], ['q12']]
[['q0'], ['a'], ['q12', 'q9']]
[['q0'], ['a'], ['q12', 'q9', 'q6']]
[['q0'], ['a'], ['q12', 'q9', 'q6', 'q2']]
[['q2'], ['a'], ['q3']]
[['q9'], ['a'], ['q10', 'q15']]
[['q3'], ['c'], ['q4', 'q15']]
[['q6'], ['c'], ['q7', 'q15']]
[['q6'], ['b'], ['q6']]
[['q12'], ['b'], ['q13', 'q12']]

Evaluando NFA-e to DFA
Ingrese test: ab
No pertenece a L(M)
PS C:\Users\David\Desktop\ProyectoTeoria>
```

TEST 2: **aa**

```
*** E V A L U A N D O NFA-E to DFA ***
Expresion regular: aac|ab*c|aa|ab+a
Alfabeto: ['a' 'c' 'b']
Estados:
['q0']
['q13' 'q12']
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
['q9']
['q6']
['q3']
['q2']
['q12' 'q9' 'q6' 'q2']
['q12' 'q9' 'q6']
['q12' 'q9']
['q12']
Estado inicial: q0
Estado final:
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
Transiciones:
[['q0'], ['a'], ['q12']]
[['q0'], ['a'], ['q12', 'q9']]
[['q0'], ['a'], ['q12', 'q9', 'q6']]
[['q0'], ['a'], ['q12', 'q9', 'q6', 'q2']]
[['q2'], ['a'], ['q3']]
[['q9'], ['a'], ['q10', 'q15']]
[['q3'], ['c'], ['q4', 'q15']]
[['q6'], ['c'], ['q7', 'q15']]
[['q6'], ['b'], ['q6']]
[['q12'], ['b'], ['q13', 'q12']]

Evaluando NFA-e to DFA
Ingrese test: aa
No pertenece a L(M)
PS C:\Users\David\Desktop\ProyectoTeoria>
```

TEST: **ac**

```
*** E V A L U A N D O NFA-E to DFA ***
Expresion regular: aac|ab*c|aa|ab+a
Alfabeto: ['a' 'c' 'b']
Estados:
['q0']
['q13' 'q12']
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
['q9']
['q6']
['q3']
['q2']
['q12' 'q9' 'q6' 'q2']
['q12' 'q9' 'q6']
['q12' 'q9']
['q12']
Estado inicial: q0
Estado final:
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
Transiciones:
[['q0'], ['a'], ['q12']]
[['q0'], ['a'], ['q12', 'q9']]
[['q0'], ['a'], ['q12', 'q9', 'q6']]
[['q0'], ['a'], ['q12', 'q9', 'q6', 'q2']]
[['q2'], ['a'], ['q3']]
[['q9'], ['a'], ['q10', 'q15']]
[['q3'], ['c'], ['q4', 'q15']]
[['q6'], ['c'], ['q7', 'q15']]
[['q6'], ['b'], ['q6']]
[['q12'], ['b'], ['q13', 'q12']]

Evaluando NFA-e to DFA
Ingrese test: ac
No pertenece a L(M)
```

TEST: **abc**

```
*** E V A L U A N D O NFA-E to DFA ***
Expresion regular: aac|ab*c|aa|ab+a
Alfabeto: ['a' 'c' 'b']
Estados:
['q0']
['q13' 'q12']
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
['q9']
['q6']
['q3']
['q2']
['q12' 'q9' 'q6' 'q2']
['q12' 'q9' 'q6']
['q12' 'q9']
['q12']
Estado inicial: q0
Estado final:
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
Transiciones:
[['q0'], ['a'], ['q12']]
[['q0'], ['a'], ['q12', 'q9']]
[['q0'], ['a'], ['q12', 'q9', 'q6']]
[['q0'], ['a'], ['q12', 'q9', 'q6', 'q2']]
[['q2'], ['a'], ['q3']]
[['q9'], ['a'], ['q10', 'q15']]
[['q3'], ['c'], ['q4', 'q15']]
[['q6'], ['c'], ['q7', 'q15']]
[['q6'], ['b'], ['q6']]
[['q12'], ['b'], ['q13', 'q12']]

Evaluando NFA-e to DFA
Ingrese test: abc
Pertenece a L(M)
```

TEST 5: cba

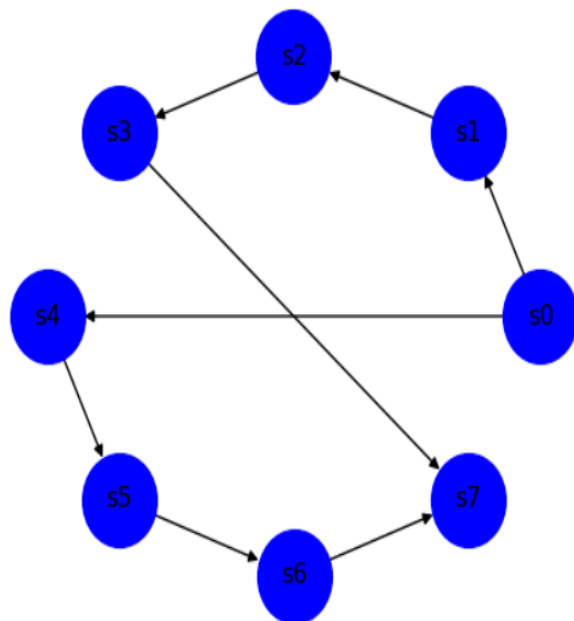
```
*** E V A L U A N D O NFA-E to DFA ***
Expresion regular:  aac|ab*c|aa|ab+a
Alfabeto:  ['a' 'c' 'b']
Estados:
['q0']
['q13' 'q12']
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
['q9']
['q6']
['q3']
['q2']
['q12' 'q9' 'q6' 'q2']
['q12' 'q9' 'q6']
['q12' 'q9']
['q12']
Estado inicial:  q0
Estado final:
['q7' 'q15']
['q4' 'q15']
['q14' 'q15']
['q10' 'q15']
Transiciones:
[['q0'], ['a'], ['q12']]
[['q0'], ['a'], ['q12', 'q9']]
[['q0'], ['a'], ['q12', 'q9', 'q6']]
[['q0'], ['a'], ['q12', 'q9', 'q6', 'q2']]
[['q2'], ['a'], ['q3']]
[['q9'], ['a'], ['q10', 'q15']]
[['q3'], ['c'], ['q4', 'q15']]
[['q6'], ['c'], ['q7', 'q15']]
[['q6'], ['b'], ['q6']]
[['q12'], ['b'], ['q13', 'q12']]

Evaluando NFA-e to DFA
Ingrese test: cba
No pertenece a L(M)
```

2.3

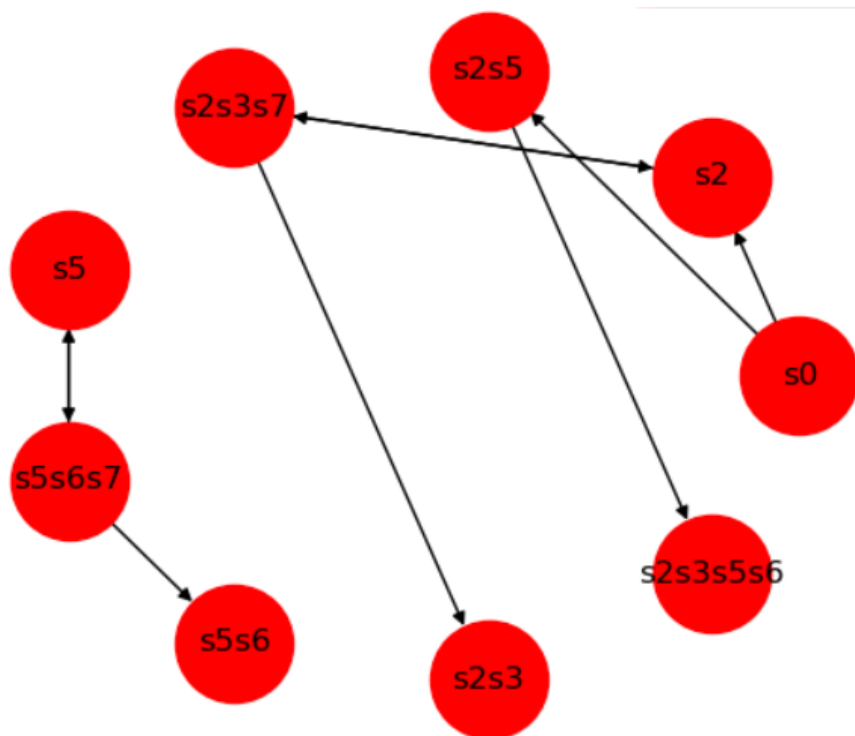
NFA-e

 **Figure 1**



11

DFA



TEST 1: ab

```
*** E V A L U A N D O  NFA-E to DFA ***
Alfabeto: ['a' 'b']
Estados:
['s0']
['s2']
['s5' 's6' 's7']
['s5']
['s2' 's3' 's7']
Estado inicial: s0
Estado final:
['s5' 's6' 's7']
['s2' 's3' 's7']
Transiciones:
[['s2', 's3', 's7'], 'b', ['s2']]
[['s2', 's3', 's7'], 'a', ['s2', 's3']]
[['s5', 's6', 's7'], 'b', ['s5']]
[['s5', 's6', 's7'], 'a', ['s5', 's6']]
[['s2'], ['a'], ['s2', 's3', 's7']]
[['s5'], ['a'], ['s5', 's6', 's7']]
[['s2'], ['b'], ['s2']]
[['s5'], ['b'], ['s5']]
Evaluando NFA-e to DFA
Ingrese test: ab
Pertenece a L(M)
```

TEST 2: aa

```
*** E V A L U A N D O  NFA-E to DFA ***
Alfabeto: ['a' 'b']
Estados:
['s0']
['s5' 's6' 's7']
['s5']
['s2' 's3' 's7']
['s2' 's5']
['s2']
Estado inicial: s0
Estado final:
['s5' 's6' 's7']
['s2' 's3' 's7']
Transiciones:
[['s2', 's5'], 'b', ['s2', 's5']]
[['s2', 's5'], 'a', ['s2', 's3', 's5', 's6']]
[['s2', 's3', 's7'], 'b', ['s2']]
[['s2', 's3', 's7'], 'a', ['s2', 's3']]
[['s5', 's6', 's7'], 'b', ['s5']]
[['s5', 's6', 's7'], 'a', ['s5', 's6']]
[['s0'], ['a'], ['s2']]
[['s0'], ['a'], ['s2', 's5']]
[['s2'], ['a'], ['s2', 's3', 's7']]
[['s5'], ['a'], ['s5', 's6', 's7']]
[['s2'], ['b'], ['s2']]
[['s5'], ['b'], ['s5']]
Evaluando NFA-e to DFA
Ingrese test: aa
Pertenece a L(M)
```

TEST 3: aaba

```
*** EVALUANDO NFA-E to DFA ***
Alfabeto: ['a' 'b']
Estados:
['s0']
['s5' 's6' 's7']
['s5']
['s2' 's3' 's7']
['s2' 's5']
['s2']
Estado inicial: s0
Estado final:
['s5' 's6' 's7']
['s2' 's3' 's7']
Transiciones:
[['s2', 's5'], 'b', ['s2', 's5']]
[['s2', 's5'], 'a', ['s2', 's3', 's5', 's6']]
[['s2', 's3', 's7'], 'b', ['s2']]
[['s2', 's3', 's7'], 'a', ['s2', 's3']]
[['s5', 's6', 's7'], 'b', ['s5']]
[['s5', 's6', 's7'], 'a', ['s5', 's6']]
[['s0'], ['a'], ['s2']]
[['s0'], ['a'], ['s2', 's5']]
[['s2'], ['a'], ['s2', 's3', 's7']]
[['s5'], ['a'], ['s5', 's6', 's7']]
[['s2'], ['b'], ['s2']]
[['s5'], ['b'], ['s5']]
Evaluando NFA-e to DFA
Ingrese test: aaba
Pertenece a L(M)
```

TEST 4: abbb

```
*** EVALUANDO NFA-E to DFA ***
Alfabeto: ['a' 'b']
Estados:
['s0']
['s5' 's6' 's7']
['s5']
['s2' 's3' 's7']
['s2' 's5']
['s2']
Estado inicial: s0
Estado final:
['s5' 's6' 's7']
['s2' 's3' 's7']
Transiciones:
[['s2', 's5'], 'b', ['s2', 's5']]
[['s2', 's5'], 'a', ['s2', 's3', 's5', 's6']]
[['s2', 's3', 's7'], 'b', ['s2']]
[['s2', 's3', 's7'], 'a', ['s2', 's3']]
[['s5', 's6', 's7'], 'b', ['s5']]
[['s5', 's6', 's7'], 'a', ['s5', 's6']]
[['s0'], ['a'], ['s2']]
[['s0'], ['a'], ['s2', 's5']]
[['s2'], ['a'], ['s2', 's3', 's7']]
[['s5'], ['a'], ['s5', 's6', 's7']]
[['s2'], ['b'], ['s2']]
[['s5'], ['b'], ['s5']]
Evaluando NFA-e to DFA
Ingrese test: abbb
No pertenece a L(M)
```

TEST 5: aaab

```
*** E V A L U A N D O  NFA-E to DFA ***
Alfabeto: ['a' 'b']
Estados:
['s0']
['s5' 's6' 's7']
['s5']
['s2' 's3' 's7']
['s2' 's5']
['s2']
Estado inicial: s0
Estado final:
['s5' 's6' 's7']
['s2' 's3' 's7']
Transiciones:
[['s2', 's5'], 'b', ['s2', 's5']]
[['s2', 's5'], 'a', ['s2', 's3', 's5', 's6']]
[['s2', 's3', 's7'], 'b', ['s2']]
[['s2', 's3', 's7'], 'a', ['s2', 's3']]
[['s5', 's6', 's7'], 'b', ['s5']]
[['s5', 's6', 's7'], 'a', ['s5', 's6']]
[['s0'], ['a'], ['s2']]
[['s0'], ['a'], ['s2', 's5']]
[['s2'], ['a'], ['s2', 's3', 's7']]
[['s5'], ['a'], ['s5', 's6', 's7']]
[['s2'], ['b'], ['s2']]
[['s5'], ['b'], ['s5']]
Evaluando NFA-e to DFA
Ingrese test: aaaab
No pertenece a L(M)
PS C:\Users\David\Desktop\ProyectoTeoria>
```