UNIVERSIDAD AUTÓNOMA DEL ESTADO DE HIDALGO

Instituto de ciencias basicas e ingenieria

Licenciatura en Ciencias Computacionales

Quinto Semestre Grupo-3

Automatas y Compiladores

"Práctica. AFD y AFND"

Alumno:

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Ejercicio 1. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {0, 1}, que acepte el conjunto de palabras que inician en “0”.

F= {s0}

Σ={0,1}

Q={start,S0,S1}

q0= start

f=(start,0)=S0

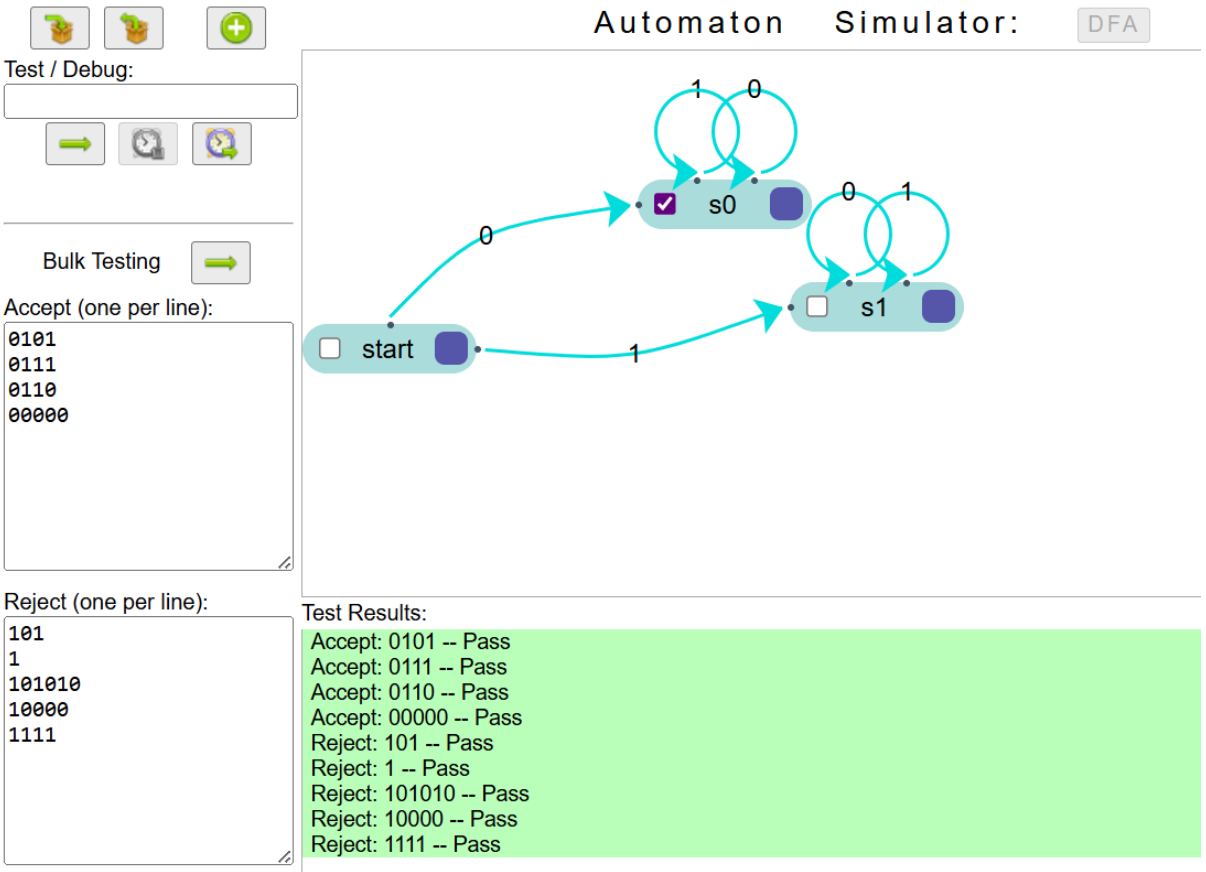
f(S0,0)=S0

f(S0,1)=S0

f(start,1)= S1

f(S1,0)= S1

f(S1,1)= S1



Ejercicio2. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {0, 1}, que acepte el conjunto de palabras que terminan en “1”.

F= {s0}

Σ={0,1}

Q={start,So,S1}

q0= start

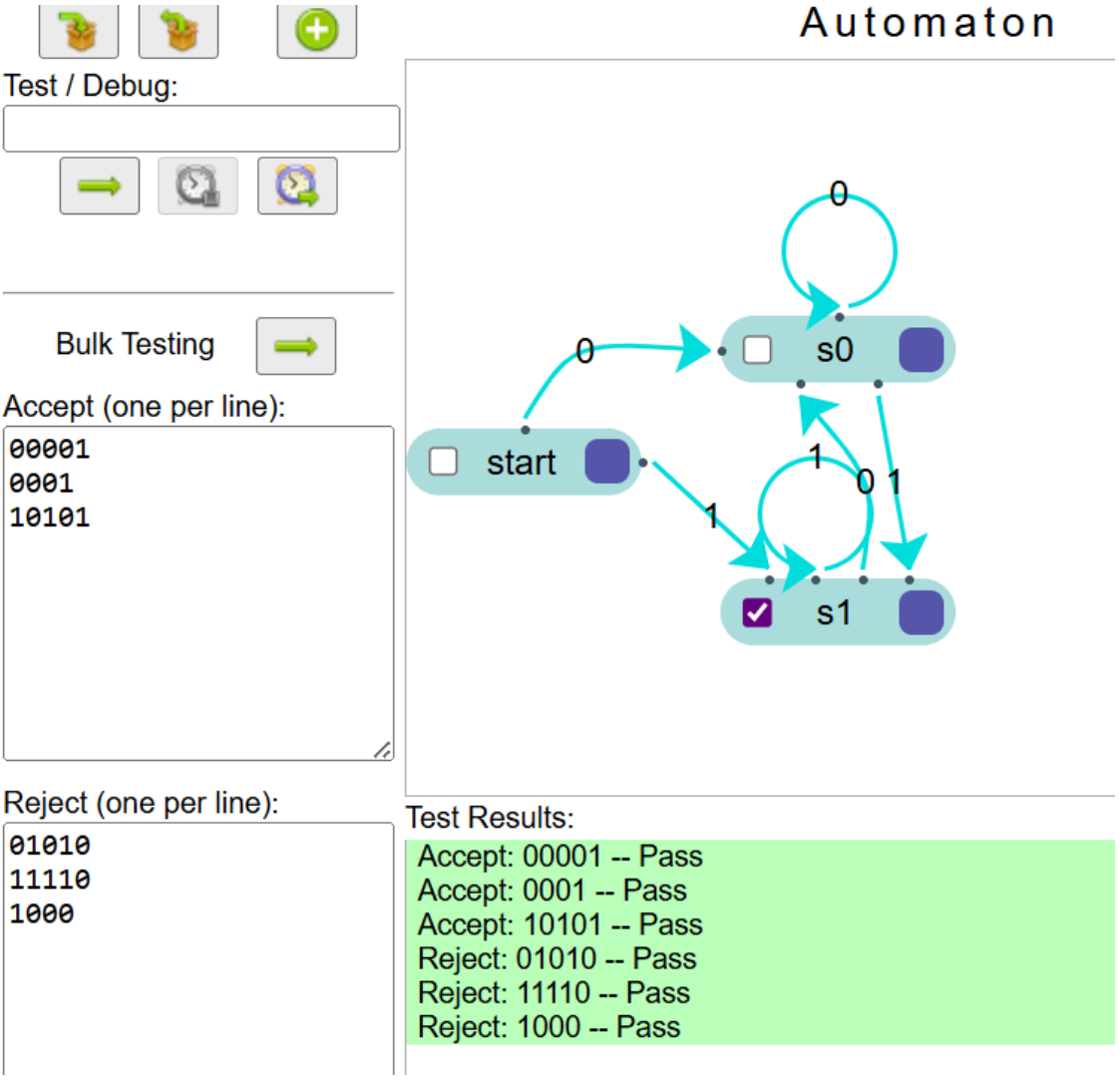
f(start,0)= So

f(start,1)= S1

f(So,0)=So

f(So,1)=S1

f(S1,1)= s1



Ejercicio 3. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {0, 1}, que acepte el conjunto de palabras que contienen la subcadena “01”.

F= {S1}

Σ={0,1}

Q={start,So,S1}

q0= start

f(start,1)= Start

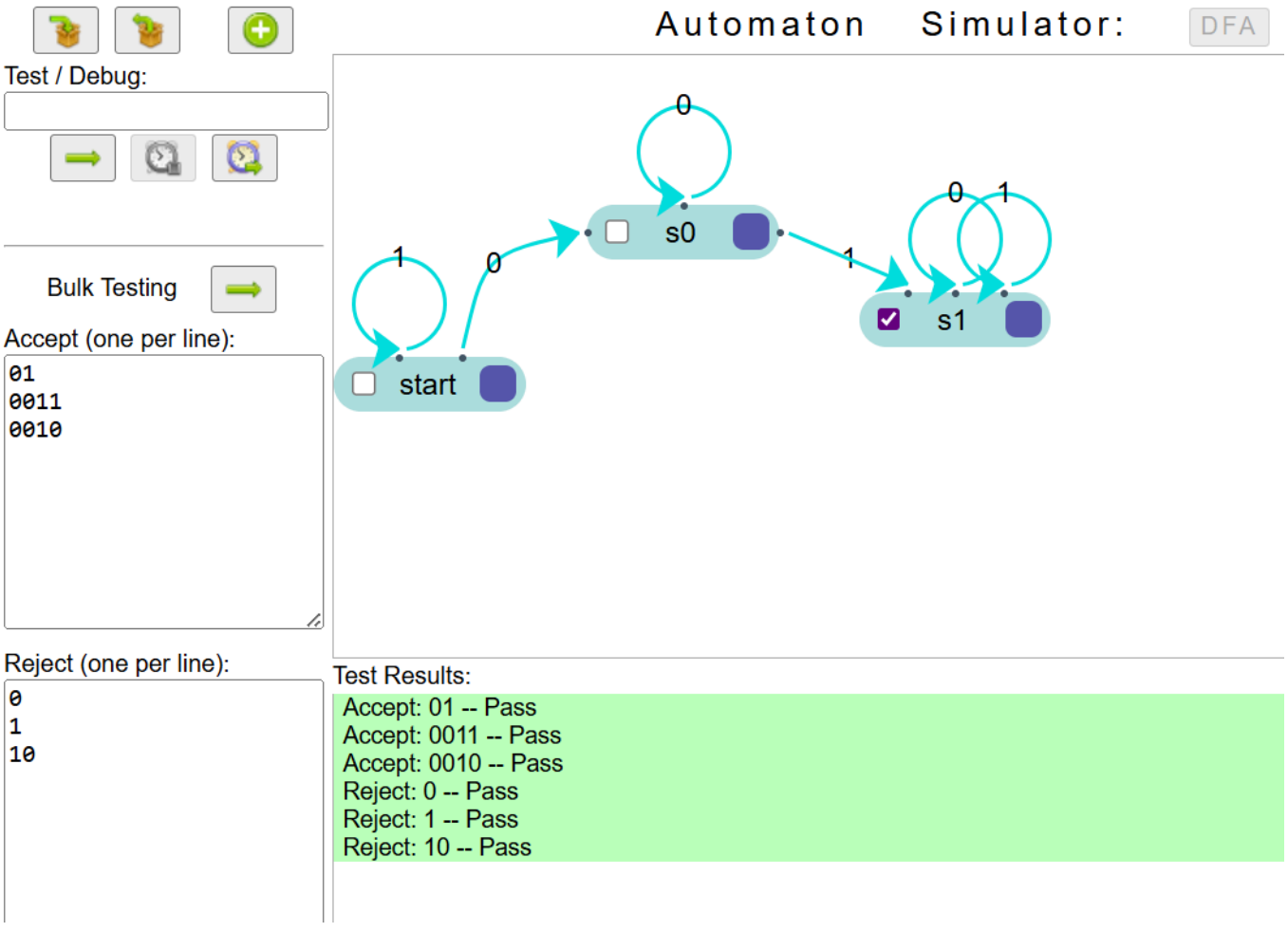
f(start,0)= So

f(So,0)=So

f(So,1)=S1

f(S1,1)= s1

f(S1,0)= s1



Ejercicio 4. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {0, 1}, que acepte el conjunto de palabras que no contienen la subcadena “01”.

F= {S0, S1}

Σ={0,1}

Q={start,S0,S1}

q0= start

f(start,1)= S0

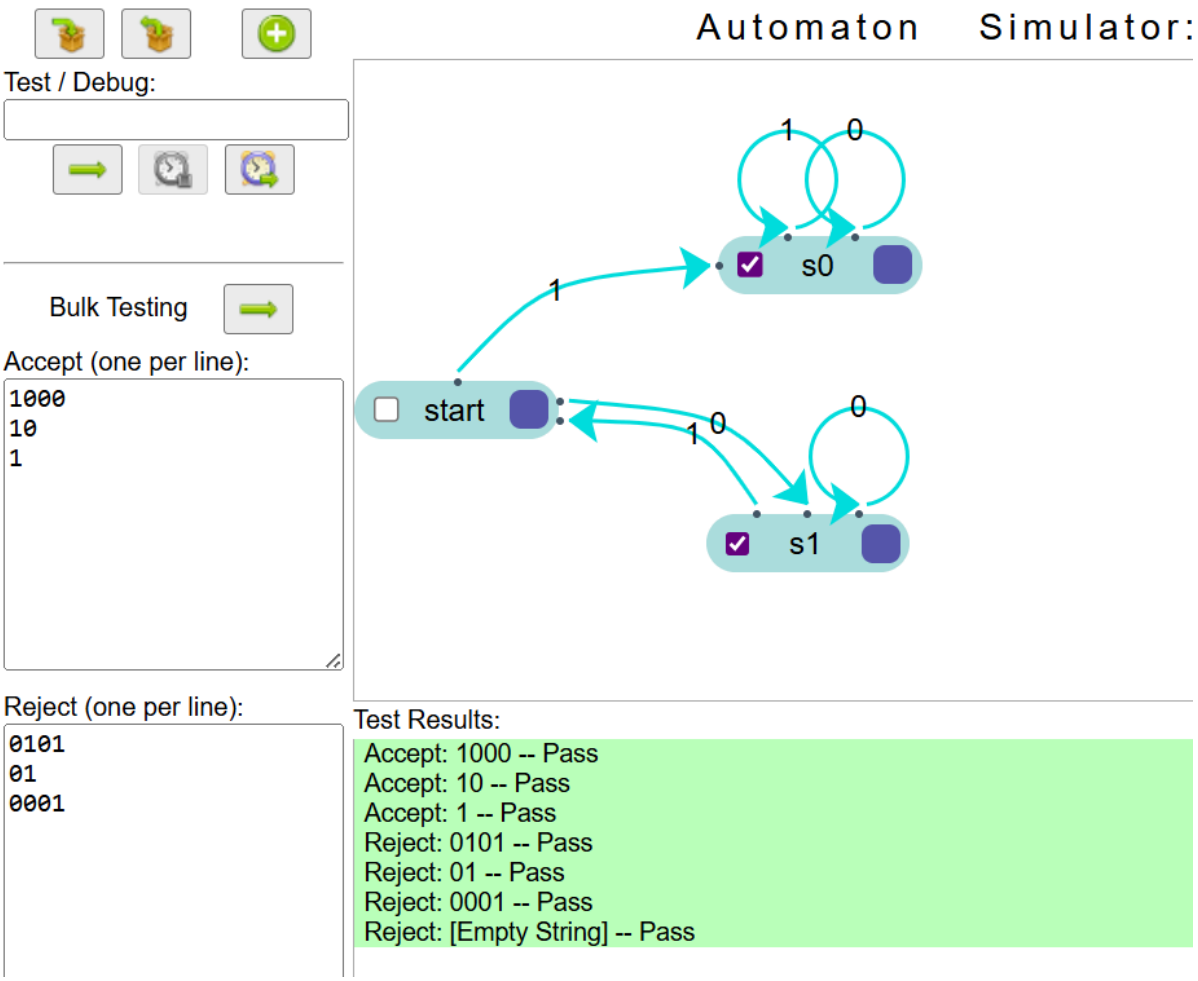
f(start,0)= S1

f(S0,0)=S0

f(S0,1)=S0

f(S1,1)= start

f(S1,0)= s1



Ejercicio 5. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {a, b, c}, que acepte el conjunto de palabras que inician con la subcadena “ac” o terminan con la subcadena “ab”.

F= {}

Σ={a,b,c}

Q={start, S0, S1, S2}

q0= start

f (START, a) = S0

f (S0, c) = S2

f (S0, b) = S1

f (S2, a) = S2

f (S2, b) = S2

f (S2, c) = S2

f (S1, b) = S1

f (START, b) = S3

f (S1, a) = S5

f (S1, b) = S3

f (S1, c) = S4

f (S3, b) = S3

f (S3, a) = S5

f (S3, c) = S4

f (S4, b) = S3

f (S4, a) = S5

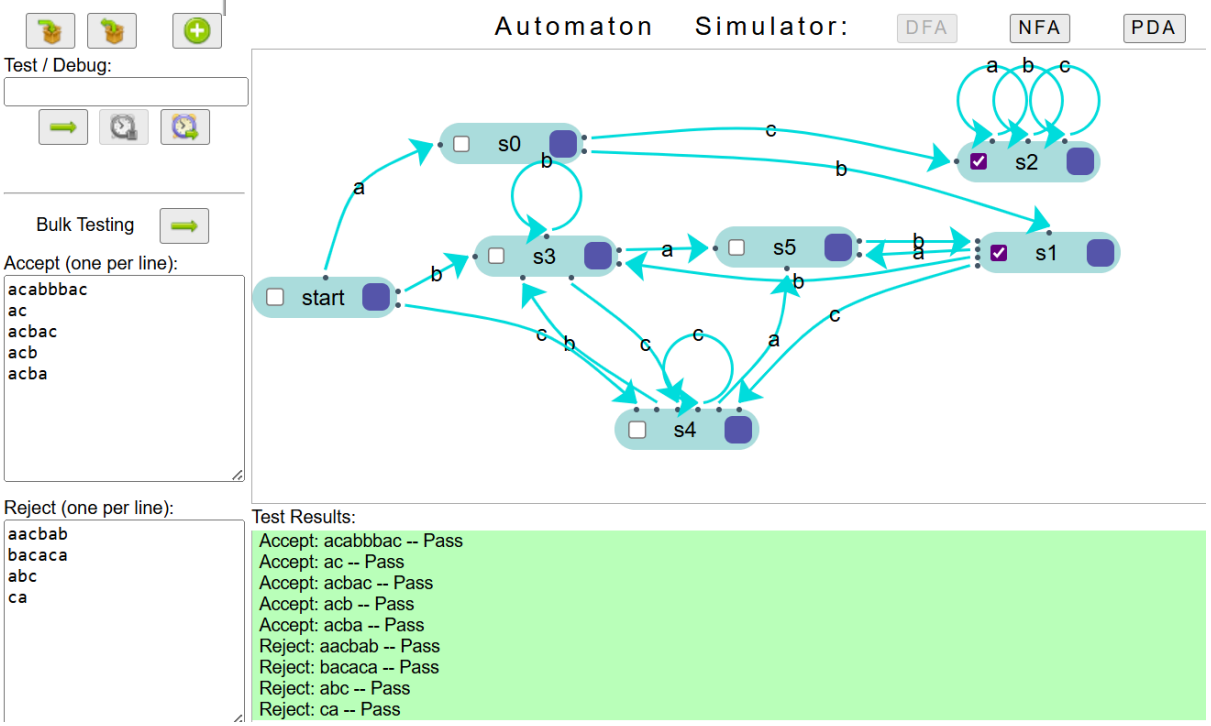
f (S4, c) = S4

f (S5, a) = S5

f (S5, c) = S4

f (S5, b) = S1

f (START, c) = S4



Ejercicio 6. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {a, b, c}, que acepte el conjunto de palabras que inician con la subcadena “ac” y no terminan con la subcadena “ab”.

∑ = {a,b,c}

Q = {START, S0, S1, S2}

q0 = START

F = {S3}

f (START, a) = S0

f (START, b) = S1

f (S0, b) = S1

f (S0, c) = S3

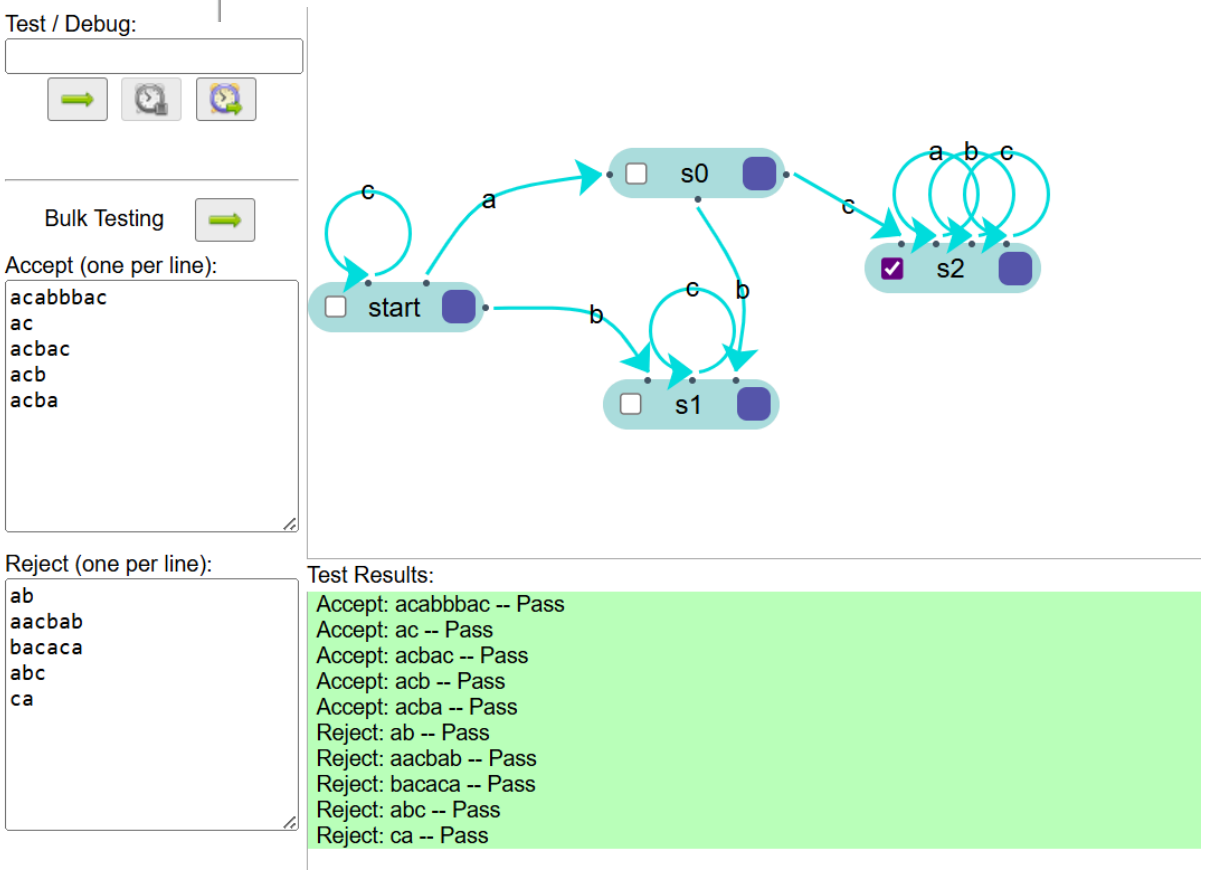
f (START, c) = START

f (S1, c) = S1

f (S3, a) = S3

f (S3, b) = S3

f (S3, c) = S3



Ejercicio 7. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {a, b, c}, que acepte el conjunto de palabras que inician con la subcadena “ac” o no terminan con la subcadena “ab”.

∑ = {a,b,c}

Q = {START, S0, S1, S2, S3, S4, S5}

q0 = START

F = {S2, S3, S4, S5}

f (START, a) = S0

f (S0, c) = S2

f (S0, b) = S1

f (S2, a) = S2

f (S2, b) = S2

f (S2, c) = S2

f (S1, b) = S1

f (START, b) = S3

f (S1, a) = S5

f (S1, b) = S3

f (S1, c) = S4

f (S3, b) = S3

f (S3, a) = S5

f (S3, c) = S4

f (S4, b) = S3

f (S4, a) = S5

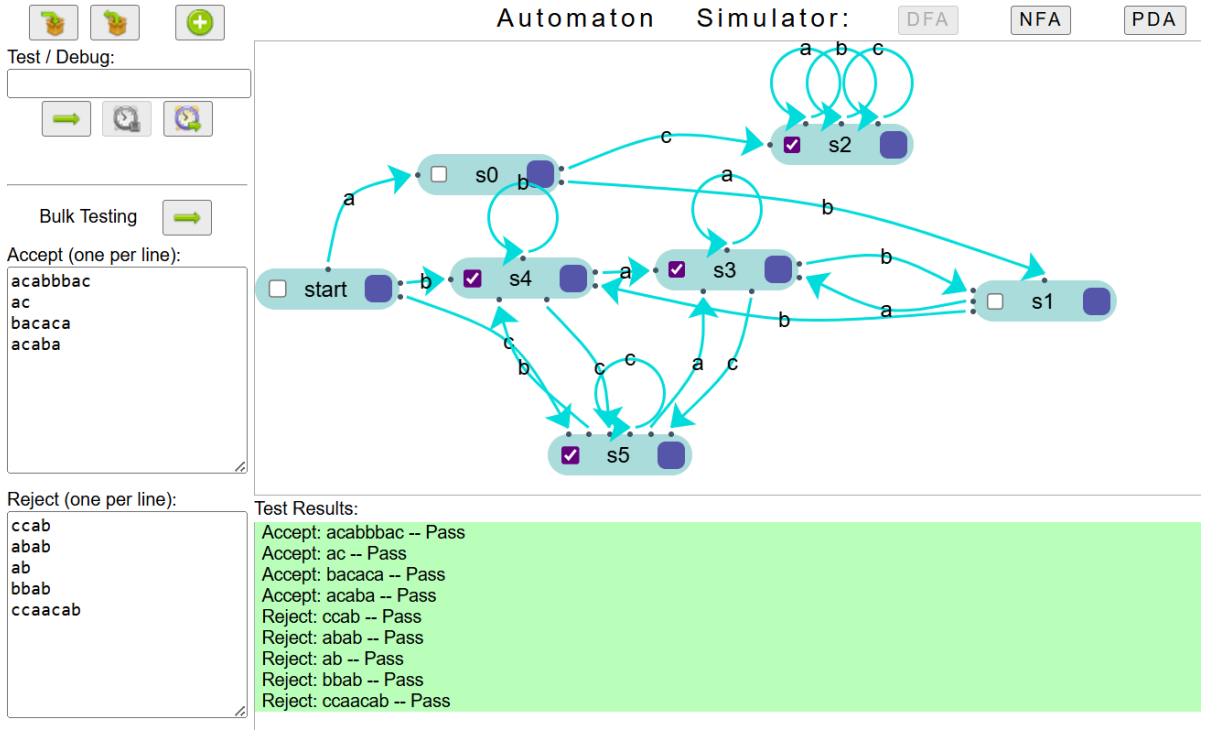
f (S4, c) = S4

f (S5, a) = S5

f (S5, c) = S4

f (S5, b) = S1

f (START, c) = S4



Ejercicio 8. Obtenga un Autómata Finito Determinista (AFD) dado el lenguaje definido en el alfabeto Σ= {a, b, c}, que acepte el conjunto de palabras que no inician con la subcadena “ac” y no terminan con la subcadena “ab”.

∑ = {a,b,c}

Q = {START, S0, S1, S2, S3, S4, S5}

q0 = START

F = {S3, S4, S5}

f (START, a) = S0

f (S0, c) = S2

f (S0, b) = S1

f (S2, a) = S2

f (S2, b) = S2

f (S2, c) = S2

f (S1, b) = S1

f (START, b) = S3

f (S1, a) = S5

f (S1, b) = S3

f (S1, c) = S4

f (S3, b) = S3

f (S3, a) = S5

f (S3, c) = S4

f (S4, b) = S3

f (S4, a) = S5

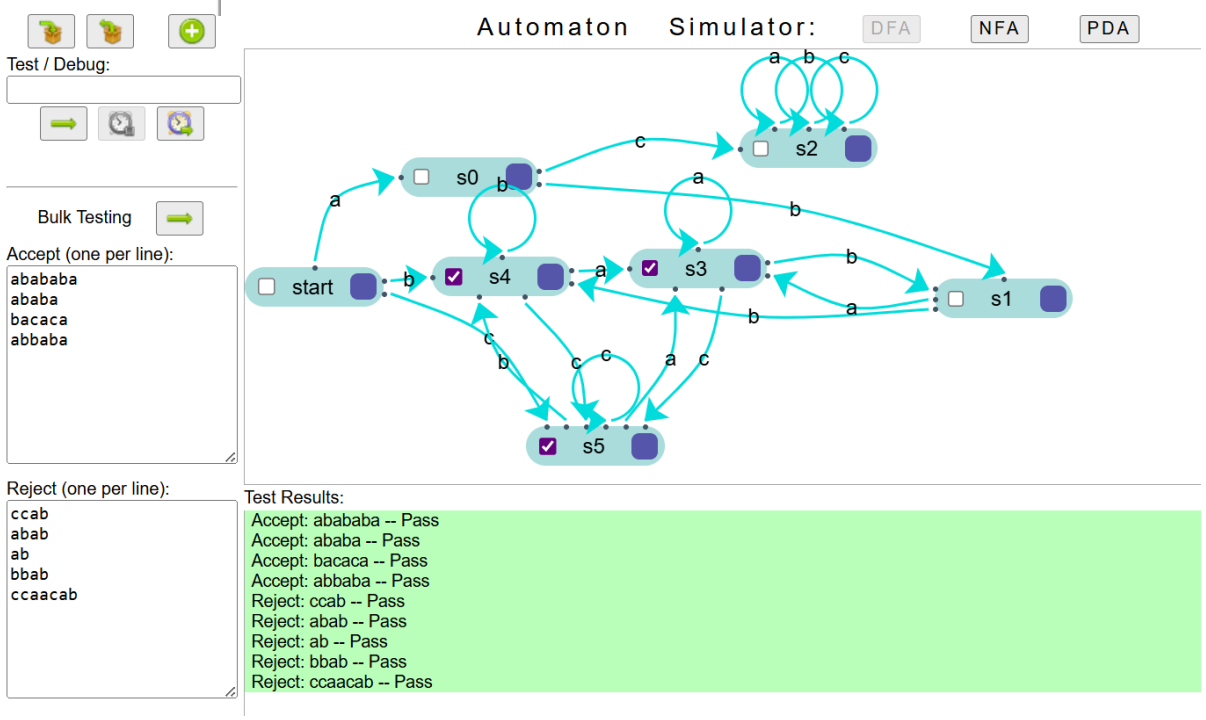
f (S4, c) = S4

f (S5, a) = S5

f (S5, c) = S4

f (S5, b) = S1

f (START, c) = S4



Ejercicio 9. Obtenga un Autómata Finito No Determinista (AFND) dado el lenguaje definido en el alfabeto Σ = {0, 1}, que acepte el conjunto de palabras que no contienen la subcadena “01”.

∑ = {0,1}

Q = {START, S0, S1, S2}

q0 = START

F = {S0, S2}

f (START, 0) = S0

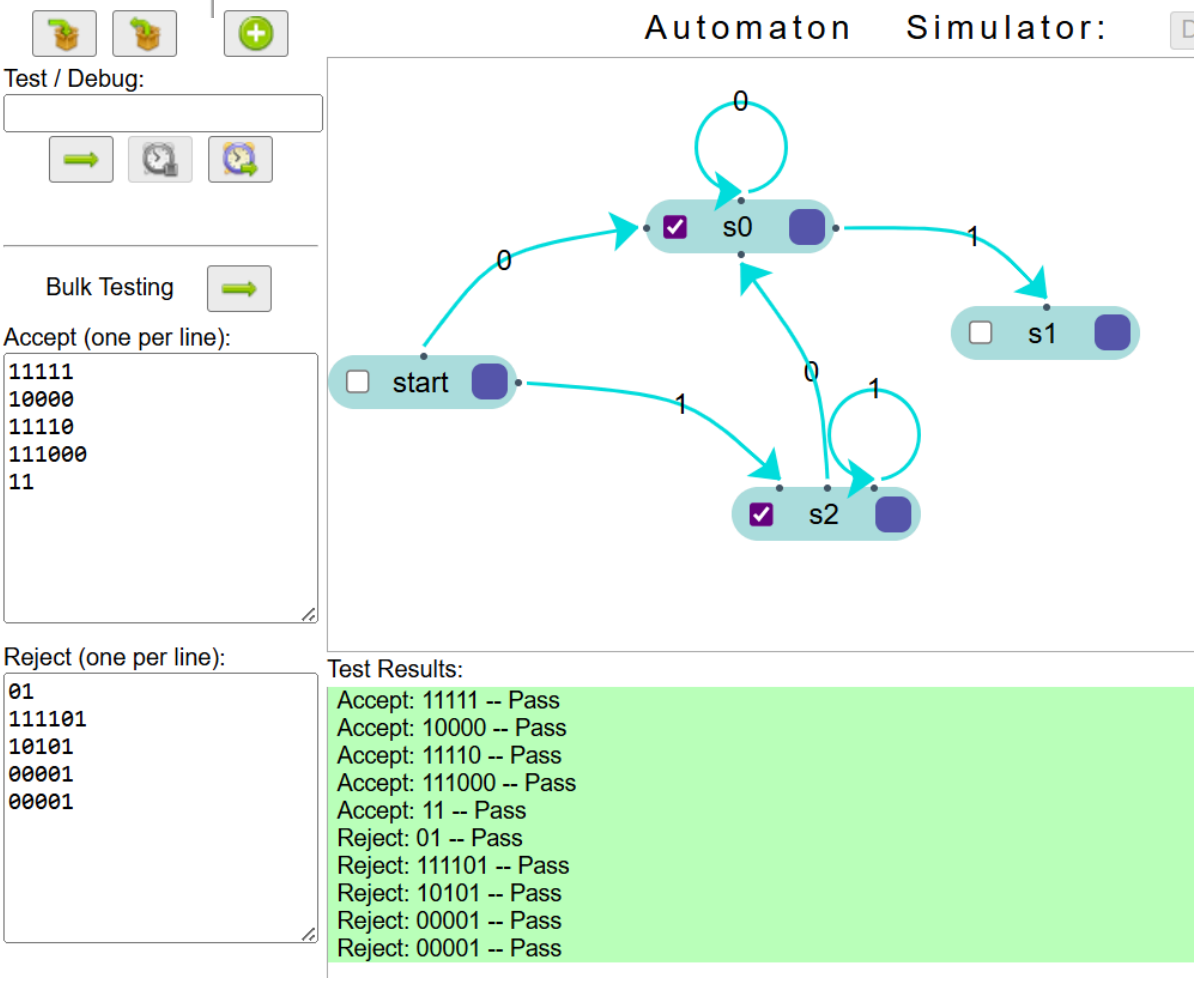
f (START, 1) = S2

f (S0, 0) = S0

f (S0, 1) = S1

f (S2, 0) = S0

f (S2, 1) = S2



Ejercicio 10. Obtenga un Autómata Finito No Determinista (AFND) dado el lenguaje definido en el alfabeto Σ = {a, b, c}, que acepte el conjunto de palabras que inician en la subcadena “ac” y terminan en la subcadena “ab”.

∑ = {a,b,c}

Q = {START, S0, S1, S2, S3, S4, S5, S6,

S7, S8}

q0 = START

F = {S3}

f (START, a) = S0

f (START, b) = S6

f (START, c) = S7

f (S0, c) = S1

f (S0, a) = S8

f (S0, b) = S6

f (S1, b) = S4

f (S1, a) = S2

f (S1, c) = S5

f (S2, a) = S2

f (S2, b) = S3

f (S2, c) = S5

f (S4, a) = S2

f (S4, b) = S4

f (S4, c) = S5

f (S5, a) = S2

f (S5, b) = S4

f (S5, c) = S5

f (S6, a) = S8

f (S6, b) = S6

f (S6, c) = S7

f (S7, a) = S8

f (S7, b) = S6

f (S7, c) = S7

f (S8, a) = S8

f (S8, b) = S6

f (S8, c) = S7

Automaton Simulator:

DFA NFA PD

Test / Debug:

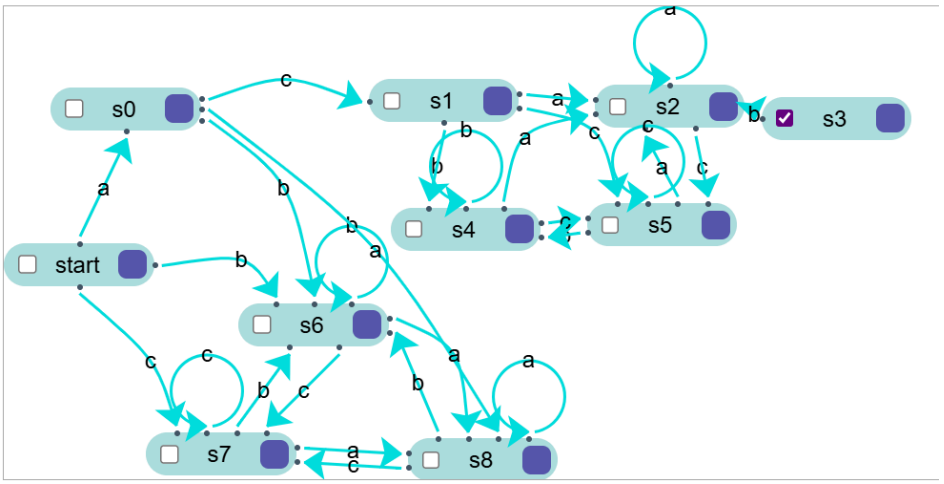
Bulk Testing

Accept (one per line):

```
acab
acbbbbcab
accab
acbbbab
acaaab
```

Reject (one per line):

```
bab
cabcba
acbabc
abcba
ababb
```



Test Results:

Accept: acab -- Pass
Accept: acbbbbcab -- Pass
Accept: accab -- Pass
Accept: acbbbab -- Pass
Accept: acaaab -- Pass
Reject: bab -- Pass
Reject: cabcba -- Pass
Reject: acbabc -- Pass
Reject: abcba -- Pass
Reject: ababb -- Pass