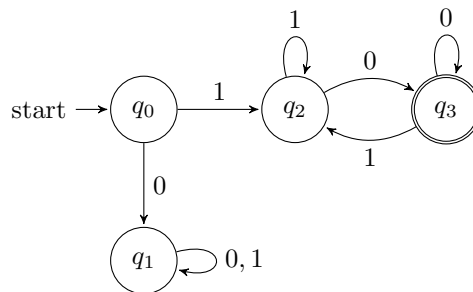


Problem 1

DFA1:



DFA/NFA Simulator (copyright 2008, David Doty)

File

type input here: 1000010000101000100101010

Back Forward

(* is before symbol about to be read)

input string: 1000010000101000100101010*

ACCEPTED

test

State	Transitions	Accepting?
q0	0 -> q1, 1 -> q2	
q1	0 -> q1, 1 -> q1	
q2	0 -> q3, 1 -> q2	
q3	0 -> q3, 1 -> q2	yes

DFA/NFA Simulator (copyright 2008, David Doty)

File

type input here: 10000100001010001001010101

Back Forward

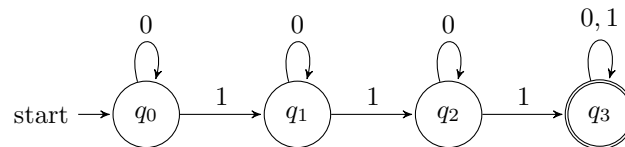
(* is before symbol about to be read)

input string: 10000100001010001001010101*

REJECTED

test

State	Transitions	Accepting?
q0	0 -> q1, 1 -> q2	
q1	0 -> q1, 1 -> q1	
q2	0 -> q3, 1 -> q2	
q3	0 -> q3, 1 -> q2	yes

DFA2:

DFA/NFA Simul...

File

type input here: 11100001101

Back Forward

(* is before symbol about to be read)

input string: 11100001101*

ACCEPTED

test

State	Transitions	Accepting?
q0	0 -> q0, 1 -> q1	
q1	0 -> q1, 1 -> q2	
q2	0 -> q2, 1 -> q3	
q3	0 -> q3, 1 -> q3	yes

DFA/NFA Simul...

File

type input here: 100000001

Back Forward

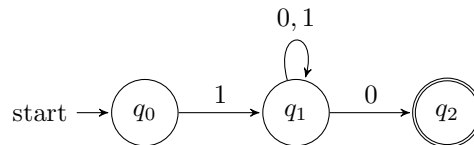
(* is before symbol about to be read)

input string: 100000001*

REJECTED

test

State	Transitions	Accepting?
q0	0 -> q0, 1 -> q1	
q1	0 -> q1, 1 -> q2	
q2	0 -> q2, 1 -> q3	
q3	0 -> q3, 1 -> q3	yes

NFA1:

DFA/NFA Simul...

File

type input here: 101001010101010

Back Forward

(* is before symbol about to be read)

input string: 101001010101010*

ACCEPTED

test

State	Transitions	Accepting?
q0	1 -> {q1}	
q1	0 -> {q1,q2}, 1 -> {q1}	
q2		yes

DFA/NFA Simul...

File

type input here: 10100101010101

Back Forward

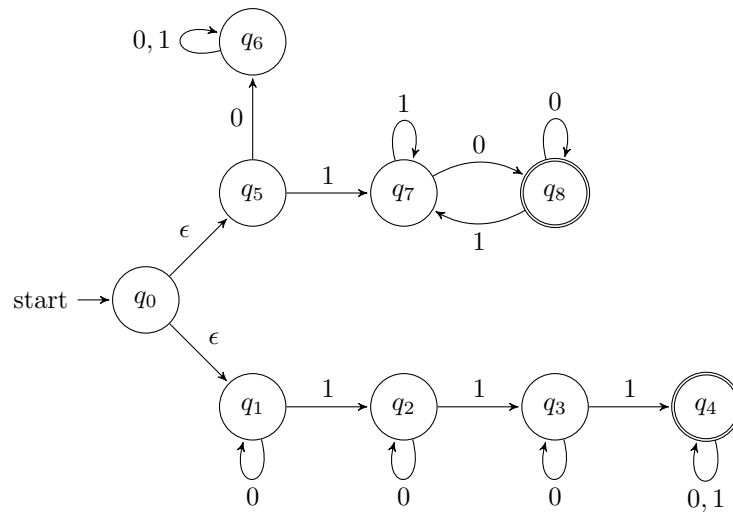
(* is before symbol about to be read)

input string: 10100101010101*

REJECTED

test

State	Transitions	Accepting?
q0	1 -> {q1}	
q1	0 -> {q1,q2}, 1 -> {q1}	
q2		yes

NFA2:

Problem 2

```

import java.util.regex.Pattern;
import java.util.regex.Matcher;

```

```

public class Main {
    public static void main(String[] args) {
        Pattern a1 = Pattern.compile("1(0|1)*0");
        Pattern a2 = Pattern.compile("(0|1)*1(0|1)*1(0|1)*1(0|1)*");

        Matcher a1_accepted = a1.matcher("1000110010");
        Matcher a1_rejected = a1.matcher("1001000101");
        Matcher a2_accepted = a2.matcher("0111101011");
        Matcher a2_rejected = a2.matcher("1000000001");

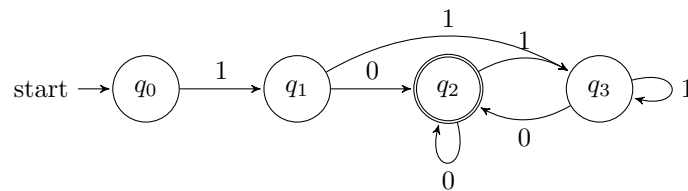
        System.out.println("Pattern\t\t\t\tInput\t\tResult");
        System.out.println("1(0|1)*0\t\t\t\t1000110010\t\t" + a1_accepted.matches());
        System.out.println("1(0|1)*0\t\t\t\t1001000101\t\t" + a1_rejected.matches());
        System.out.println("(0|1)*1(0|1)*1(0|1)*1(0|1)*\t\t\t\t0111101011\t\t" + a2_accepted.matches());
        System.out.println("(0|1)*1(0|1)*1(0|1)*1(0|1)*\t\t\t\t1000000001\t\t" + a2_rejected.matches());
    }
}

```

≡

```
[shmish@ENVY]: /mnt/d/School/CS-483/Assignment_002
λ java Main
Pattern                                Input      Result
1(0|1)*0                               1000110010 true
1(0|1)*0                               1001000101 false
(0|1)*1(0|1)*1(0|1)*1(0|1)*          0111101011 true
(0|1)*1(0|1)*1(0|1)*1(0|1)*          1000000001 false
[shmish@ENVY]: /mnt/d/School/CS-483/Assignment_002
λ □
```

Problem 3



DFA/NFA Simul...

File

type input here: 100100000

Back Forward

(* is before symbol about to be read)

input string: *100100000

ACCEPTED

test

State	Transitions	Accepting?
q0	1 -> {q1}	
q1	0 -> {q2}, 1 -> {q3}	
q2	0 -> {q2}, 1 -> {q3}	yes
q3	0 -> {q2}, 1 -> {q3}	

DFA/NFA Simul...

File

type input here: 100100001

Back Forward

(* is before symbol about to be read)

input string: *100100001

REJECTED

test

State	Transitions	Accepting?
q0	1 -> {q1}	
q1	0 -> {q2}, 1 -> {q3}	
q2	0 -> {q2}, 1 -> {q3}	yes
q3	0 -> {q2}, 1 -> {q3}	