Tutorial 2

Q1:

(1)

<integer_literal, 2>

<*>

<id, r>

(2)

<while>

<(>

<integer_literal, 1>

<)>

<{>

<id, x>

<=>

< integer_literal, 0>

<;>

(3)

<string_literal, “This is a test program.”>

(4)

<id, A>

<[>

<id, i>

<]>

<+>

<id, j>

Q2:

According to the diagram, we can draw the transition table as follows:

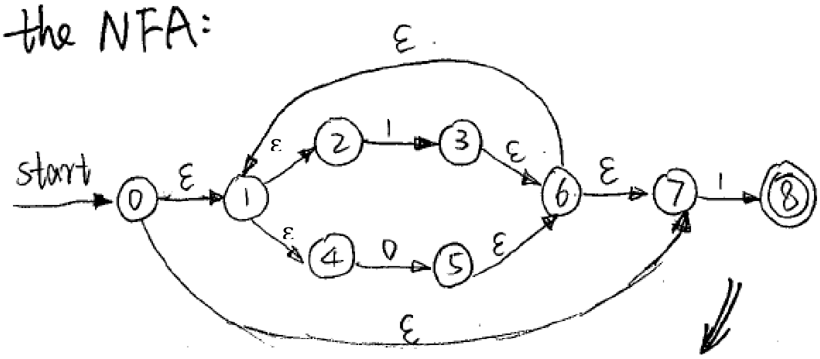
	a	b
0	$\{0,1\}$	$\{0\}$
1	$\emptyset$	$\{2\}$
2	$\emptyset$	$\{3\}$
3	$\emptyset$	$\emptyset$

From the table, we know that: when we are in State 0, and the input is 0, the next state we can move to can be State 0 or State 1, so the next state we will go to is infinite, so this diagram is NFA instead of DFA.

Q3:

(1)

(1) According to the RE $(1|0)^*1$, we get the NFA:



(2)

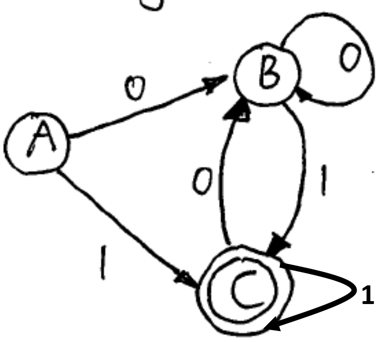
I	I_0	I_1
$\{0,1,2,4,7\}^A$	$\{5,6,1,2,4,7\}^B$	$\{3,6,1,7,2,4,8\}^C$
$\{5,6,1,2,4,7\}^B$	$\{5,6,1,7,2,4\}^B$	$\{8,3,6,1,2,4,7\}^C$
$\{3,6,1,7,2,4,8\}^C$	$\{5,6,1,7,2,4\}^B$	$\{3,6,1,2,7,4,8\}^C$

Asume $A=\{0,1,2,4,7\}$

$B=\{5,6,1,2,4,7\}$

$C=\{3,6,1,7,2,4,8\}$

Then we get the DFA



Q4:

(1) NFA $\longrightarrow$ DFA

I	I_0	I_1
{A F} 1	{B E F} 2	ϕ 5
{BEF} 2	ϕ 5	{D} 3
{D} 3	{CAF} 4	ϕ 5
{CAF} 4	{BEF} 2	ϕ 5

Then, we can get the DFA: