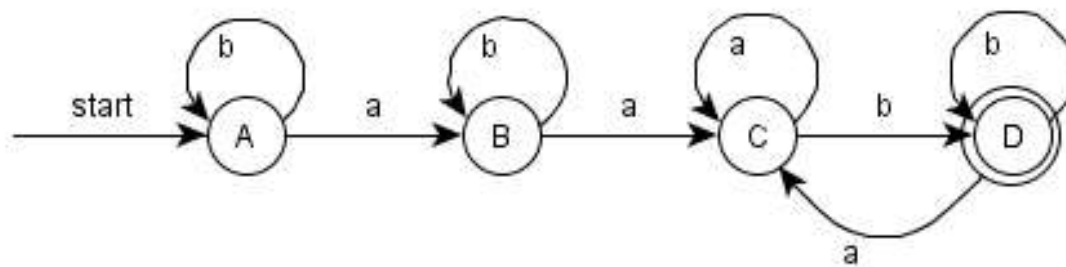# Homework – week 4

- pp. 166, Exercise 3.7.1 (b), Exercise 3.7.2 (b), Exercise 3.7.3 (d)
- pp. 172, Exercise 3.8.1
- pp.187, Exercise 3.9.4

- 3.7.1 (b) Answer：
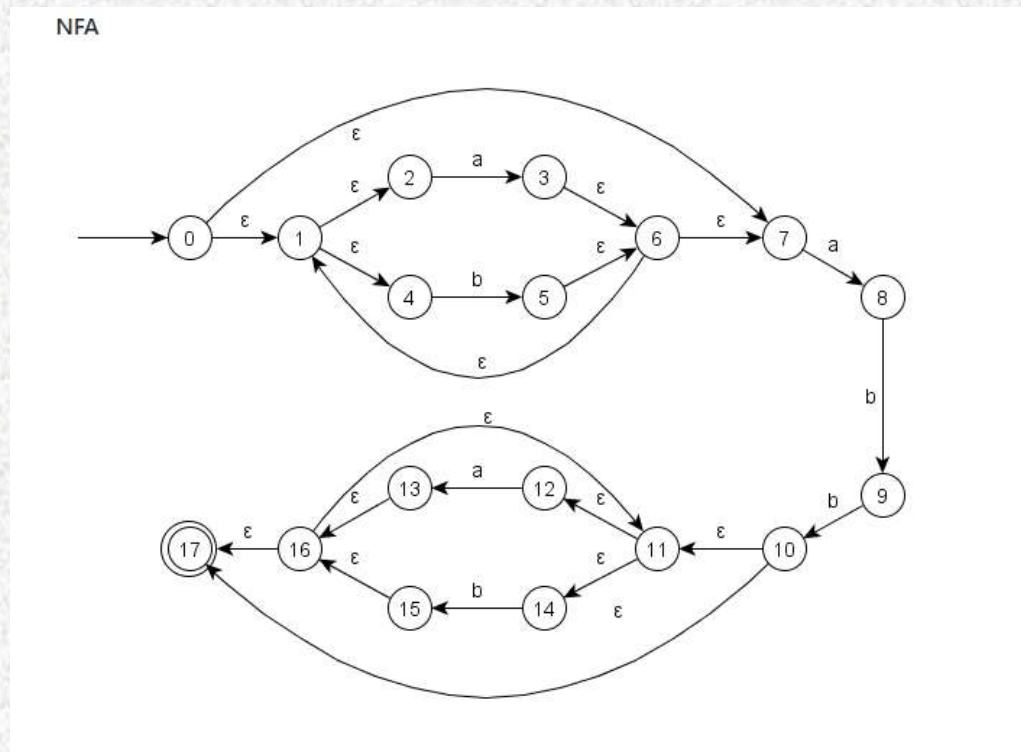
Transition table

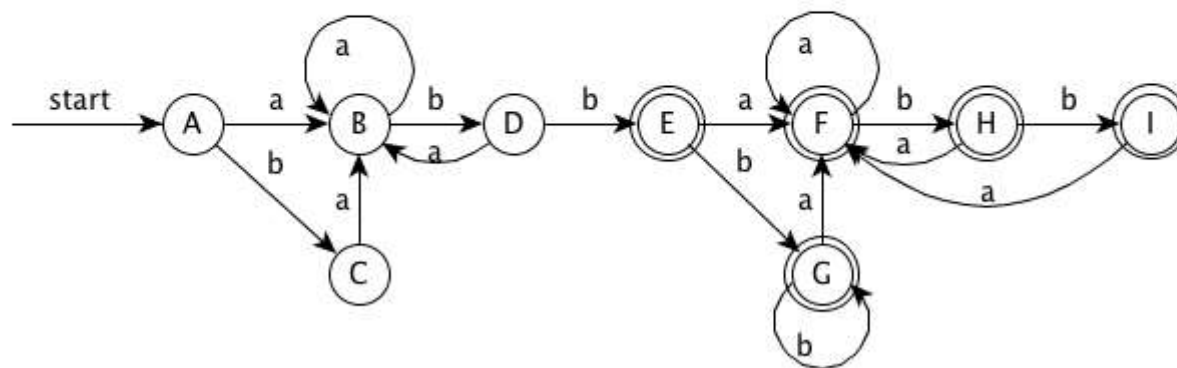| NFA State	DFA State	a	b
{0}	A	B	A
{0,1}	B	C	B
{0,1,2}	C	C	D
{0,2,3}	D	C	D

DFA

- 3.7.2 (b) Answer：
- -start->{0,1,2,3}-a->{0,1,2,3}-a->{0,1,2,3}-b->{0,1,2,3}-b->{0,1,2,3}
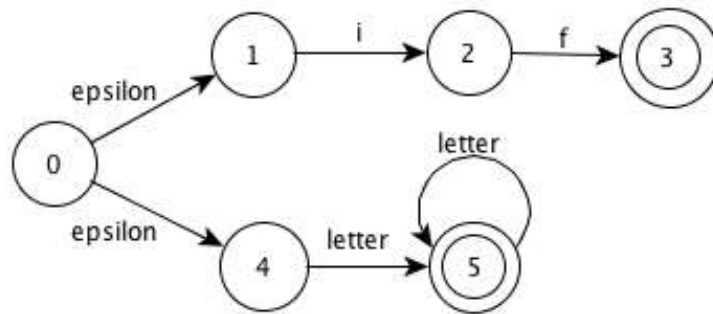
- 3.7.3 (d) Answer：

NFA

Transition table

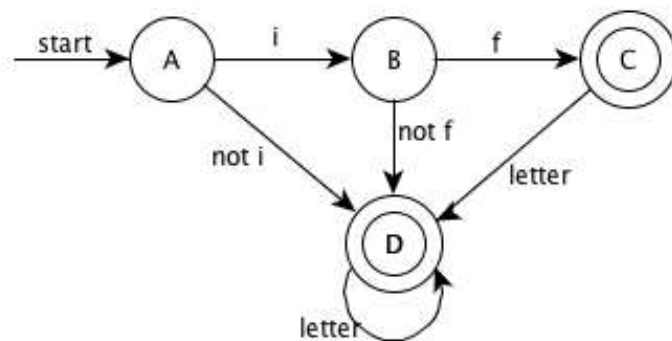| NFA State	DFA State	a	b
{0,1,2,4,7}	A	B	C
{1,2,3,4,6,7,8}	B	B	D
{1,2,4,5,6,7}	C	B	C
{1,2,4,5,6,7,9}	D	B	E
{1,2,4,5,6,7,10,11,12,14,17}	E	F	G
{1,2,3,4,6,7,8,11,12,13,14,16,17}	F	F	H
{1,2,4,5,6,7,11,12,13,15,16,17}	G	F	G
{1,2,4,5,6,7,9,11,12,14,15,16,17}	H	F	I
{1,2,4,5,6,7,10,11,12,14,15,16,17}	I	F	G

DFA

- ## 3.8.1 Answer：

1. NFA

NOTE: this NFA has potential conflict, we can decide the matched lexeme by 1. take the longest 2. take the first listed.

2. DFA

- 3.9.4:
- Construct the minimum-state DFA's for the following regular expressions:
- 1.(a|b)*a(a|b)
- 2.(a|b)*a(a|b)(a|b)
- 3.(a|b)*a(a|b)(a|b)(a|b)