CSE 5700 - Compilers

Chpter 3 Problems

3.3.6)

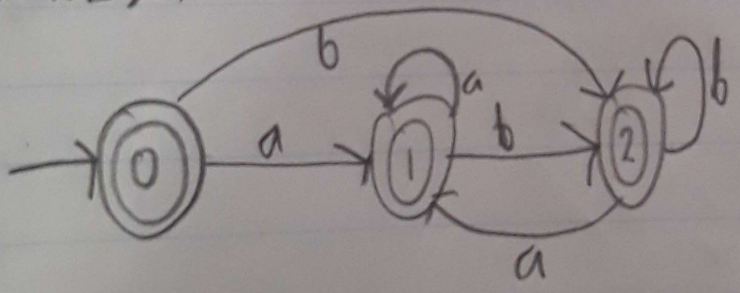
a) [A-Ja-j]

b) [bcdfghjklmnpqrstvwxzy]

c) [0-9a-f]

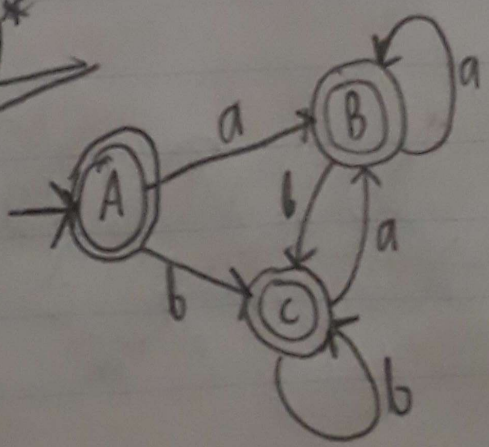
d) [.?!]

3.4.2) Provide DFA instead of transition diagram

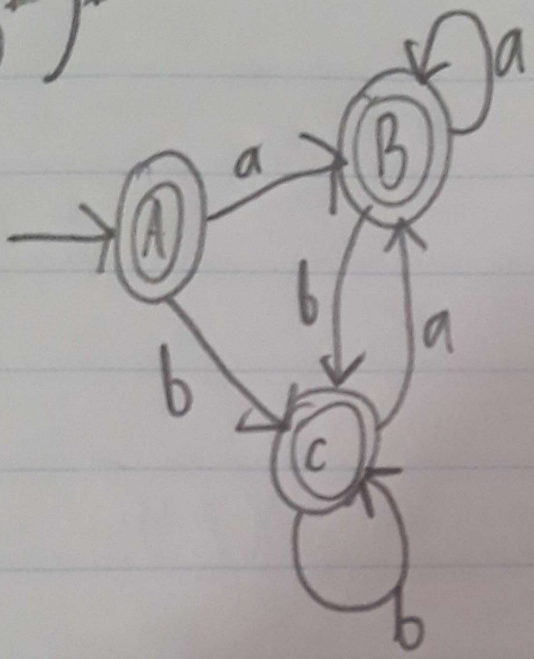


3.9.3)

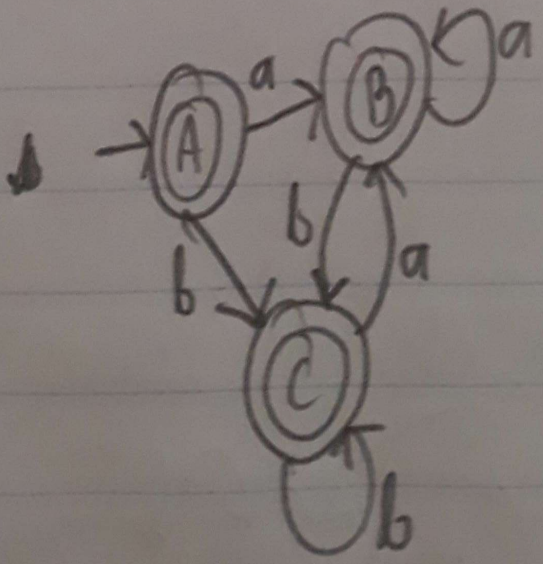
(a|b)*



$(a^* | b^*)^*$



$((\epsilon | a) b^*)^*$



Chapter 4

4.2.3

a) $S \to AB$
$A \to 1A \mid \epsilon$
$B \to CB \mid \epsilon$
$C \to 01A$

b) $S \to 1S1 \mid 0S0 \mid 1 \mid 0 \mid \epsilon$

c) $S \to SS \mid 0S1 \mid 1S0 \mid \epsilon$

d) $S \to U \mid V$
$U \to T1U \mid T1T$
$V \to T0V \mid T0T$
$T \to 1T0T \mid 0T1T \mid \epsilon$

e) $S \to 1S \mid 0T \mid \epsilon$
$T \to 0T \mid 01T \mid \epsilon$

f) $M \to P \mid 0M1 \mid 1M0 \mid 1M1 \mid 0M0$
$P \to 0I0 \mid 1I0$
$I \to 0I0 \mid 111 \mid \epsilon$

5.2.3 a) A.s = B.i + C.s

i) No, b/c it contains an inherited attribute

ii) Yes, From above or from left

iii) Yes, it is L-attributed so no cycles present

b)

i) No, it contains inherited attribute

ii) Yes, it is consistent w/ L-attributed definition. from above or from left

iii) Yes, it is L-attributed so no cycles present

c) A.s = B.s + D.s

i) Yes, since all the attributes are synthesized

ii) Yes, since all attributes are synthesized

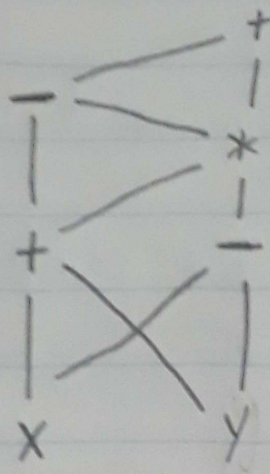
iii) Yes, it is L&S attributed so no cycles are present

!d)

i) No, it contains an inherited attribute

ii) No, it is consistent with L-attributed def. B.i. uses A.s, that depends on D.i, which depends on B.i and therefore cycle is present

6.1.1)

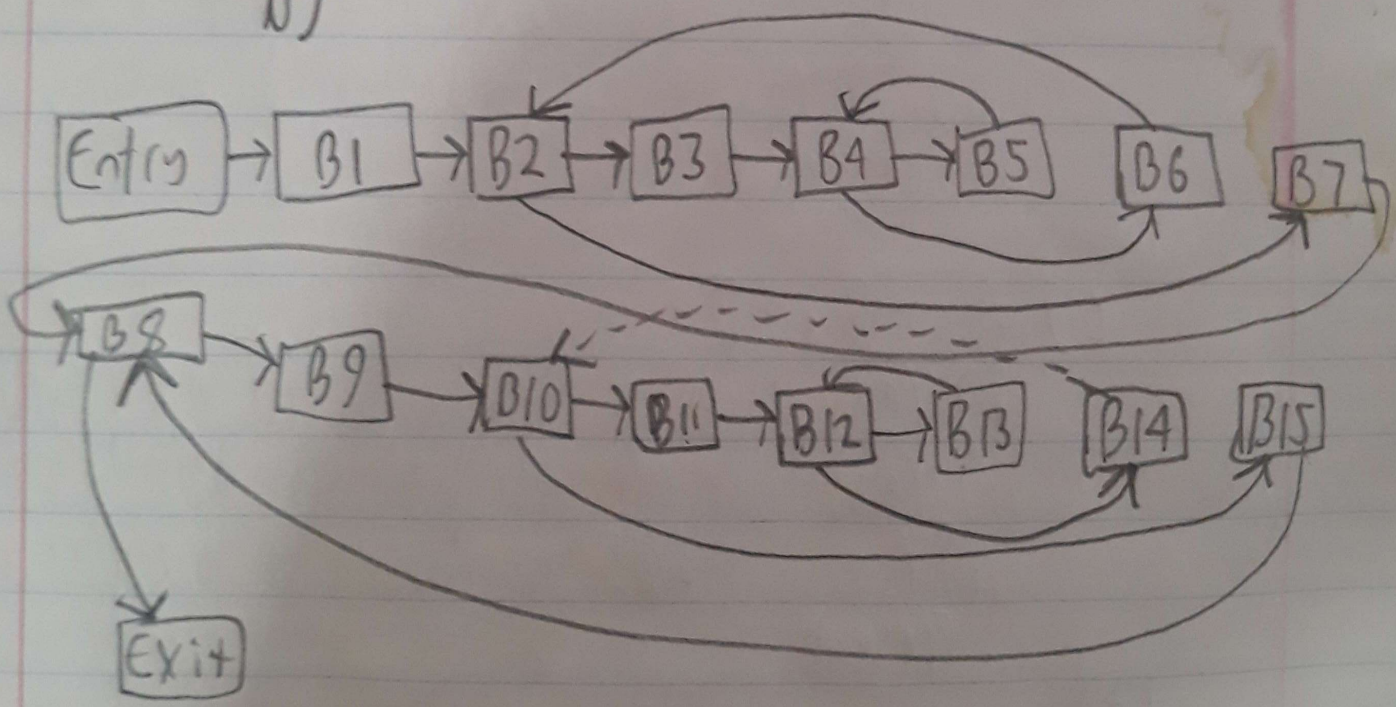


DAG

8.4.1)

a) See Attached Word Doc.

b)



() {B2, B3, B4, B6}
{B4, B5}
{B8, B9, B10, B15}
{B10, B11, B12, B14}
{B12, B13}

8.5.1) Construct DAG for basic block

$d = b \cdot c$
$e = a + b$
$b = b \cdot c$
$a = e - d$