330 2010-12-03

Note Title 2010-12-03

Ex. 2.9 $a^*(ba^*ba^*)^*$

(a) Any number of as followed by any number of strings that include $2n$ bs $(n \geq 0)$ and any number of as.

In short: The set of all strings of as and bs that contain an even number of bs.

(b)
$$S \to A_s \; S$$
$$S \to b \; A_s \; b \; A_s \; S \mid \varepsilon$$
$$A_s \to a \; A_s \mid \varepsilon$$

$$S \to A_s \; TBA_s$$
$$A_s \to a A_s \mid \varepsilon$$
$$TBA_s \to bA_s \, bA_s \, TBA_s \mid \varepsilon$$

Note: $S \to bA_s \; S \; bA_s \; S \mid \varepsilon$ makes the grammar ambiguous

(c) rightmost derivation of baabaaabb

loop until end then repeat

$S \Rightarrow AS \quad S \Rightarrow S \Rightarrow bASbAsS \Rightarrow bAsbAsbAsbAsS \Rightarrow$

$\Rightarrow bAsbAsbAsbAs \Rightarrow bAsbAsbAsb \Rightarrow bAsbAsbb \Rightarrow$

$\Rightarrow bAsbaAsbb \Rightarrow bAsbaaAsbb \Rightarrow bAsbaaaAsbb \Rightarrow$

$\Rightarrow bAsbaaabb \Rightarrow baAsbaaabb \Rightarrow baaAsbaaabb \Rightarrow$

$\Rightarrow Asbaaabaaabb \Rightarrow baaabaaabb$

2.12

$G \to S\,\$\$$

$S \to AM$

$M \to S \mid \varepsilon$

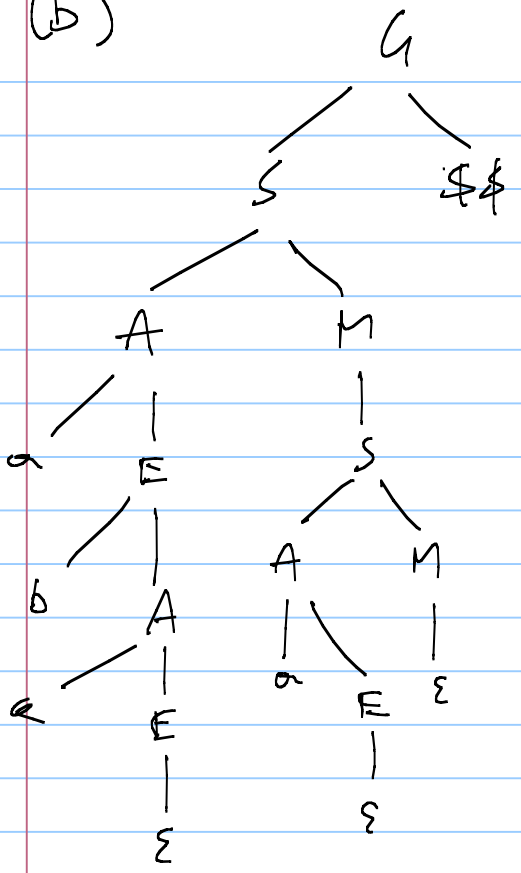
$A \to a\,E \mid b\,AA$

$E \to a\,B \mid b\,A \mid \varepsilon$

$B \to b\,E \mid a\,BB$

(a) Strings as and bs terminated by (the end marker) $\$$. The number of as in the string is more than the number of bs in the string.

(b)



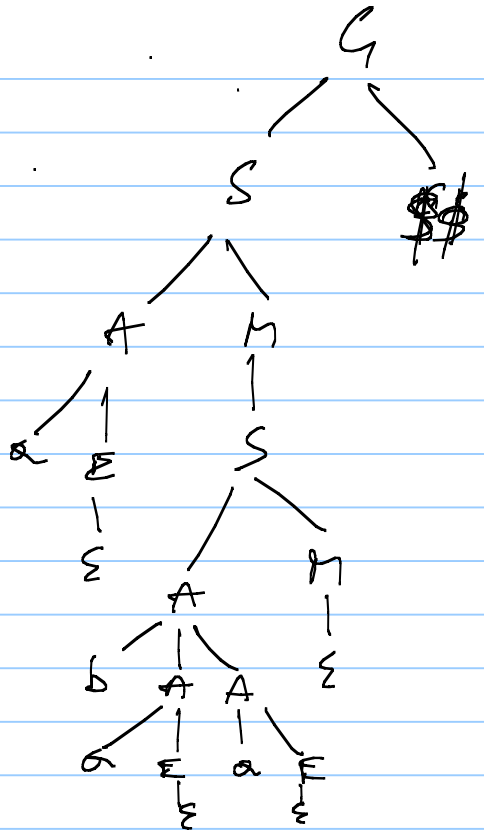
$S \rightarrow AM$

$M \rightarrow S \mid \varepsilon$

$A \rightarrow aE \mid bAA$

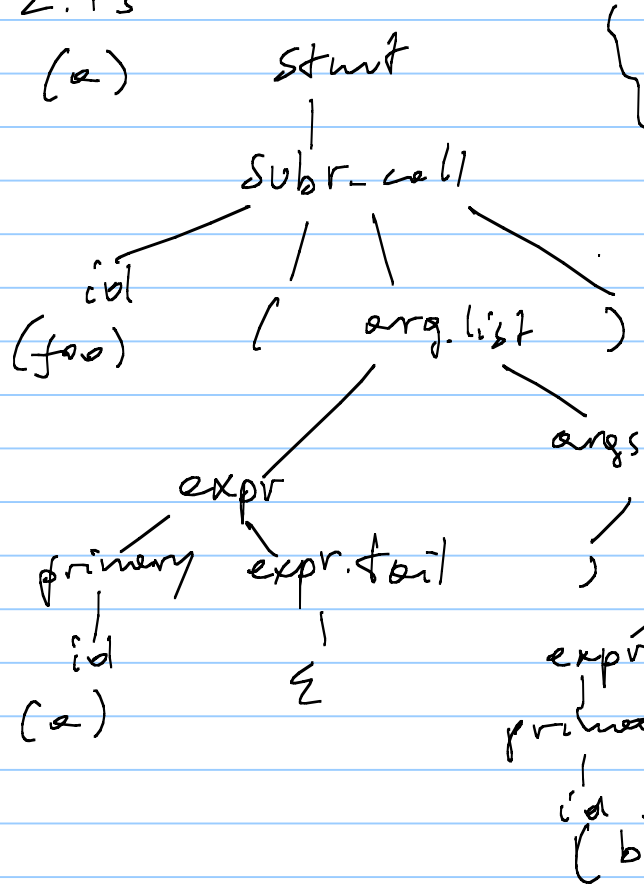
$E \rightarrow aB \mid bA \mid \varepsilon$

$B \rightarrow bE \mid aBB$



2.13

(a)



(b) stmt ⇒ subr_call ⇒ id (arg.list) ⇒ (foo)

⇒ foo (expr args.tail) ⇒ foo (expr, arg.list) ⇒

⇒ foo (expr, expr args.tail) ⇒

⇒ foo (expr, expr) ⇒ foo (expr, primary) ⇒

⇒ foo (expr, id) ⇒ foo (primary, id) ⇒
(b)

⇒ foo (id, b)
(b)

Final exam:

Closed book

Three hours

Comprehensive

Tuesday Dec. 7 9-12
Classroom.
Pls. check!

History etc (Ch. 1 [S], slides)

Syntax (Chs 2-3 [S], in part, slides)

Haskell

fp

Prolog

Check web site also!