Answer for Problem4 Set

October 9, 2018

1 Question 1

Perform the pairwise disjointness test for the following grammar rules.
a. A → aB | b | cBB
b. B → aB | bA | aBb
c. C → aaA | b | caB

1.1 a

$First(aB) = a$
$Fisrt(b) = b$
$First(cBB) = c$
So, $a \neq b \neq c$, no intersect, test passed.

1.2 b

$First(aB) = a$
$Fisrt(bA) = b$
$First(aBb) = a$
So, $a == a$,intersected, test failed.

1.3 c

$First(aaA) = a$
$Fisrt(b) = b$

$First(caB) = c$
So, $a \neq b \neq c$, no intersected, test passed.

2 Question 3

Show a trace of the recursive descent parser given in Section 4.4.1 for the string a + b * c .

Next token is: 11 Next lexeme is a
Enter <expr>
Enter <term>
Enter <factor>
Next token is: 21 Next lexeme is +
Exit <factor>
Exit <term>
Next token is: 11 Next lexeme is b
Enter <term>
Enter <factor>
Next token is: 23 Next lexeme is *
Exit <factor>
Next token is: 11 Next lexeme is c
Enter<factor>
Next token is: -1 Next lexeme is EOF
Exit <factor>
Exit <term>
Exit <expr>

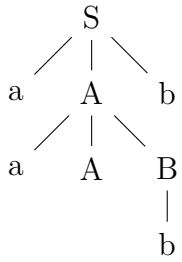
3 Question 5

Given the following grammar and the right sentential form, draw a parse tree and show the phrases and simple phrases, as well as the handle.

S → aAb | bBA
A → ab | aAB
B → aB | b

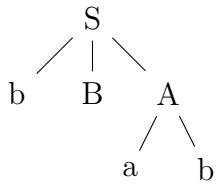
a. aaAbb
b. bBab
c. aaAbBb

3.1 a



Phrases: aaAbb, aAb, b
Simple phrases: b
Handle: b

3.2 b



Phrases: bBab, ab
Simple phrases: ab
Handle: ab

3.3 c

Cannot parse