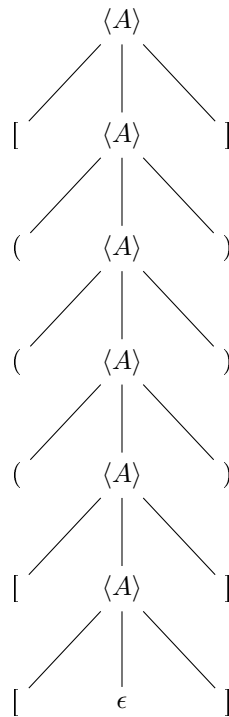


1. BNF - Backus-Naur Form

1.1. Gramática Lineal

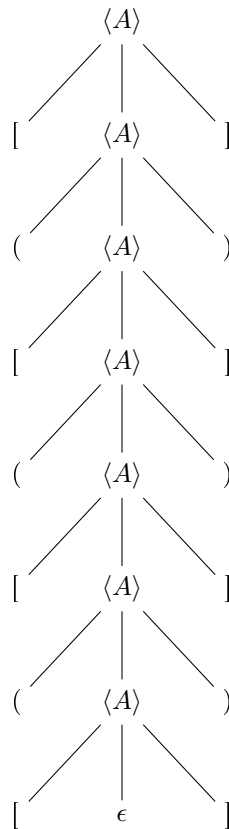
1.1.1. Ejercicio 1

$\langle A \rangle \Rightarrow [\langle A \rangle]$
 $\Rightarrow [(\langle A \rangle)]$
 $\Rightarrow [(((\langle A \rangle)))]$
 $\Rightarrow [((((\langle A \rangle))))]$
 $\Rightarrow [(((([\langle A \rangle]])))]$
 $\Rightarrow [(((([[\langle A \rangle]])))]$
 $\Rightarrow [(((([[[]]])))]$



1.1.2. Ejercicio 2

$$\begin{aligned}
 \langle A \rangle &\Rightarrow [\langle A \rangle] \\
 &\Rightarrow [(\langle A \rangle)] \\
 &\Rightarrow [([\langle A \rangle])] \\
 &\Rightarrow [(([\langle A \rangle]))] \\
 &\Rightarrow [((([\langle A \rangle]]))] \\
 &\Rightarrow [(((([\langle A \rangle]])))] \\
 &\Rightarrow [((((([[\langle A \rangle]])))))] \\
 &\Rightarrow (((([([\langle A \rangle]])))))
 \end{aligned}$$



2. Otras gramáticas BNF

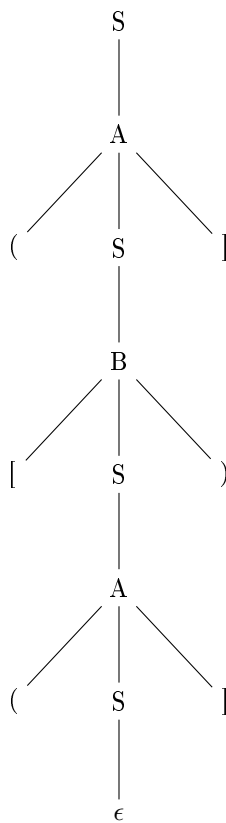
2.1. Ejercicio 3

$$\begin{array}{l} E ::= E \wedge C \\ \quad | E \vee C \\ \quad | C \\ C ::= \sim C \\ \quad | F \\ F ::= (E) \\ \quad | \textit{identificador} \end{array}$$

3. Gramáticas independientes de contexto

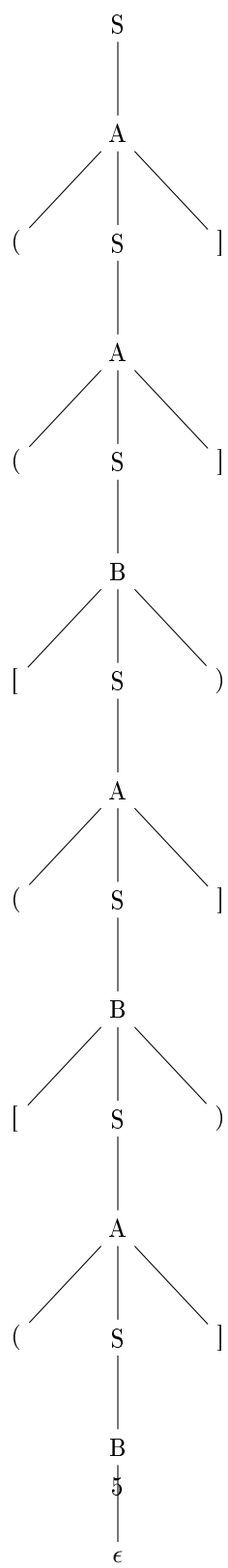
3.1. Ejercicio 4

$$\begin{array}{l} S \Rightarrow A \\ \quad \Rightarrow (S] \\ \quad \Rightarrow (B] \\ \quad \Rightarrow ([S]) \\ \quad \Rightarrow ([A]) \\ \quad \Rightarrow ([([S])]) \\ \quad \Rightarrow ([()]) \end{array}$$



3.2. Ejercicio 5

$$\begin{aligned}
 S &\Rightarrow A \\
 &\Rightarrow (S] \\
 &\Rightarrow (A] \\
 &\Rightarrow ((S]) \\
 &\Rightarrow ((B]) \\
 &\Rightarrow (([S])) \\
 &\Rightarrow (([A])) \\
 &\Rightarrow ((([S]))) \\
 &\Rightarrow ((([B]))) \\
 &\Rightarrow ((([S]))) \\
 &\Rightarrow ((([A]))) \\
 &\Rightarrow ((([S]))) \\
 &\Rightarrow ((([B]))) \\
 &\Rightarrow ((([])))
 \end{aligned}$$

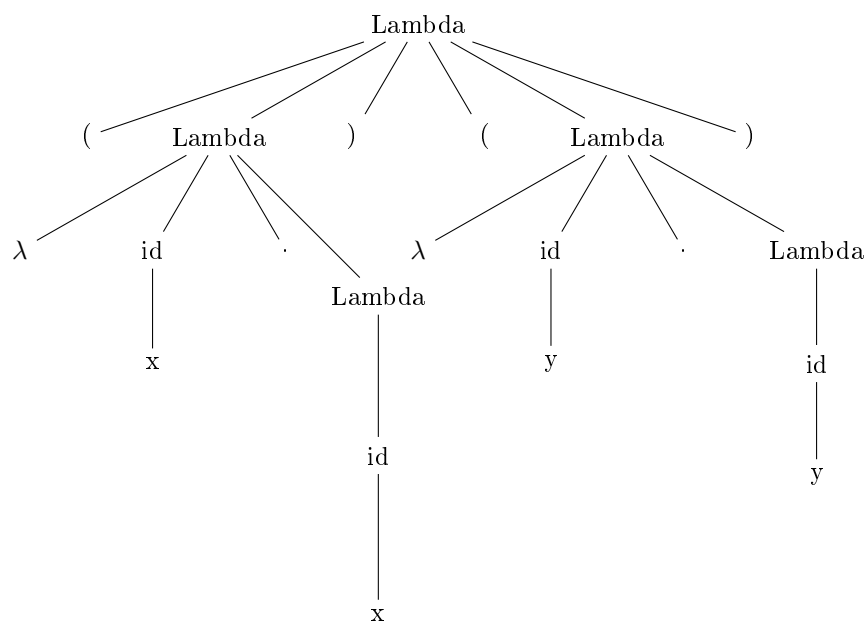


4. Gramáticas independientes de contexto

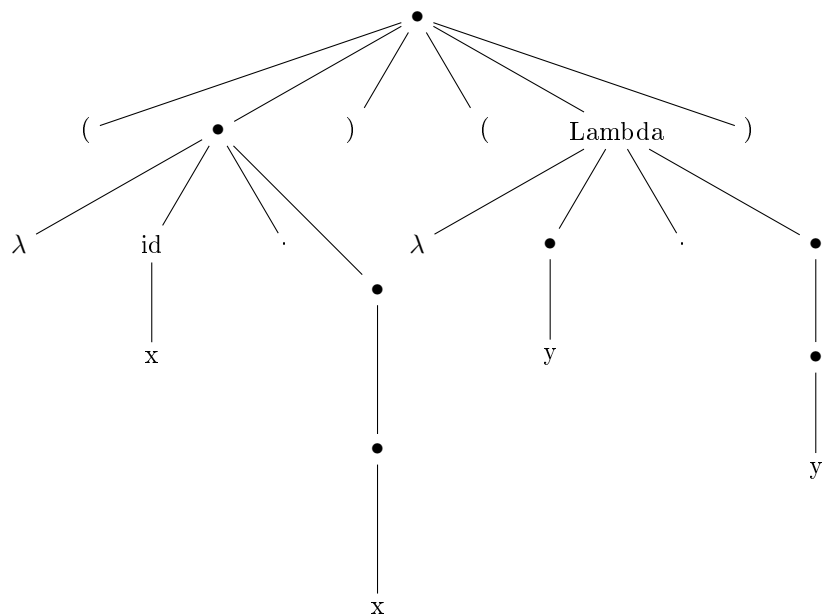
4.1. Ejercicio 6

$$\begin{aligned}
 \text{Lambda} &\Rightarrow (\text{Lambda})(\text{Lambda}) \\
 &\Rightarrow (\lambda id.\text{Lambda})(\text{Lambda}) \\
 &\Rightarrow (\lambda id.id)(\text{Lambda}) \\
 &\Rightarrow (\lambda id.id)(\lambda id.\text{Lambda}) \\
 &\Rightarrow (\lambda id.id)(\lambda id.\text{Lambda}) \\
 &\Rightarrow (\lambda id.id)(\lambda id.id) \\
 &\Rightarrow (\lambda x.id)(\lambda id.id) \\
 &\Rightarrow (\lambda x.x)(\lambda id.id) \\
 &\Rightarrow (\lambda x.x)(\lambda id.id) \\
 &\Rightarrow (\lambda x.x)(\lambda y.id) \\
 &\Rightarrow (\lambda x.x)(\lambda y.y)
 \end{aligned}$$

Árbol de derivación



Árbol esqueleto

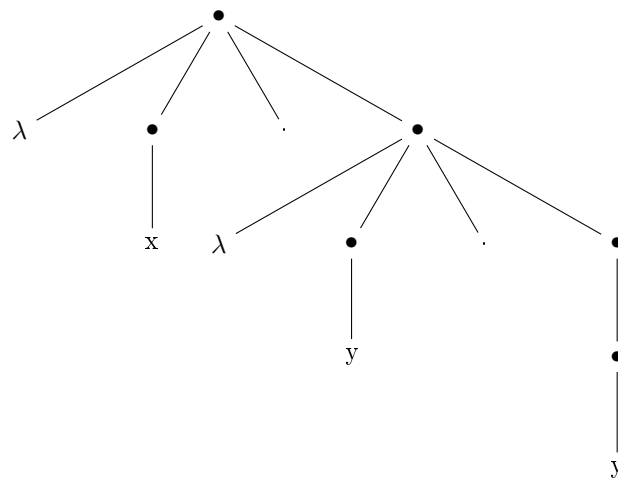
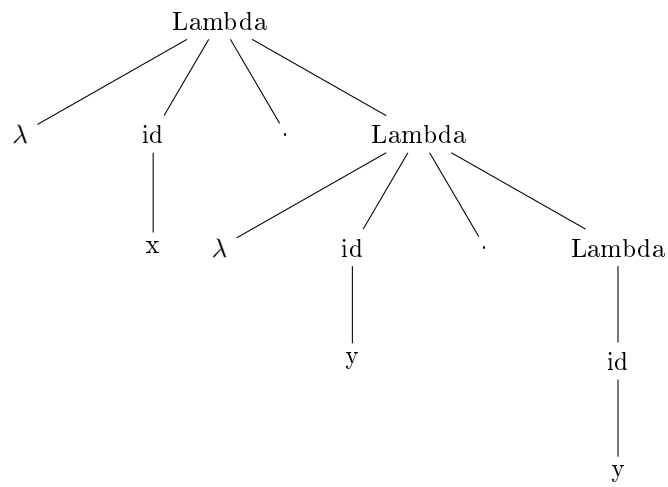


Árbol esqueleto condensado

$(\lambda x.x)(\lambda y.y)$

4.2. Ejercicio 7

$$\begin{aligned}
 \text{Lambda} &\Rightarrow \lambda id. \text{Lambda} \\
 &\Rightarrow \lambda id. \lambda id. \text{Lambda} \\
 &\Rightarrow \lambda id. \lambda id. id \\
 &\Rightarrow \lambda x. \lambda id. id \\
 &\Rightarrow \lambda x. \lambda y. id \\
 &\Rightarrow \lambda x. \lambda y. x
 \end{aligned}$$



$\lambda x.\lambda y.x$

5. Otras gramáticas

5.1. Cobol Like Language

5.2. Ejercicio 8

a = 5;
b = 6;
c = a + b;

5.3. Ejercicio 9

```
a = 0;  
b = 0;  
c = 0;
```

5.4. Diagrama sintáctico

5.5. Ejercicio 10

A/B?C

5.6. Ejercicio 11

A/B/C?D