BNF version.

(predictive)

E>TY>FZY>CZY>CY=CLE>C+TY > C+FZY>C+CZY>C+CXTY>C+CXFZY > C+C*LZY>C+CXLY>C+CXL all terminals stop.

PREDICTIVE GRAMMAR

- (1) No two productions for a single nonterminal that start with same token.

 (left-factored)
- (2) No Left-Recursion A\$Ad

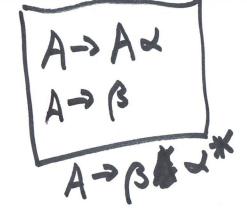
 E>T**E

EDTXXEDELEXXE

Left-recursive.

DIRECT LEFT-RECURSION

A→A(2/13/5)



A > BNF

A > BNF

A > CAT DOWN

Algorithm: Eliminating Left Recursion Nonterminals: A, A, A, A, ... An

for i=1 to n

for j=1 to i-1

for j=1 to i-1

if I a production A:->A; Y

replace that production by expanding

replace that production by expanding

A; with all of the alternatives for A;

A; with all of the alternatives for A;

rewrite any direct left-recursion on Ai

A
$$\rightarrow$$
 A \times | A By | Bz | \times

B \rightarrow A \times | Cw | C \times

C \rightarrow A \times | Bz | Cy | \times

A \rightarrow (Bz| \times) | (Bz| \times)

A \rightarrow (Bz| \times) A' | \times

A \rightarrow (Bz| \times) A' | \times

B \rightarrow (X|By) A' | \times

B \rightarrow (Bz| \times) A' \times | Cw | C \times

B \rightarrow (X A' \times | Cw | C \times) B'

L B'-> TO KXB' E 1=3 [j-1 c -> (B2|X)A'z |Bz|Cy|V C-> ((xA'x|2A'x|Cu|Cx)2|x)A'2| (xA'x|2A'x|Cu|Cx2)|Cx|V factor out all terms starting with C C>C~ B C-BC° C-BCC' E

} low precedence E-DE+E E-E medirm precedence EXE high " " highest precedence PE (3) literals { ? construct from high to low precedence LE: literal expression LE ->i/c

