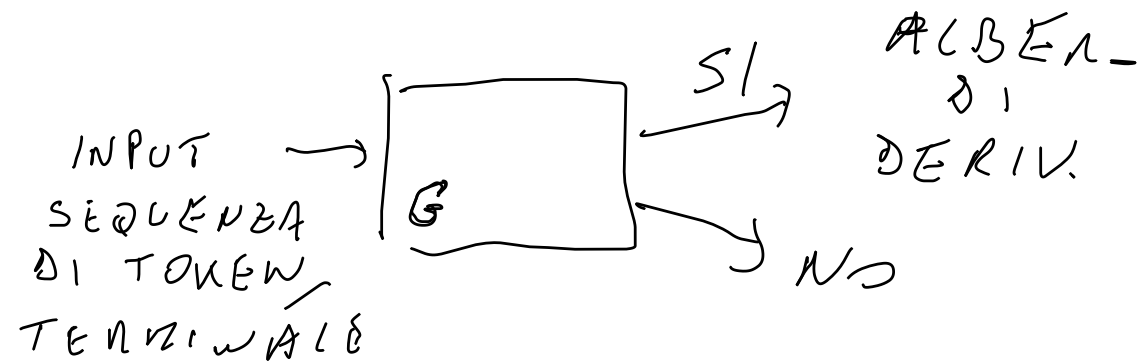


COSA È UN PARSER?



PARSER
 TOP-DOWN BOTTOM-UP

DISCESA
 RICORSIVA

NON PREDITTIVO

CON
 BACKTRACK

PREDITTIVO

SENZA BACKTRACK

LL(1)

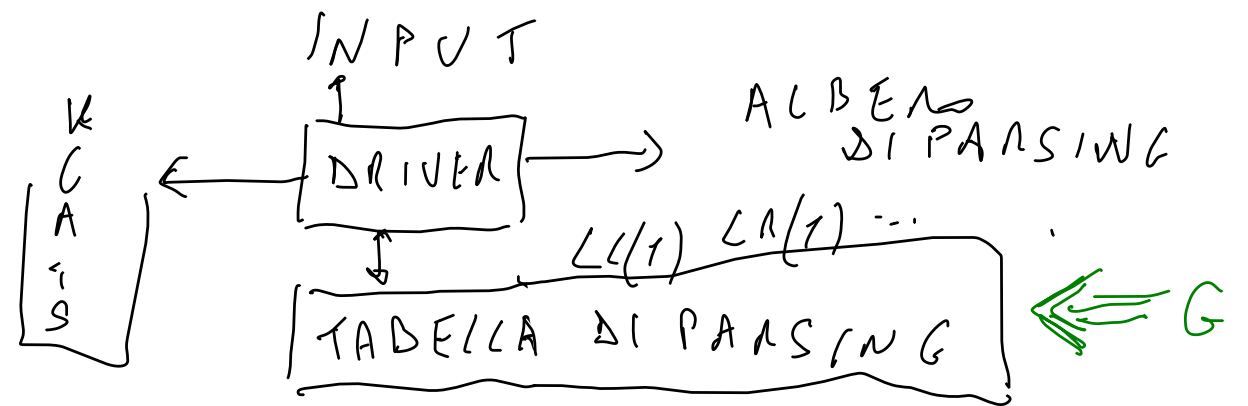
LR(1)

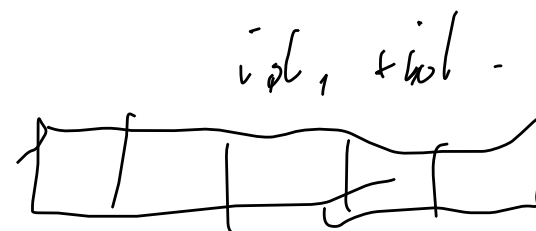
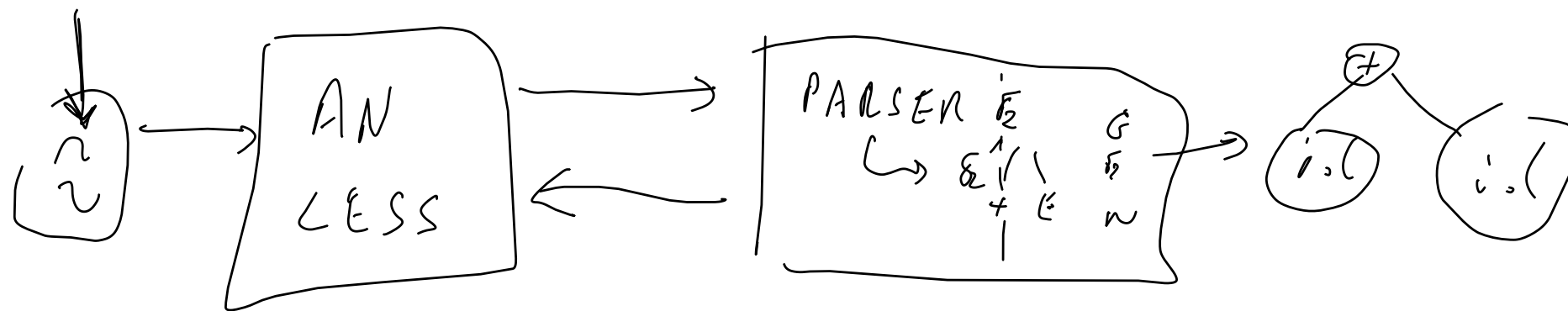
SLR(1)

LALR(1)

LL(1) IANGLR

LR
 / YACC
 DISOWN
 SAVACU





Esercizio

- Si consideri la seguente grammatica:

$S \rightarrow SB \mid y$
 $B \rightarrow Bx \mid Ax$
 $A \rightarrow z \mid zSy$

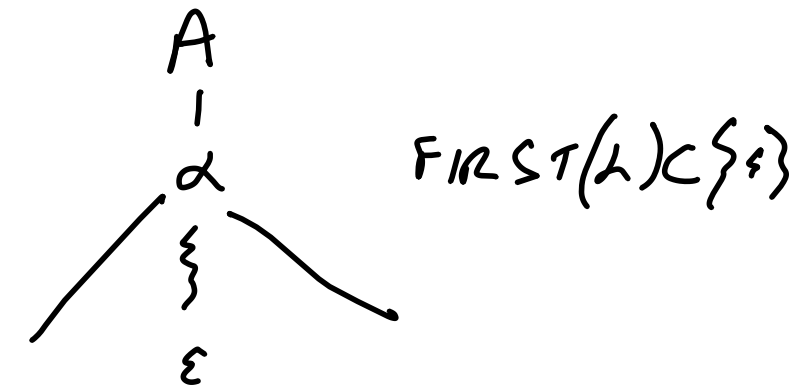
- Si dica se la grammatica è LL(1), motivando opportunamente
- Qualora non lo sia, modificare la grammatica per renderla LL(1)
- Scrivere la parsing table
- Mostrare l'esecuzione dell'algoritmo di parsing con parsing table mostrando l'evoluzione dello stack e dell'input quando la stringa di ingresso è "yxxzyyxx\$".
- Mostrare l'albero di derivazione (parse tree) per la stessa frase (eventualmente nella grammatica modificata. Facoltativo: anche nella grammatica originaria)

LL(1) \Leftrightarrow

- $FIRST(\alpha) \cap FIRST(\beta) = \emptyset$
- NON SI HA $\alpha \Rightarrow^* \epsilon$ AND $\beta \Rightarrow^* \epsilon$
- SE $\beta \Rightarrow^* \epsilon$ ALLORA
 $FOLLOW(A) \cap FIRST(\alpha) = \emptyset$

$S \rightarrow y S'$
 $S' \rightarrow BS' \mid \epsilon$
 $B \rightarrow Ax \mid B'$
 $B' \rightarrow xB' \mid \epsilon$
 $A \rightarrow z R$
 $R \rightarrow \epsilon \mid Sy$

	FIRST	FOLLOW
S	y	\$ y
S'	ϵ z	$\$ y$
B	z	z \$ y
B'	x ϵ	z \$ y
A	z	x
R	ϵ y	x



$S \rightarrow \alpha D \Rightarrow^* \epsilon$
 $C \rightarrow \epsilon \mid e$
 $D \rightarrow \epsilon \mid p$

$FIRST(CD) = \{ a, p, \epsilon \}$

$\angle L(1)$

$$S \rightarrow \gamma S'$$

$$S' \rightarrow B S' \mid \underline{\varepsilon}$$

$$B \rightarrow \underline{A \times B'}$$

$$B' \rightarrow x B' \mid \varepsilon$$

$$A \rightarrow z R$$

$$R \rightarrow \varepsilon \mid \dot{S} \gamma$$

	γ	x	$z.$	$\$$
S	$S \rightarrow \gamma S'$			
B			$B \rightarrow A \times B'$	
S'	$S' \rightarrow \varepsilon$		$S' \rightarrow B S'$	$S' \rightarrow \varepsilon$
B'	$B' \rightarrow \varepsilon$	$B' \rightarrow x B'$	$B' \rightarrow \varepsilon$	$B' \rightarrow \varepsilon$
A			$A \rightarrow z R$	
R	$R \rightarrow S \gamma$	$R \rightarrow z$		

STACK

INPUT

OUTPUT

$S \#$
 $y S' \#$
 $S' \#$
 $B S' \#$
 $A \times B S' \#$
 $z R \times B S' \#$
 $R \times B S' \#$
 $S y \times B S' \#$
 $y S' y \times B S' \#$
 $S' y \times B S' \#$
 $y \times B S' \#$
 $x B S' \#$
 $B S' \#$
 $S' \#$
 $\#$

$y z y x \#$

$S \rightarrow y S'$
 $MATCH(y)$
 $S' \rightarrow B S'$
 $B \rightarrow A \times B'$
 $A \rightarrow z R$
 $MATCH(z)$
 $R \rightarrow S y$
 $S \rightarrow y S'$
 $MATCH(y)$
 $S' \rightarrow \epsilon$
 $MATCH(y)$
 $MATCH(x)$
 $B' \rightarrow \epsilon$
 $S' \rightarrow \epsilon$
 $MATCH(\#)$

