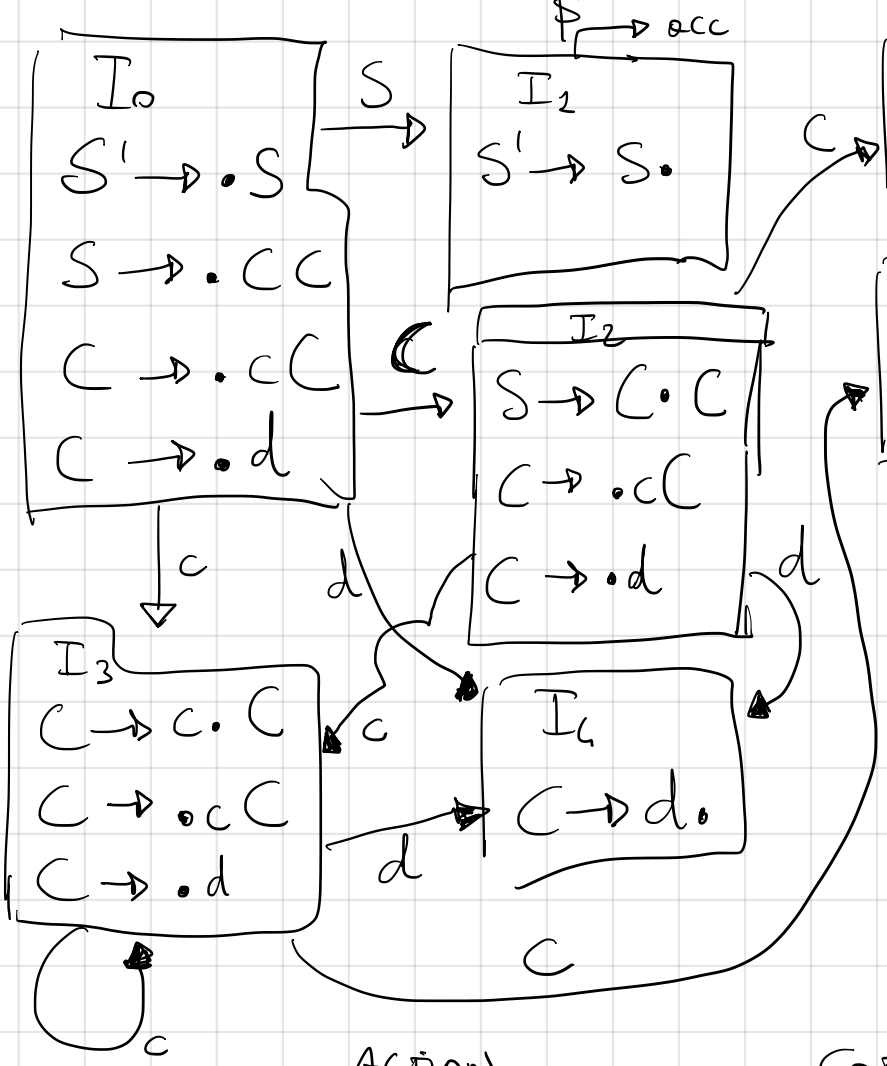
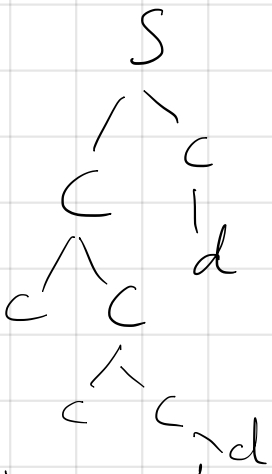
$S \xrightarrow{1} CC$ $\quad C \xrightarrow{2} cC \mid \overset{3}{d}$ $\quad S' \xrightarrow{0} S$ $\quad \Sigma = \{c, d\}$





FOLLOW(S') = {$}

FOLLOW(S) = {$}

FOLLOW(C) = {c, d, $}

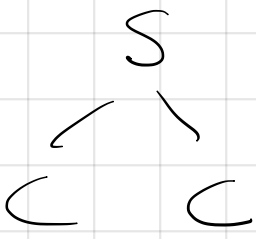
FIRST(S') = {c, d}

FIRST(S') = {c, d}

FIRST(C) = {c, d}

STATE	ACTION c	ACTION d	ACTION $	GOTO S	GOTO C
0	s3	s4		1	2
1			acc		
2	s3	s4			5
3	s3	s4			6
4	r3	r3	r3		
5			r1		
6	r2	r2	r2		

The grammar is SLR(1)



$L(S) = \{ xy \mid x, y \in c^*d \} = \{ dd, cdcd, dcd, ccdd, ccdcd, \ldots \}$

$\overset{\times}{c}/cd$ $\quad cc/d$

SLR(1) TABLE

STATE	SYMBOL	INPUT	ACTION
0	$	ccd$	Shift 3
0 3	$c	cd$	Shift 3
0 3 3	$cc	d$	Shift 4
0 3 3 4	$ccd	$	Red C → d
0 3 3 6	$ccC	$	Red C → cC
0 3 6	$cC	$	Red C → cC
0 2	$C	$	ERROR

Which is conect

because $S \not\Rightarrow cccd$

STATE	SYMBOL	INPUT	ACTION
0	$	cdd$	Shift 3
0 3	$c	dd$	Shift 4
0 3 4	$cd	d$	Red C → d
0 3 6	$cC	d$	Red C → cC
0 2	$C	d$	Shift 4
0 2 4	$Cd	$	Red C → d
0 2 5	$CC	$	Red S → CC
0 1	$S	$	ACCEPT

$E \underset{rm}{\Rightarrow} T \Rightarrow T * F \Rightarrow T * id \Rightarrow F * id \Rightarrow (E) * id$

$(E) *$ — id — NOT VIABLE

(E) — $* id$ — VIABLE

$(E$ — $) * id$ — VIABLE

LR(0) automaton

γ PREFIX

$E + T *$

I_7:
- $T \to T * \cdot F$ #2
- $F \to \cdot (E)$ #2
- $F \to \cdot id$ #3

#1

$E' \underset{rm}{\Rightarrow} E \Rightarrow E + T \Rightarrow E + T * F$

#2

$E' \overset{*}{\Rightarrow} \dots \Rightarrow E + T * F \Rightarrow E + T * (E)$

#

$E' \overset{*}{\Rightarrow} \dots \Rightarrow E + T * F \Rightarrow E + T * id$

$S' \xrightarrow{0} S$

$S \xrightarrow{1} L = R \mid \xrightarrow{2} R$

$L \xrightarrow{3} * R \mid \xrightarrow{4} id$

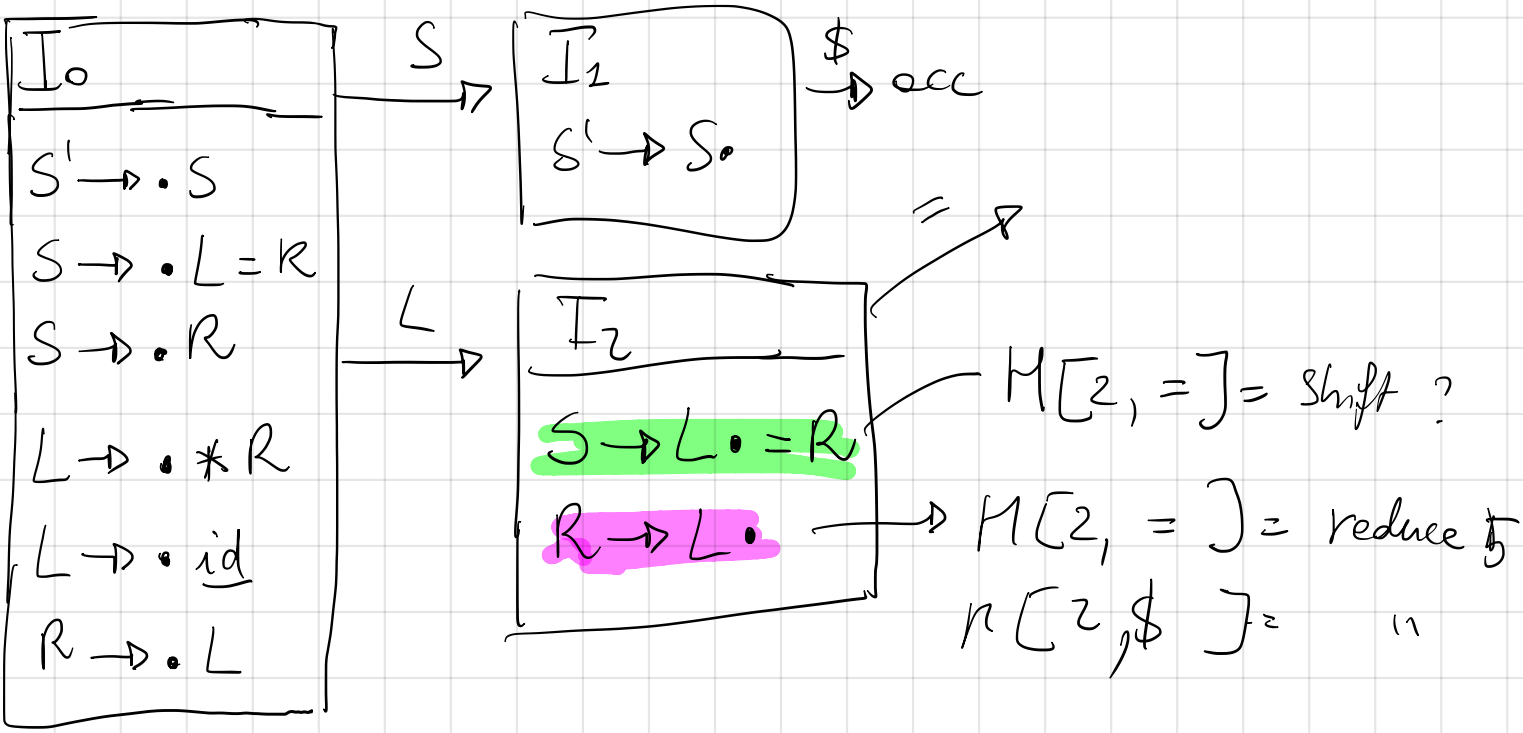
$R \xrightarrow{5} L$

$FIRST(S) = \{ *, id \}$ $FOLLOW(S') = \{ \$ \}$

$FIRST(L) = \{ *, id \}$ $FOLLOW(S) = \{ \$ \}$

$FIRST(R) = \{ *, id \}$ $FOLLOW(L) = \{ =, \$ \}$

$FOLLOW(R) = \{ \$, = \}$



$S' \underset{rm}{\Rightarrow} S \Rightarrow R \Rightarrow L \Rightarrow * R \Rightarrow$

$S' \Rightarrow S \Rightarrow L = R \Rightarrow L = L \Rightarrow L = id = * R = id$

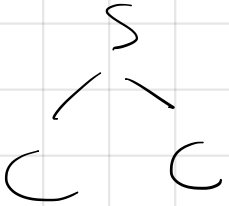
$R = \dots$ cannot be produced in a right sentential form

LR(1) automaton

$S' \xrightarrow{0} S$ $S \xrightarrow{1} CC$ $C \xrightarrow{2} cC \mid \xrightarrow{3} d$

$\mathcal{L}(S') = c^*d\,c^*d$

ccd dd cdcd ccccdcccd



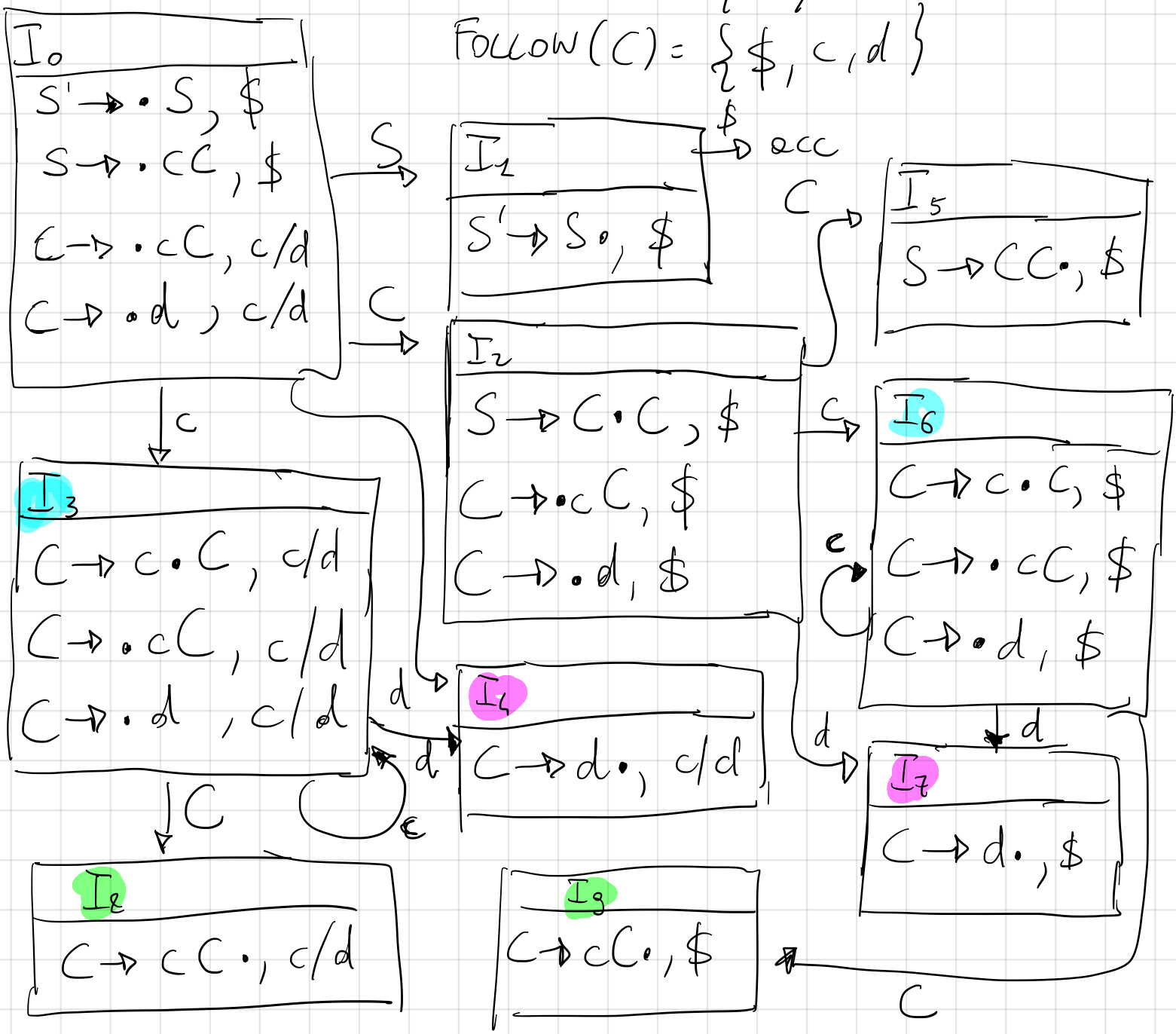
FIRST(S) = {c, d}

FIRST(C) = {c, d}

FOLLOW(S') = {$}

FOLLOW(S) = {$}

FOLLOW(C) = {$, c, d}



STATE	ACTION			GOTO	
	c	d	$	S	C
0	s3	s4		1	2
1			acc		
2	s6	s7			5
3	s3	s4			8
4	r3	r3			
5			r1		
6	s6	s7			9
7			r3		
8	r2	r2			
9			r2		

10 stats

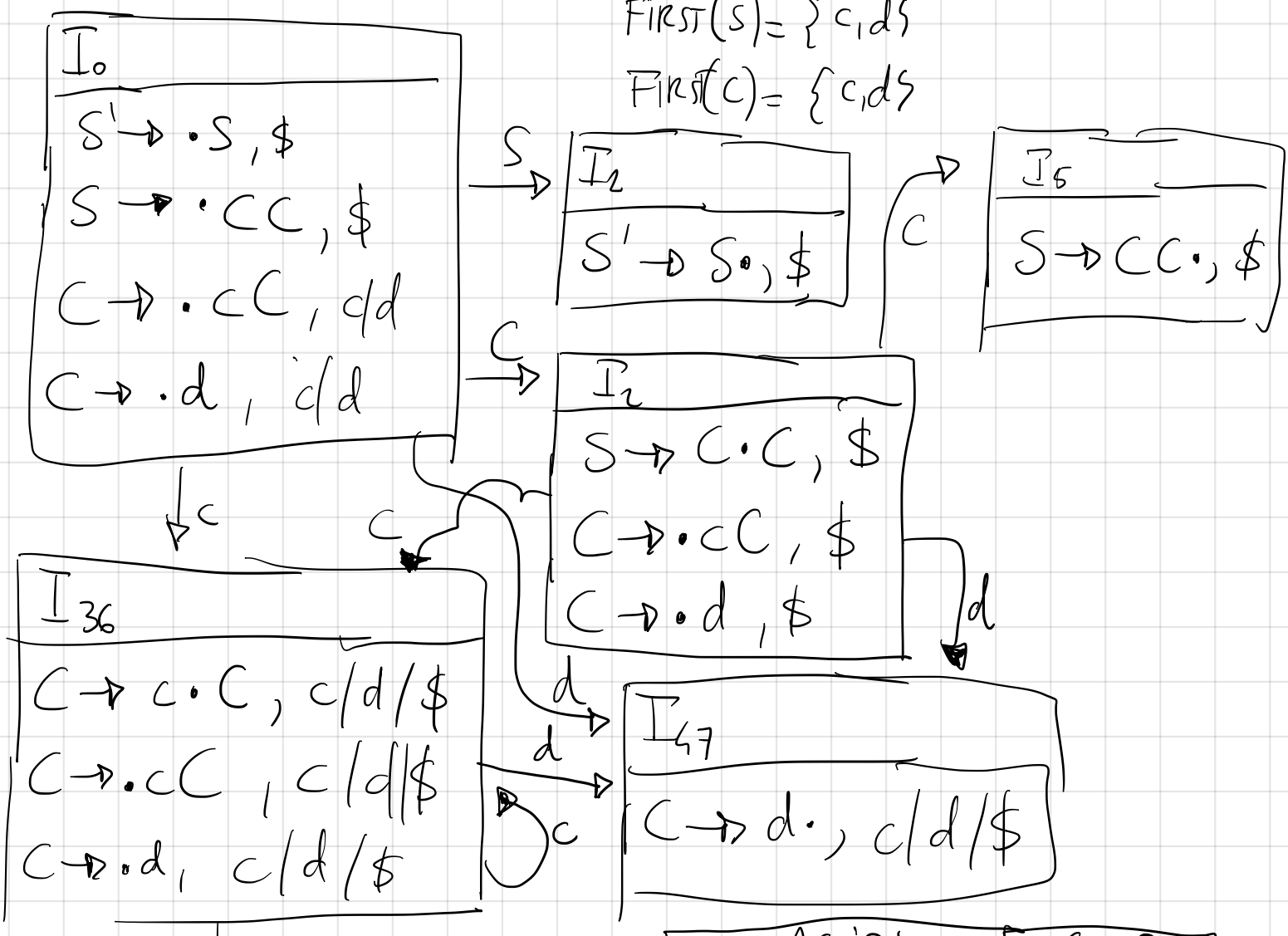
LR(1) table

LALR(1)

$S' \xrightarrow{0} S$ $S \xrightarrow{1} CC$ $C \xrightarrow{2} cC \mid \xrightarrow{3} d$

FIRST(S) = {c, d}

FIRST(C) = {c, d}



	ACTION			GOTO	
ST	c	d	$	S	C
0	s36	s47		1	2
1			acc		
2	s36	s47			5
36	s36	s47			89
47	r3	r3	r3		
5			r1		
89	r2	r2	r2		

LALR(1) table

ccd

CR(1) tabel

STACK	SYMBOLS	INPUT	Action
0	$	ccd$	S3
0 3	$c	cd$	S3
0 3 3	$cc	d$	S4
0 3 3 4	$ccd	$	ERROR

LALR(1) tabel

STACK	SYMBOLS	INPUT	ACT
0	$	ccd$	S36
0 36	$c	cd$	S36
0 36 36	$cc	d$	S47
0 36 36 47	$ccd	$	r C→d
0 36 36 89	$ccC	$	r C→cC
0 36 89	$cC	$	r C→cC
0	$C	$	ERROR