Compiler 5-3

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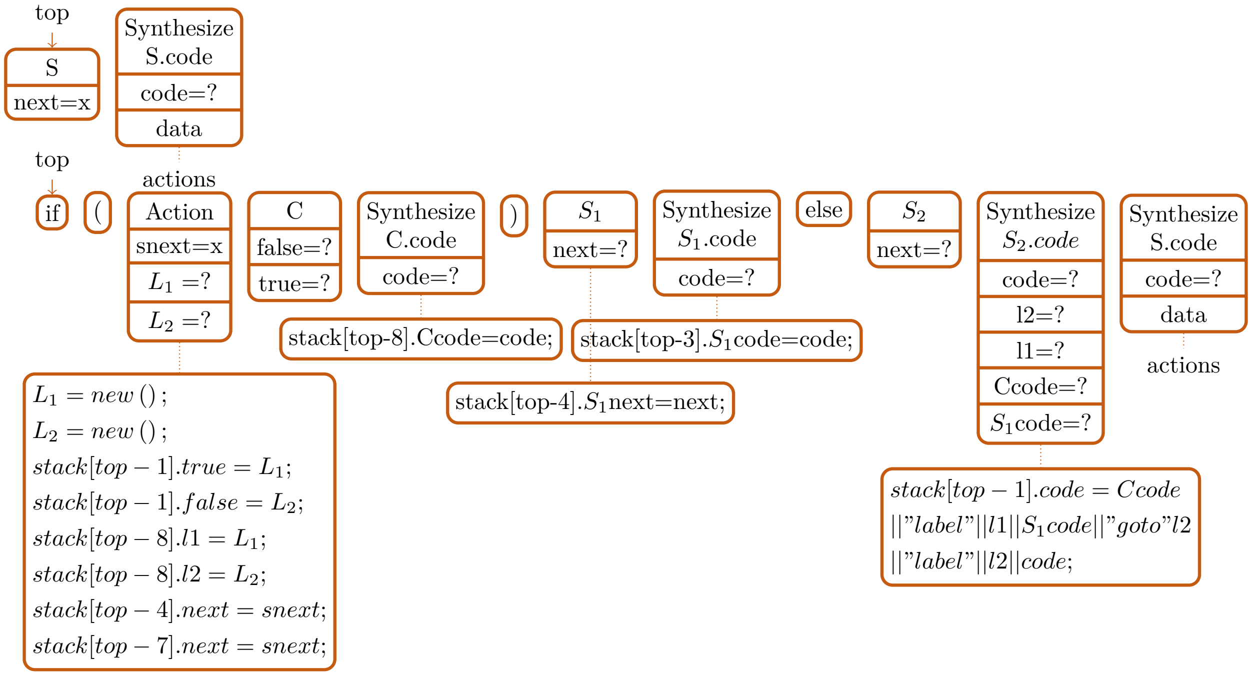
5.4.4

$S \rightarrow \textbf{if}\,(C)\ \ S_1\ \textbf{else}\ S_2$	$L_1\ =\ new\,()$ $L_2\ =\ new\,()$ $C.true\ =\ L_1$ $C.false\ =\ L_2$ $S_1.next\ =\ S.next$ $S_2.next\ =\ S.next$ $S.code\ =\ C.code\|\|label\|\|L_1\|\|S_1.code\|\|\textbf{goto}\ S_1.next\|\|label\|\|L_2\|\|S_2.code$
$S \rightarrow \textbf{do}\ S_1\ \textbf{while}\,(C)$	$L_1\ =\ new\,()$ $L_2\ =\ new\,()$ $C.true\ =\ L_1$ $C.false\ =\ S.next$ $S_1.next\ =\ L_2$ $S.code\ =\ label\|\|L_1\|\|S_1.code\|\|label\|\|L_2\|\|C.code$
$S \rightarrow$ ‘{′L‘}′	$L.next\ =\ S.next$ $S.code\ =\ L.code$
$L \rightarrow L_1S$	$L_2\ =\ new\,()$ $L_1.next\ =\ L_2$ $S.next\ =\ L.next$ $L.code\ =\ L_1.code\|\|label\|\|L_2\|\|S.code$
$L \rightarrow \varepsilon$	$L.code\ =$ “”

5.5.4

- 1



$L_1 = new\,()\,;$
$L_2 = new\,()\,;$
$stack[top-1].true = L_1;$
$stack[top-1].false = L_2;$
$stack[top-8].l1 = L_1;$
$stack[top-8].l2 = L_2;$
$stack[top-4].next = snext;$
$stack[top-7].next = snext;$

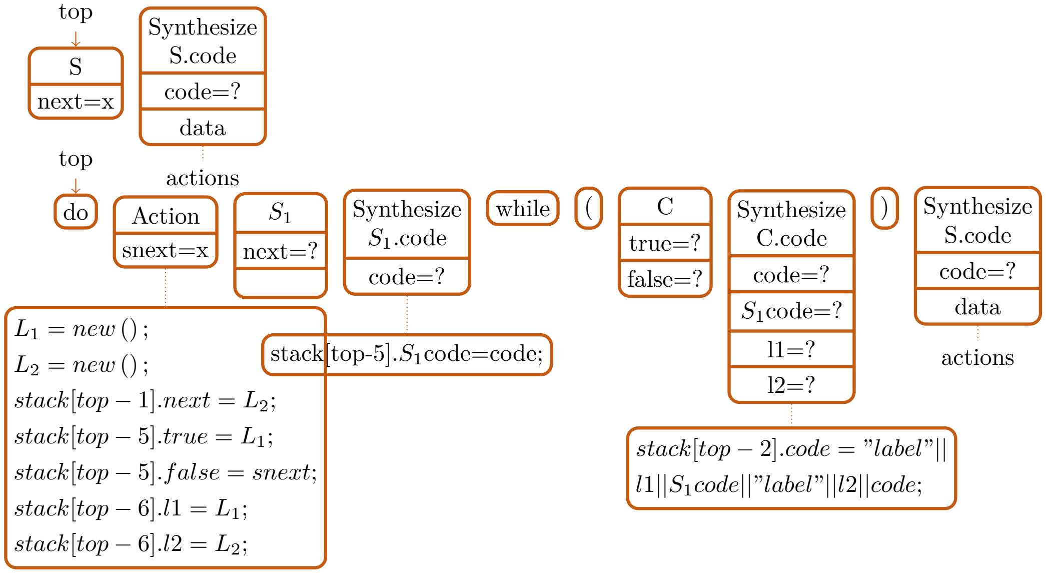
stack[top-8].Ccode=code;

stack[top-3].S_1code=code;

stack[top-4].S_1next=next;

$stack[top-1].code = Ccode$
$||"label"||l1||S_1code||"goto"l2$
$||"label"||l2||code;$

- 2

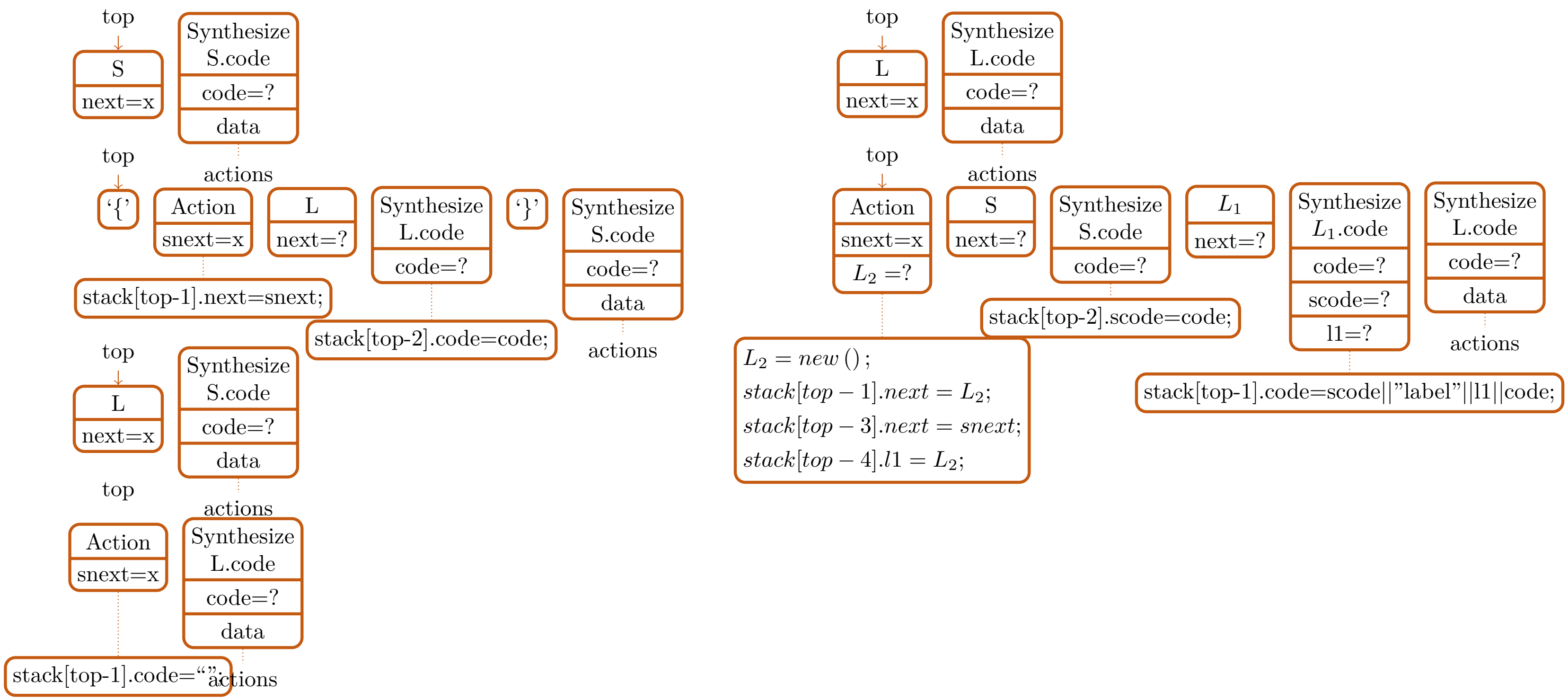


$L_1 = new\,()\,;$
$L_2 = new\,()\,;$
$stack[top-1].next = L_2;$
$stack[top-5].true = L_1;$
$stack[top-5].false = snext;$
$stack[top-6].l1 = L_1;$
$stack[top-6].l2 = L_2;$

stack[top-5].S_1code=code;

$stack[top-2].code = "label"||$
$l1||S_1code||"label"||l2||code;$

- 3



stack[top-1].next=snext;

stack[top-2].code=code;

stack[top-1].code=“”;

$L_2 = new\,()\,;$

$stack[top-1].next = L_2;$

$stack[top-3].next = snext;$

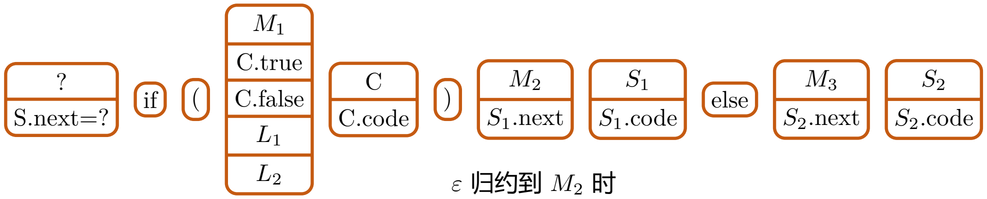
$stack[top-4].l1 = L_2;$

stack[top-2].scode=code;

stack[top-1].code=scode||”label”||l1||code;

5.5.5

- 1



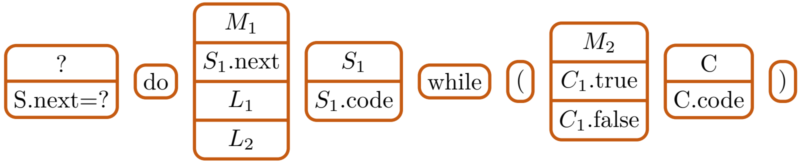
$if\,(M_1\;C)\,M_2\;S_1 else M_3\;S_2$ 归约到 S 时
tempCode=stack[top-6].code||”label”
||stack[top-7].L_1||stack[top-3].code
||goto stack[top-10].next||”label”
||stack[top-7].L_2||stack[top].code;
top=top-9;
stack[top].code=tempCode;

ε 归约到 M_2 时
$S_1.next \;=\; stack[top-6].next$

ε 归约到 M_1 时
$L_1 \;=\; new\,()$
$L_2 \;=\; new\,()$
$C.true \;=\; L_1$
$C.false \;=\; L_2$

ε 归约到 M_3 时
$S_2.next \;=\; stack[top-9].next$

- 2

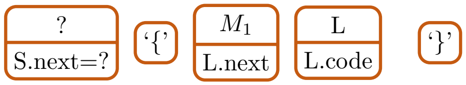


$do\ M_1\ S_1\ while\ (M_2\ C)$ 归约到 S 时
tempCode=”label”||stack[top-6].L_1||stack[top-5].code
||”label”||stack[top-6].L_2||stack[top-1].code;
top=top-7;
stack[top].code=tempCode;

ε 归约到 M_1 时
$L_1 \ = \ new\,()$
$L_2 \ = \ new\,()$
$S_1.next \ = \ L_2$

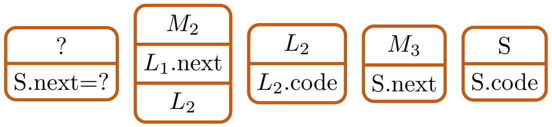
ε 归约到 M_2 时
$C_1.true \ = \ stack[top-4].L_1$
$C_1.false \ = \ stack[top-6].next$

- 3



‘{’L‘}’ 归约到 S 时
tempCode=stack[top-1].code;
top=top-3;
stack[top].code=tempCode;

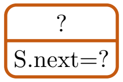
ε 归约到 M_1 时
L.next=stack[top-2].next



$M_2 L_1 M_3 S$ 归约到 L 时
tempCode=stack[top-2].code||stack[top].code;
top=top-3;
stack[top].code=tempCode;

ε 归约到 M_2 时
$L_2 \ = \ new\,()$
$L_1.next \ = \ L_2$

ε 归约到 M_3 时
S.next=stack[top-3].next;



ε 归约到 L 时
tempCode=””;
top=top+1;
stack[top].code=tempCode;