$Chapter\ 6-HW03$

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6.6.1 解:

Production	Syntax Rule
$S \rightarrow repeat \ S_1 \ while \ B$	$S_1.next = newlabel()$
	B.true = newlabel()
	B.false = S.next
	$S.code = label(B.true) \parallel S_1.code$
	$\parallel label(S_1.next) \parallel B.code$
$S \to for(S_1; B; S_2) S_3$	$S_1.next = newlabel()$
	B.true = newlabel()
	B.false = S.next
	$S_2.next = S_1.next$
	$S_3.next = newlabel()$
	$S.code = S_1.code$
	$\parallel label(S_1.next) \parallel B.code$
	$\parallel label(B.true) \parallel S_3.code$
	$\parallel S_3.next \parallel S_2.code$
	$\parallel gen('goto', S_1.next)$

6.7.1 解:

$$\begin{array}{lll} 100 & if \ a == b, \ goto \ _\\ \\ 101 & goto \ _\\ \\ 102 & if \ c == d, \ goto \ _\\ \\ 103 & goto \ _\\ \\ 104 & if \ e == f, \ goto \ _\\ \\ 105 & goto \ _\\ \end{array}$$

1) 各个子表达式的 truelist 和 falselist 如下图所示:

$$B.t = \{102, 104\}, B.f = \{101, 105\}$$

$$B.t = \{100\}, B.f = \{101\}$$
&& $M.i = 102$ $B.t = \{102, 104\}, B.f = \{105\}$

$$C = d$$

$$B.t = \{102, 104\}, B.f = \{105\}$$

$$M.i = 104$$
 $B.t = \{104\}, B.f = \{105\}$

分别用 L_1 和 L_2 表示表达式的真、假两个出口,则回填后的指令序列为:

100 if
$$a == b$$
, goto 102
101 goto L_2
102 if $c == d$, goto L_1
103 goto 104
104 if $e == f$, goto L_1
105 goto L_2

2) 各个子表达式的 truelist 和 falselist 如下图所示:

$$B.t = \{100, 102, 104\}, B.f = \{105\}$$

$$B.t = \{100, 102\}, B.f = \{103\} \quad \| \quad M.i = 104 \quad B.t = \{104\}, B.f = \{105\}$$

$$B.t = \{100, 102\}, B.f = \{103\} \quad | \quad e = f$$

$$B.t = \{100\}, B.f = \{101\} \quad \| \quad M.i = 102 \quad B.t = \{102\}, B.f = \{103\}$$

分别用 L_1 和 L_2 表示表达式的真、假两个出口,则回填后的指令序列为:

100 if
$$a == b$$
, goto L_1
101 goto 102
102 if $c == d$, goto L_1
103 goto 104
104 if $e == f$, goto L_1
105 goto L_2

3) 各个子表达式的 truelist 和 falselist 如下图所示:

$$B.t = \{104\}, B.f = \{101, 103, 105\}$$

$$B.t = \{102\}, B.f = \{101, 103\} \quad \&\& \quad M.i = 104 \quad B.t = \{104\}, B.f = \{105\}$$

$$B.t = \{100\}, B.f = \{101\} \quad \&\& \quad M.i = 102 \quad B.t = \{102\}, B.f = \{103\}$$

$$A = b \quad \epsilon \quad c = d$$

分别用 L_1 和 L_2 表示表达式的真、假两个出口,则回填后的指令序列为:

100 if
$$a == b$$
, goto 102

101
$$goto L_2$$

$$102$$
 if $c == d$, goto 104

103
$$goto L_2$$

104 if
$$e == f$$
, goto L_1

105
$$goto L_2$$