Week 12

Xiaoyuan Xie 谢晓园
xxie@whu.edu.cn
计算机学院E301

- **教材P268 6.7.1**

  使用右图6-43中的翻译方案，

  翻译下列表达式。

  给出每个子表达式的

  truelist和falselist。

  假设第一条指令的地址是100。

  - 1) a==b && (c==d || e==f)
  - 2) (a==b || c==d) || e==f
  - 3) (a==b && c==d) && e==f

1) $B \rightarrow B_1 \parallel M\ B_2$ $\{\ backpatch(B_1.falselist, M.instr);$
   $B.truelist = merge(B_1.truelist, B_2.truelist);$
   $B.falselist = B_2.falselist;\ \}$

2) $B \rightarrow B_1\ \&\&\ M\ B_2$ $\{\ backpatch(B_1.truelist, M.instr);$
   $B.truelist = B_2.truelist;$
   $B.falselist = merge(B_1.falselist, B_2.falselist);\ \}$

3) $B \rightarrow\ !\ B_1$ $\{\ B.truelist = B_1.falselist;$
   $B.falselist = B_1.truelist;\ \}$

4) $B \rightarrow (\ B_1\ )$ $\{\ B.truelist = B_1.truelist;$
   $B.falselist\ =\ B_1.falselist;\ \}$

5) $B \rightarrow E_1\ \mathbf{rel}\ E_2$ $\{\ B.truelist = makelist(nextinstr);$
   $B.falselist = makelist(nextinstr + 1);$
   $emit('\mathtt{if}'\ E_1.addr\ \mathbf{rel}.op\ E_2.addr\ '\mathtt{goto}\ \_');$
   $emit('\mathtt{goto}\ \_');\ \}$

6) $B \rightarrow \mathbf{true}$ $\{\ B.truelist = makelist(nextinstr);$
   $emit('\mathtt{goto}\ \_');\ \}$

7) $B \rightarrow \mathbf{false}$ $\{\ B.falselist = makelist(nextinstr);$
   $emit('\mathtt{goto}\ \_');\ \}$

8) $M \rightarrow \epsilon$ $\{\ M.instr = nextinstr;\ \}$

Figure 6.43: Translation scheme for boolean expressions

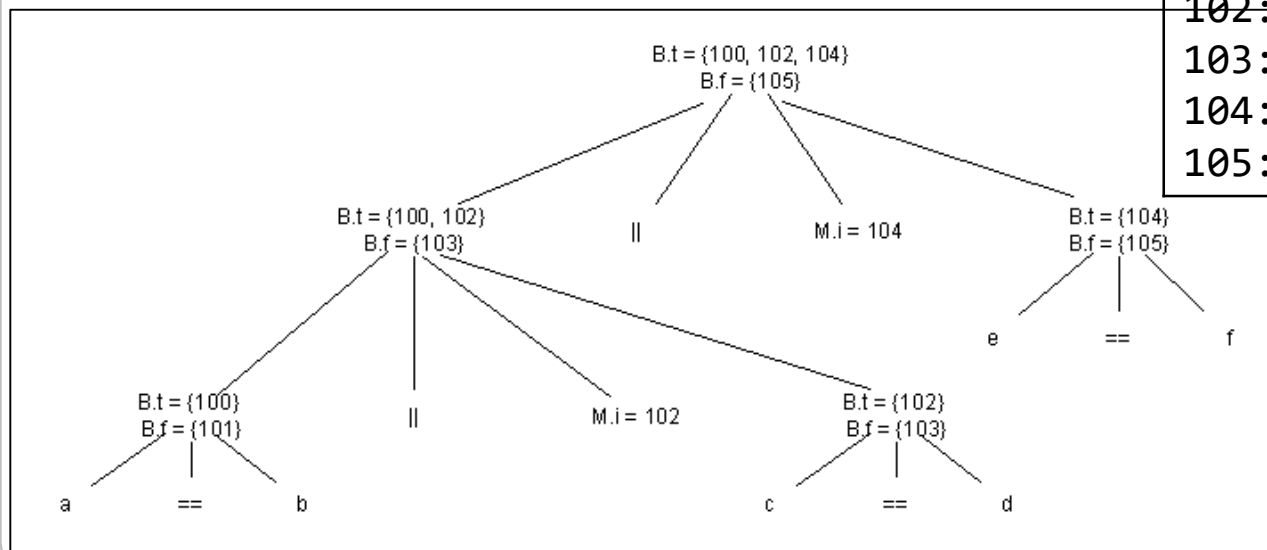# Week 12 作业

- **教材P268 6.7.1**
  - 1) a==b && (c==d || e==f)
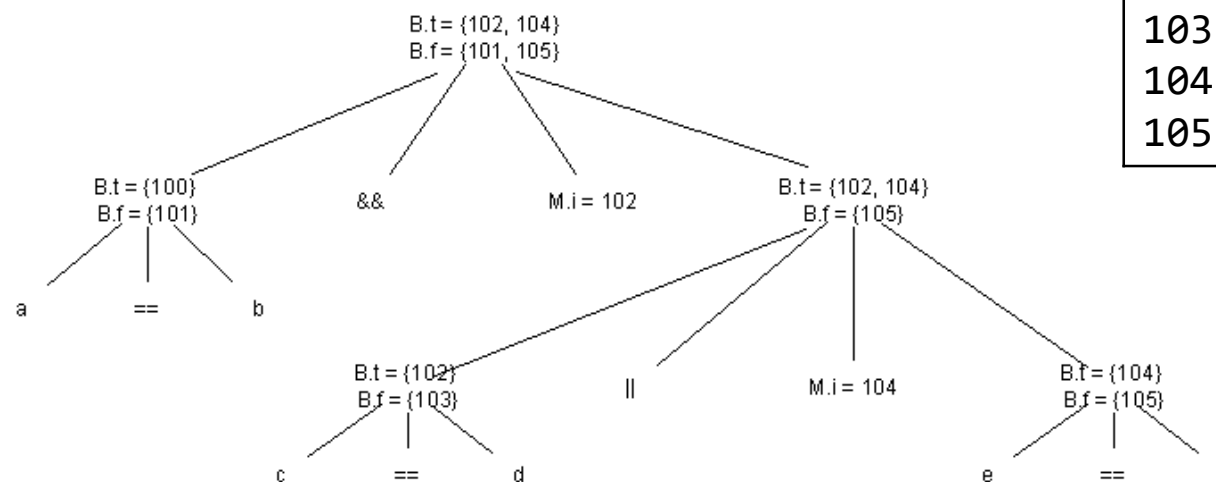
回填后的指令
100: if a == b goto 102
101: goto _(false)
102: if c == d goto _(true)
103: goto 104
104: if e == f goto _(true)
105: goto _(false)

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- **教材P268 6.7.1**
  - 2）(a==b || c==d) || e==f

回填后的指令
100: if a == b goto _(true)
101: goto 102
~~102:~~ if c == d goto _(true)
103: goto 104
104: if e == f goto _(true)
105: goto _(false)

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- **教材P268 6.7.1**
  - 3) (a==b && c==d) && e==f
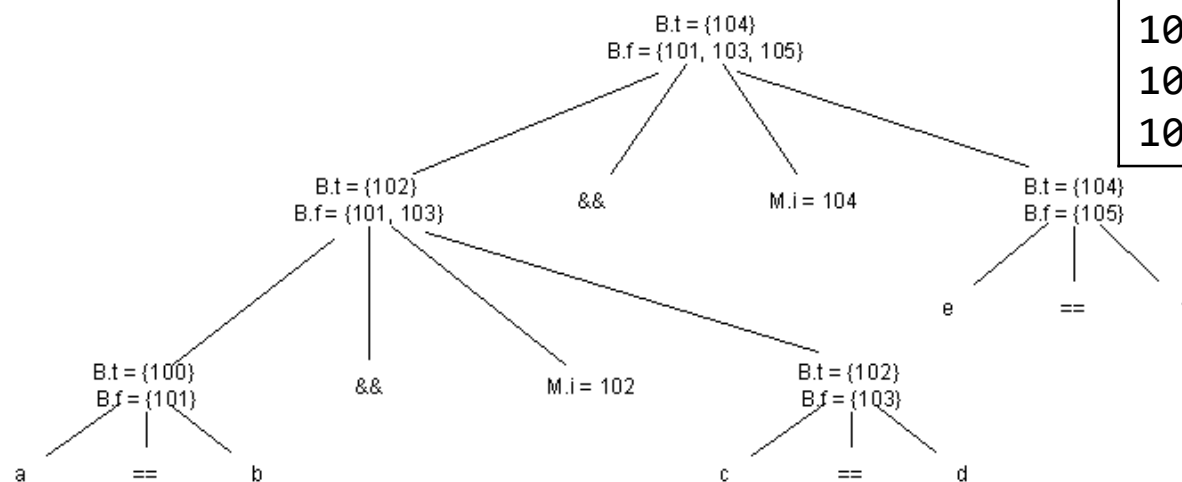
回填后的指令
100: if a == b goto 102
101: goto _(false)
102: if c == d goto 104
103: goto _(false)
104: if e == f goto _(true)
105: goto _(false)

Thank you!