Compiler's Principles 2019 HW9

作业





□考虑布尔表达式

false or true and not c < f

- ❖ 参考本ppt中布尔表达式短路计算、标号回填等翻译技术, 生成对应的三地址代码。
- ❖ 假设nextinstr = 200
- ❖除了三地址代码外,画出LR分析方法对应的注释分析树(如slide 99),标注出属性和属性值。
- ❖ 结合LR分析方法指出回填的具体细节
 - > 在使用哪一个产生式归约时候进行的回填
 - > 用哪一个标号,回填了哪一个不完整的goto指令

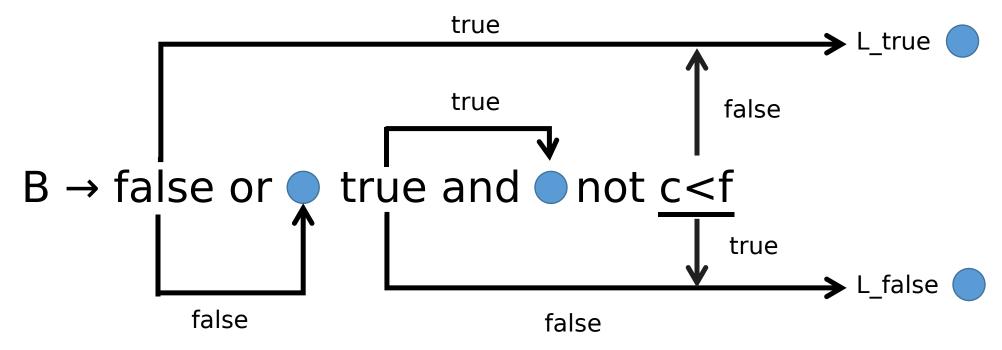
布尔表达式文法

B → B or B | B and B | not B | (B) | E relop E | true | false

布尔运算符or, and和not具有优先级和结合性

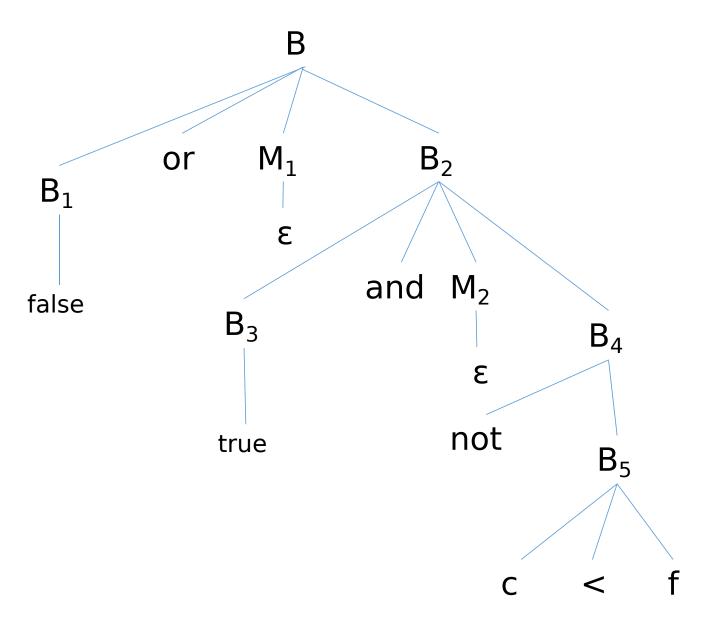
布尔表达式的短路计算

•按照题目要求,需要考虑布尔表达式的短路计算:

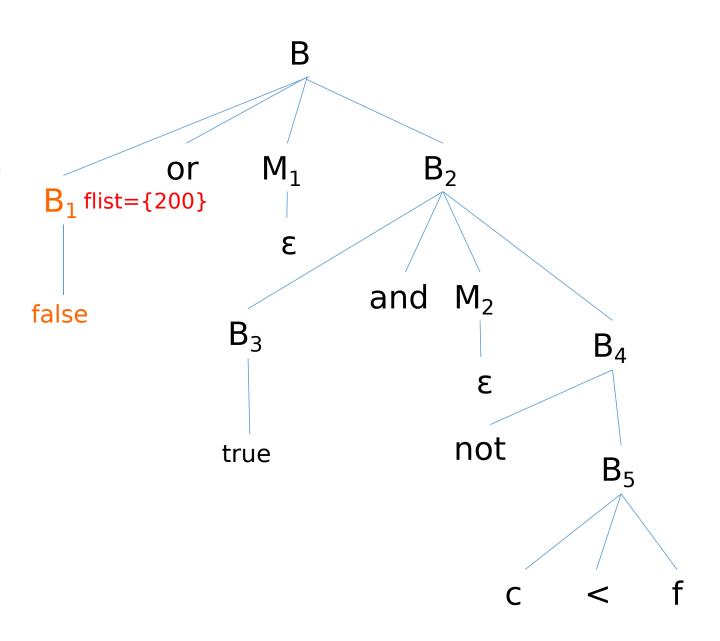


表示转移到的目标语句在有关布尔表达式翻译时尚未确定

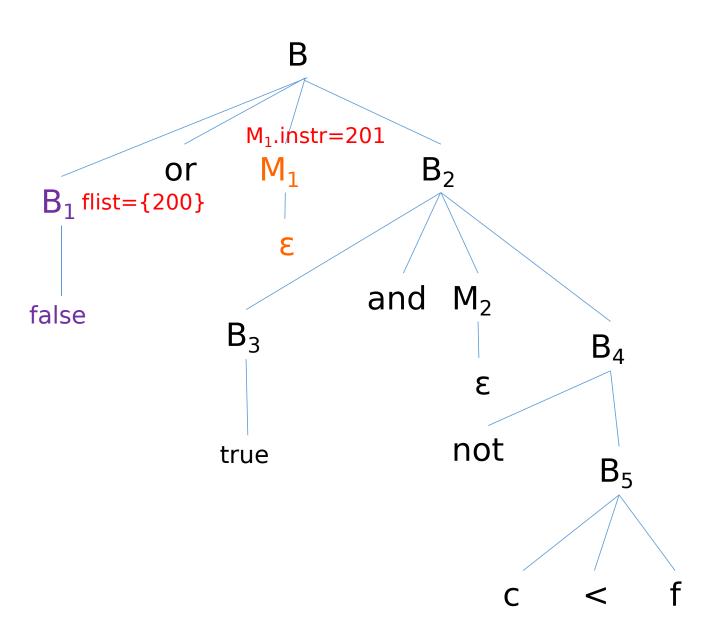
false or true and not c < f 假设nextinstr = 200



false or true and not c < f 假设nextinstr = 200

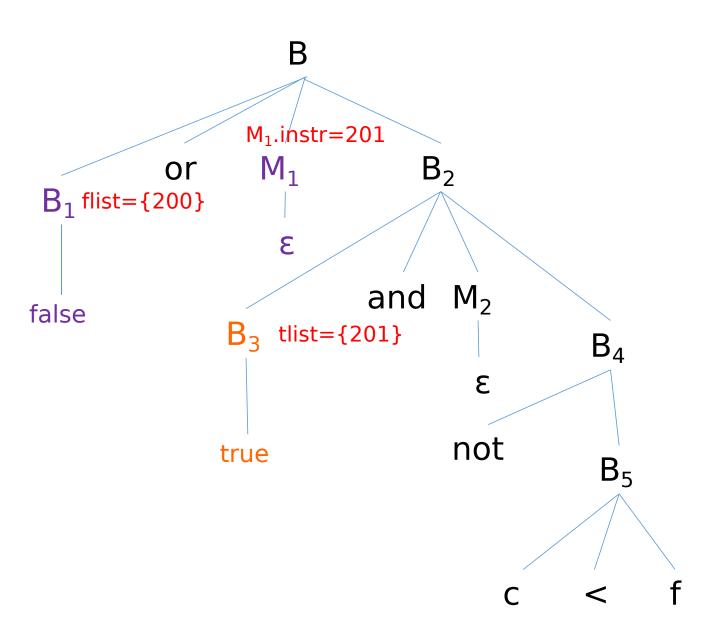


false or true and not c < f 假设nextinstr = 200



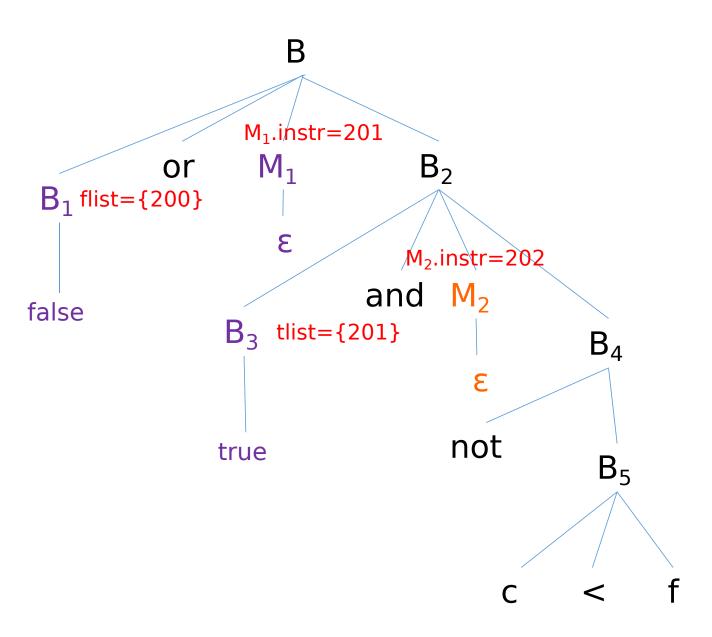
false or true and not c < f 假设nextinstr = 200

(200) goto -



false or true and not c < f 假设nextinstr = 200

(200) goto -

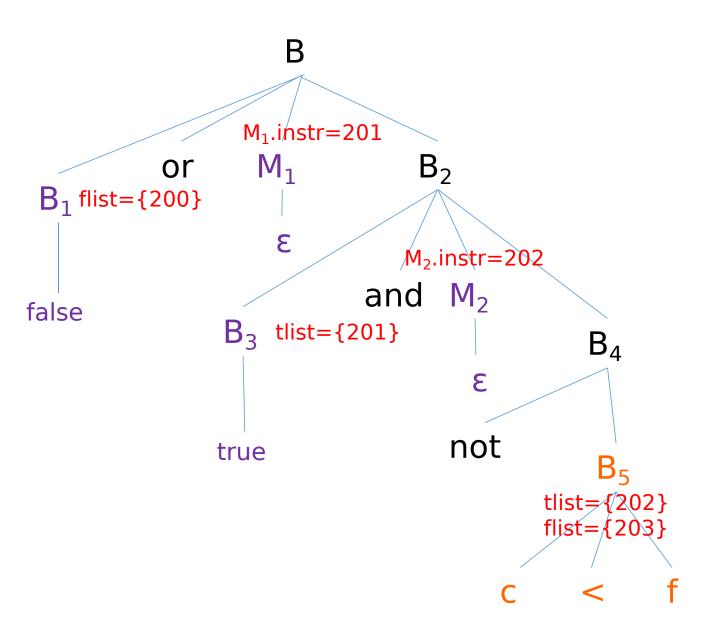


false or true and not c < f 假设nextinstr = 200

```
(200) goto -
```

(201) goto -

(202) if c<f goto -

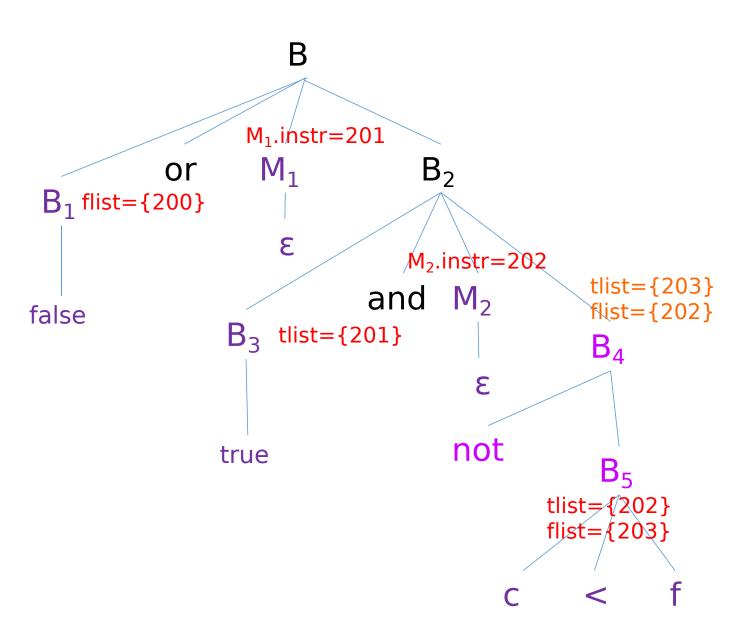


false or true and not c < f 假设nextinstr = 200

```
(200) goto -
```

(201) goto -

(202) if c<f goto -



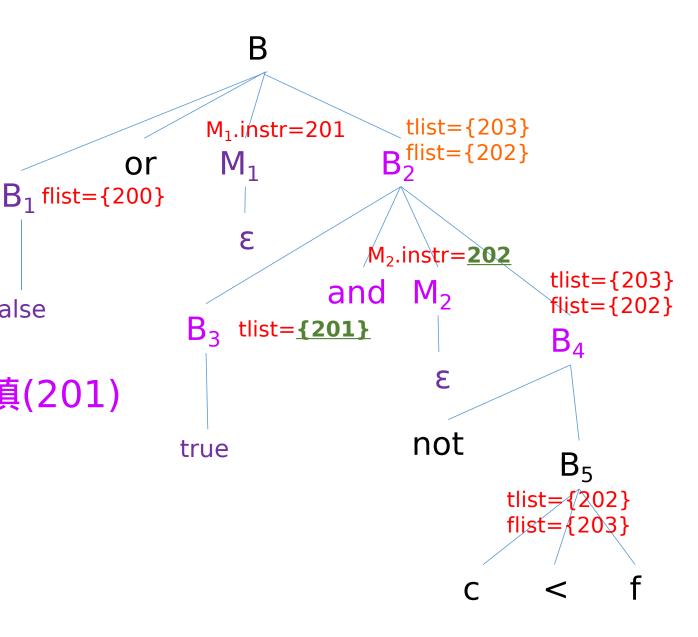
false or true and not c < f 假设nextinstr = 200

```
(200) goto -
```

(201) goto 202 // 用202回填(201)

false

(202) if c<f goto -



false or true and not c < f 假设nextinstr = 200

```
false
(200) goto 201 // 用201回填(200)
```

(201) goto 202 // 用202回填(201)

(202) if c<f goto -

(203) goto -

```
tlist={203}
                          flist = \{202\}
                                      tlist={203}
                   M_1.instr = 201
                                   B flist={202}
                    M_1
B_1 flist={200}
                      3
                                  M_2.instr=202
                                                    tlist={203}
                              and M_2
                                                    flist={202}
                 B_3 tlist={201}
                                                    B_4
                                         3
                                       not
                true
                                                     B_5
                                                tlist = \{202\}
                                                flist={203}
```

or

综合标准答案

1. 三地址代码:

(200) goto 201

(201) goto 202

(202) if c<f goto -

- 2. 注释分析树(见右侧)
- 3. 回填细节
- (1) 按 $B_2 \to B_3$ and $M_2 B_4$ 归约时用202回填(201)
- (2) 按 $B \rightarrow B_1$ or M_1 B_2 归约时用201回填(200)

