BASIC BLOCK

Course Name: Compiler Design
Course Code: CSE331
Level:3, Term:3
Department of Computer Science and Engineering
Daffodil International University

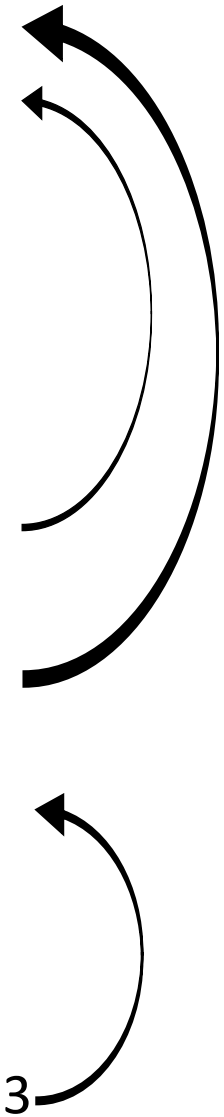
How to select LEADER

1. The first three address instruction in the intermediate code is a leader.
2. Any instruction that is the target of a conditional or unconditional jump is a leader.
3. Any instruction that immediately follows of a conditional or unconditional jump is a leader.

Consider this example to find leader & divide into blocks:

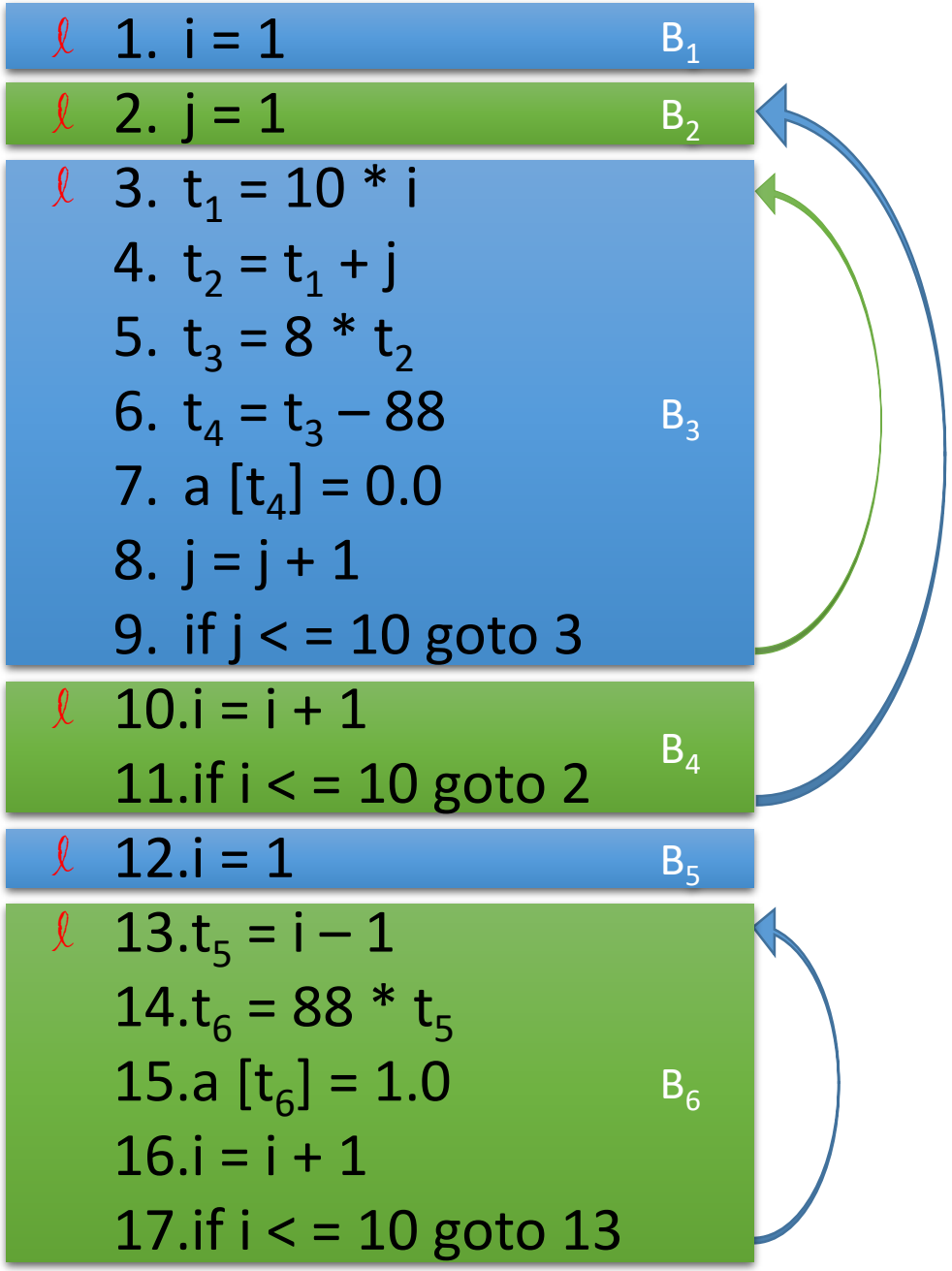
1. i = 1
2. j = 1
3. t_1 = 10 * i
4. t_2 = t_1 + j
5. t_3 = 8 * t_2
6. t_4 = t_3 – 88
7. a [t_4] = 0.0
8. j = j + 1
9. if j < = 10 goto 3
10. i = i + 1
11. if i < = 10 goto 2
12. i = 1
13. t_5 = i – 1
14. t_6 = 88 * t_5
15. a [t_6] = 1.0
16. i = i + 1
17. if i < = 10 goto 13

ℓ 1. i = 1
ℓ 2. j = 1
ℓ 3. t_1 = 10 * i
4. t_2 = t_1 + j
5. t_3 = 8 * t_2
6. t_4 = t_3 – 88
7. a [t_4] = 0.0
8. j = j + 1
9. if j < = 10 goto 3
ℓ 10.i = i + 1
11.if i < = 10 goto 2
ℓ 12.i = 1
ℓ 13.t_5 = i – 1
14.t_6 = 88 * t_5
15.a [t_6] = 1.0
16.i = i + 1
17.if i < = 10 goto 13

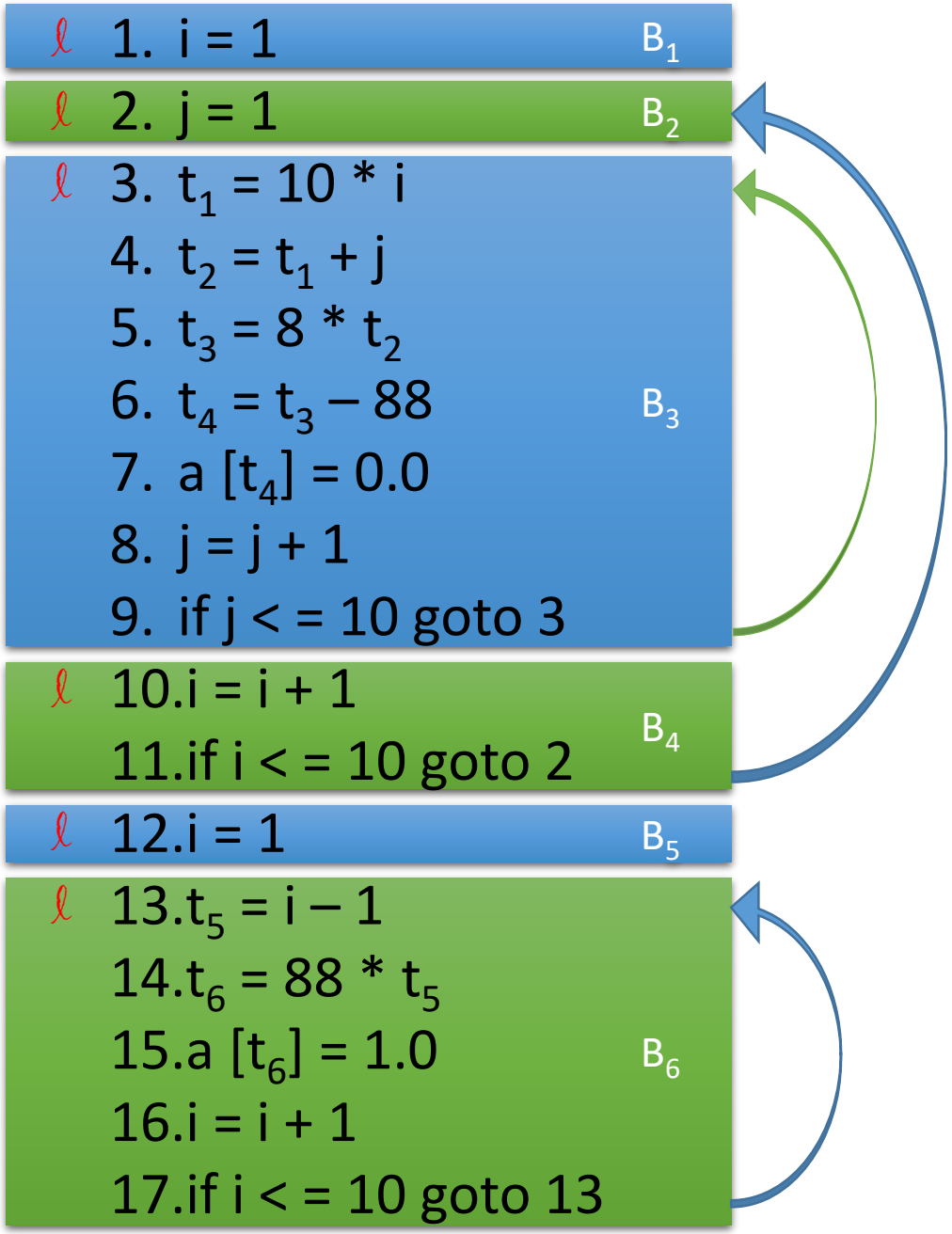


First, we find leader (ℓ)

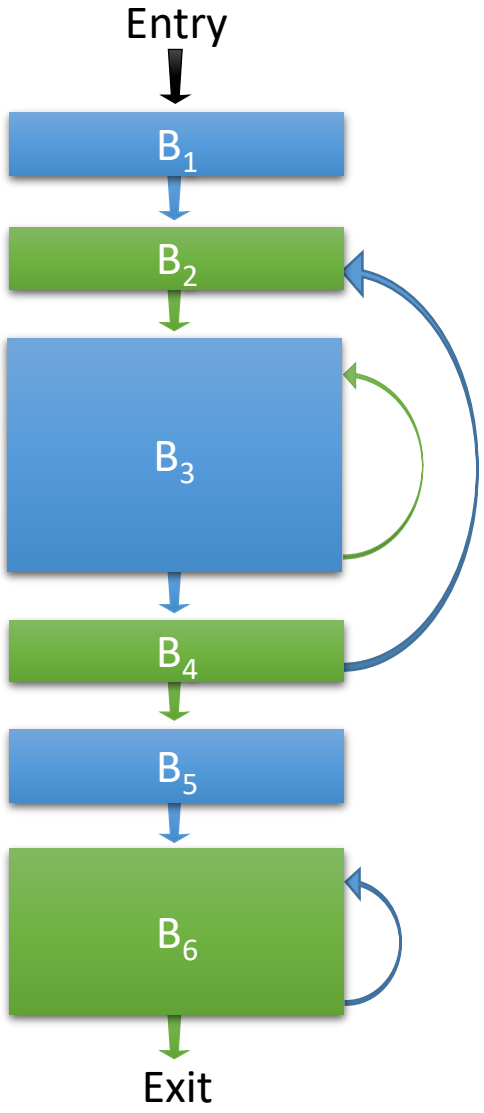
- The first three address instruction in the intermediate code is a leader
- Any instruction that is the target of a conditional or unconditional jump is a leader
- Any instruction that immediately follows of a conditional or unconditional jump is a leader.



First, we find leader (ℓ),
then divide into blocks(B)


1. i = 1
B1
2. j = 1
B2
3. t1 = 10 * i
4. t2 = t1 + j
5. t3 = 8 * t2
6. t4 = t3 – 88
7. a [t4] = 0.0
8. j = j + 1
9. if j < = 10 goto 3
B3
10.i = i + 1
11.if i < = 10 goto 2
B4
12.i = 1
B5
13.t5 = i – 1
14.t6 = 88 * t5
15.a [t6] = 1.0
16.i = i + 1
17.if i < = 10 goto 13
B6

Flow Graph


Entry
B1
B2
B3
B4
B5
B6
Exit

Thank You