06/04/20

TUTORIAL-6

ACHYUTHA...
...

(1) - (4) B1 (12) B5
(5) - (7) B2 (13) B6
8 B3 (14)(21) B7
9-11 B4 22 B8
23-30 B9

B1
i = m-1
j = n
t1 = 4*n
v = a[t1]

B2
i = i+1
t2 = 4*i
t3 = a[t2]

B3
if t3 < v goto (5)

B4
j = j-1
t4 = 4*j
t5 = a[t4]

B5
if t5 > v goto (9)

B6
if i >= j
goto (23)

B7
t6 = 4*i
y = a(t6)
t7 = 4*i
t8 = 4*j
t9 = a(t8)
a[t7] = t9
t10 = 4*j
a[t10] = y

B8
goto (5)

B9
t11 = 4*i
x = a(t11)
t12 = 4*i
t13 = 4*n
t14 = a(t13)
a(t12) = t14
t15 = 4*n
a(t15) = x

(i)
Replacing:
4*i in B7 with t6
4*j in B7 with t8

t6 = 4*i
y = a(t6)
t8 = 4*j
t9 = a(t8)
a[t6] = t9
a(t8) = y

(ii) Replacing
4*i in B9
with t11
4*n in B9 with t13
t11 = 4*i
x = a(t11)
t13 = 4*n
t14 = a(t13)
a(t11) = t14
a(t13) = x

Replacing 4*i in B9
with t6
x = a[t6]
t13 = 4*n
t14 = a(t13)
a(t6) = t14
a(t13) = x

Replacing
4*j in B7 with
t4
t6 = 4*i
x = a[t6]
t7 = a[t4]
a(t6) = t7
a(t4) = x

Replacing 4*j in B1
with t2
x = a(t2)
t9 = a[t4]
a[t2] = t9
a[t4] = x

Replacing 4*n in B9 with t1
x = a[t6]
t14 = a(t1)
a[t6] = t14
a(t1) = x

B1
i = m-1
j = n
t1 = 4*n
v = a[t1]

B2
i = i+1
t2 = 4*i
t3 = a[t2]

B3
if t3 < v goto B2

B4
j = j-1
t4 = 4*j
t5 = a[t4]

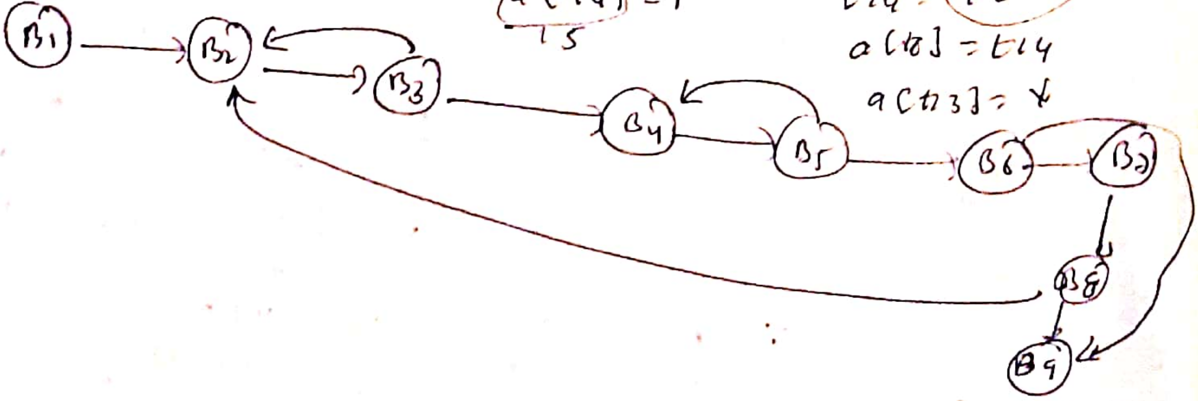
B5
if t5 > v goto B4

B6
if i >= j goto B9

B7
x = a[t2] t3
t4 = a[t4] t5
a[t2] = t4
a[t4] = x t5

B8
goto B2

B9
x = a[t6]
t14 = a[t1]
a[t6] = t14
a[t13] = x



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② code

B1:

```
i := 1
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B2:

```
j := 1
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B3:

```
t1 = 10 * i
t2 = t1 + j
t3 = 8 * t2
t4 = t3 - 88
a[t4] = t2 - 88
a[t4] = 0.0
j := j + 1
if j <= 10 goto B3
```

B4:

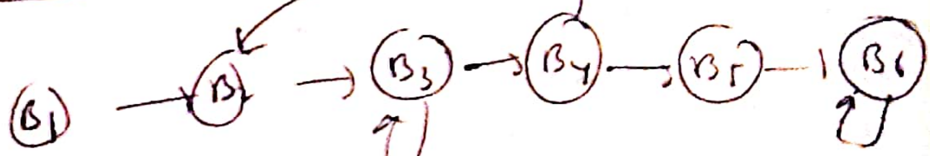
```
i = i+1
if i <= 10 goto B2
```

B5:

```
i := 1
```

B6:

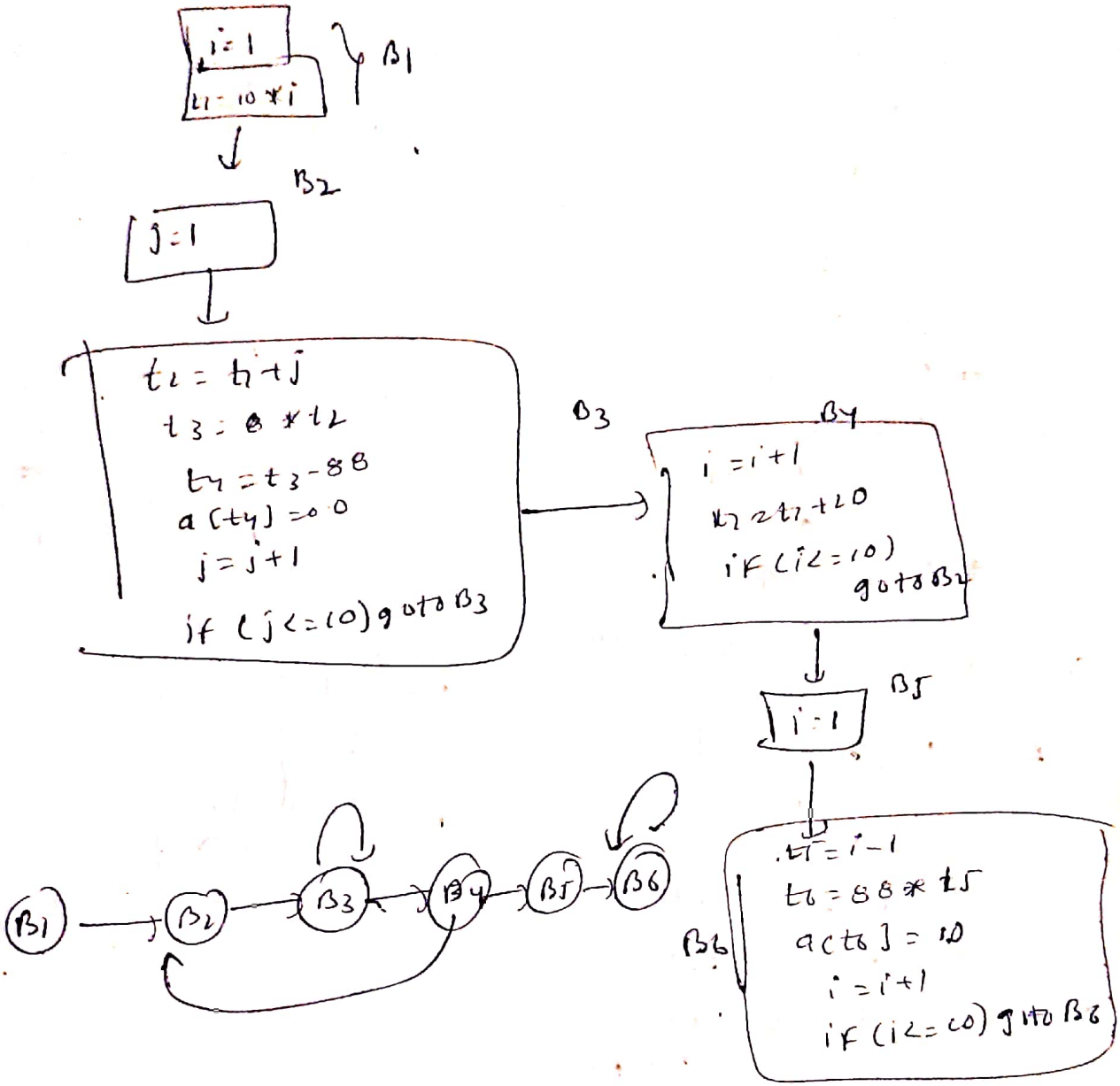
```
t5 = i - 1
t6 = 88 * t5
a[t6] = 1.0
i = i+1
if i <= 10 goto B6
```



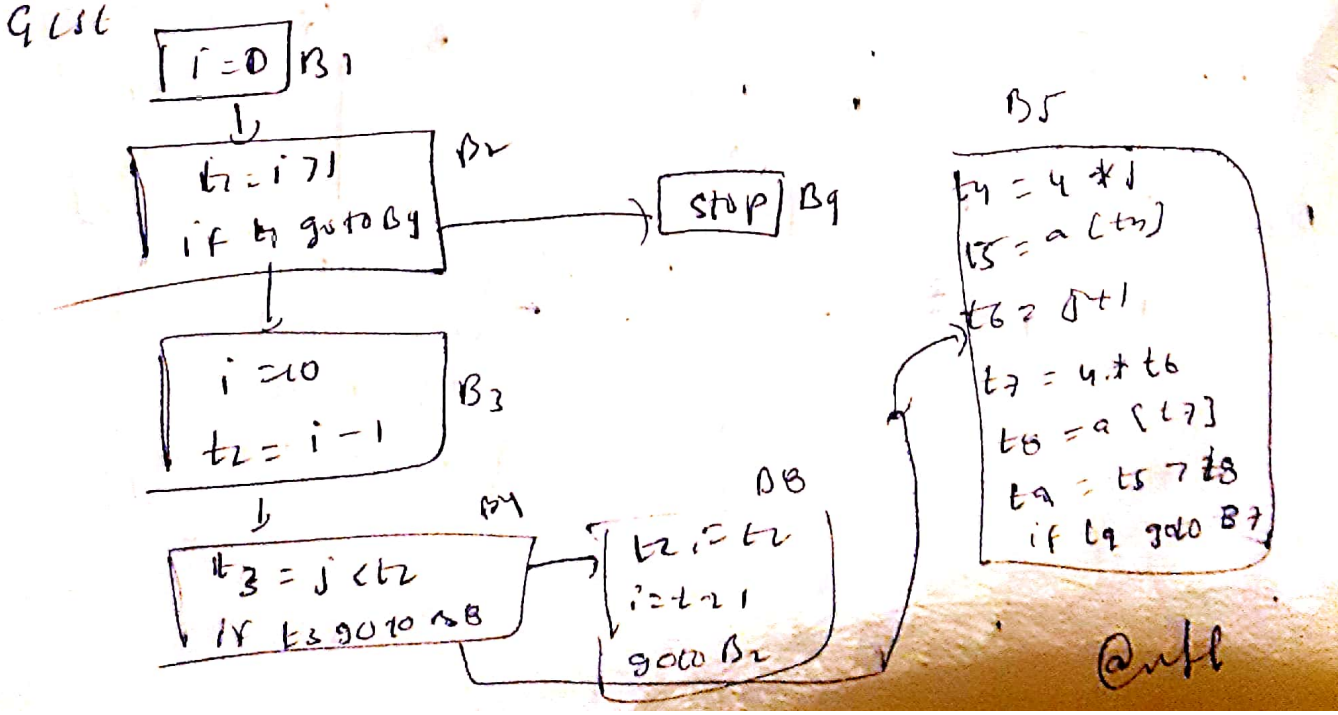
↳ LSt not seen
→ No copy propagation

loop variable not found

Induction vars after eliminating



3)



B6

t7 = a[t4]
t11 : a[t10]
temp : t11
t12 : t4
t13 = a + t12
t14 = t6
t15 = 4 * t14
t16 = a[t15]
* t13 = t16
t17 = t6
t18 = 4 * t17
t19 = a + t18
* t19 : temp

B7

t20 = t6
i = t20
goto B4

B7 →

B1, B2, B3, B7, B6
B6, B3
Total

Gest of copy propogation

B6 → t10 = a[t4]
temp = t11
t13 = a + t4
t16 = a[t7]
t16 = a[t2]
* t13 : t16
* t19 = a + t7
* t19 = temp

B7 → i = t6
goto B4

B8 → i = t6
goto B2

after IV elimination

B1 → i = 0
s2 = i - 1

B3 → j = 0, t2 = i - 1
s4 = 4 * j
s6 = j + 1
s7 = s4 + y

B4 → s2 = t2 * 4
t3 = s4 < s2
if t3 goto B8

B5 → t5 = a[s4]
t8 = a[s7]
t9 = t5 > t8
if t5 goto B7

B7 → s4 = s4 + 4
s7 = s7 + 4
goto B4

@nfl

I. v detection