

ASSIGNMENT - 8 COMPILERS

(Ish Agarwal, 18CS30021)

Q1) The leaders are:

→ 100 : $n = 10$

~~100~~ 101 : $i = 0$

→ 102 : if $i < n$ goto 106

→ 103 : goto 118

→ 104 : $i = i + 1$

105 : goto 102

→ 106 : $t1 = i \ll 2$

107 : $t2 = a[t1]$

108 : $t3 = t2 \% 2$

109 : if $t3 \neq 0$ goto 114

→ 110 : $t4 = i \ll 2$

111 : $t5 = c + t4$

112 : $*t5 = 0$

113 : goto 104

→ 114 : $t6 = i \ll 2$

115: $t7 = c + t6$

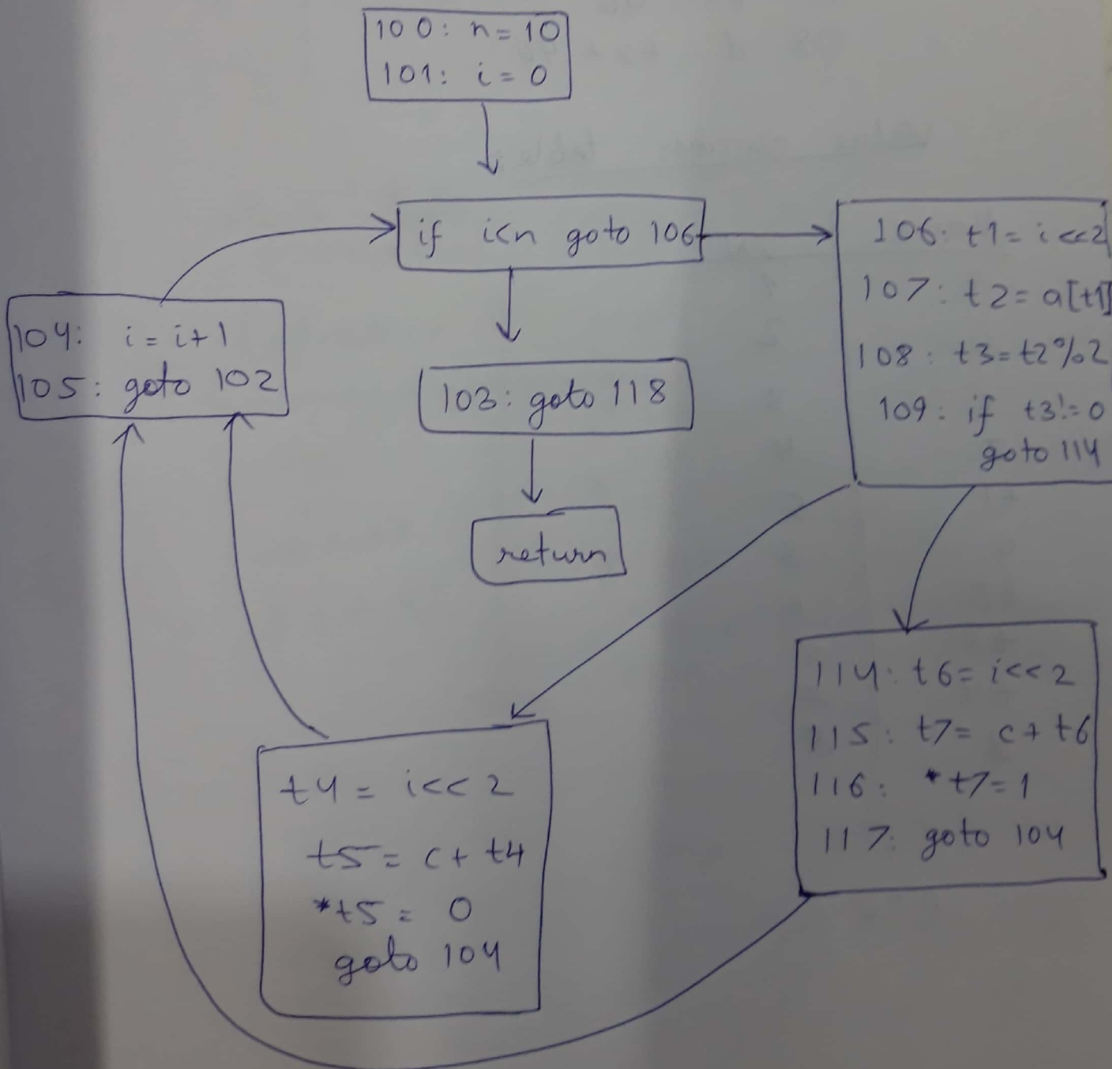
116: $*t7 = 1$

117: goto 104

118: return

~~Hence~~

Hence the basic blocks and control flow graph is:



Q2) After numbering:

01. $a = 10$

02. $b = 20$

03. $t1 = i * j$

04. $t2 = 10 + t1$

05. $i = 1$

06. $t3 = t1$

07. $t4 = 40$

08. $d = t2 + 40$

∴ Value number table :

Name	VN
a	1
b	2
i	3
j	4
t1	5
c	3
t2	6
t3	5
t4	7
d	8

P T O

Name table:

Index	Name	Val
1	a	10
2	b	20
3	i, c	
4	j	
5	t1, t3	
6	t2	
7	t4	40
8	d	

Hash table:

Expression	V.N
	5
$i * j$	6
$10 + t1$	8
$t2 + 40$	