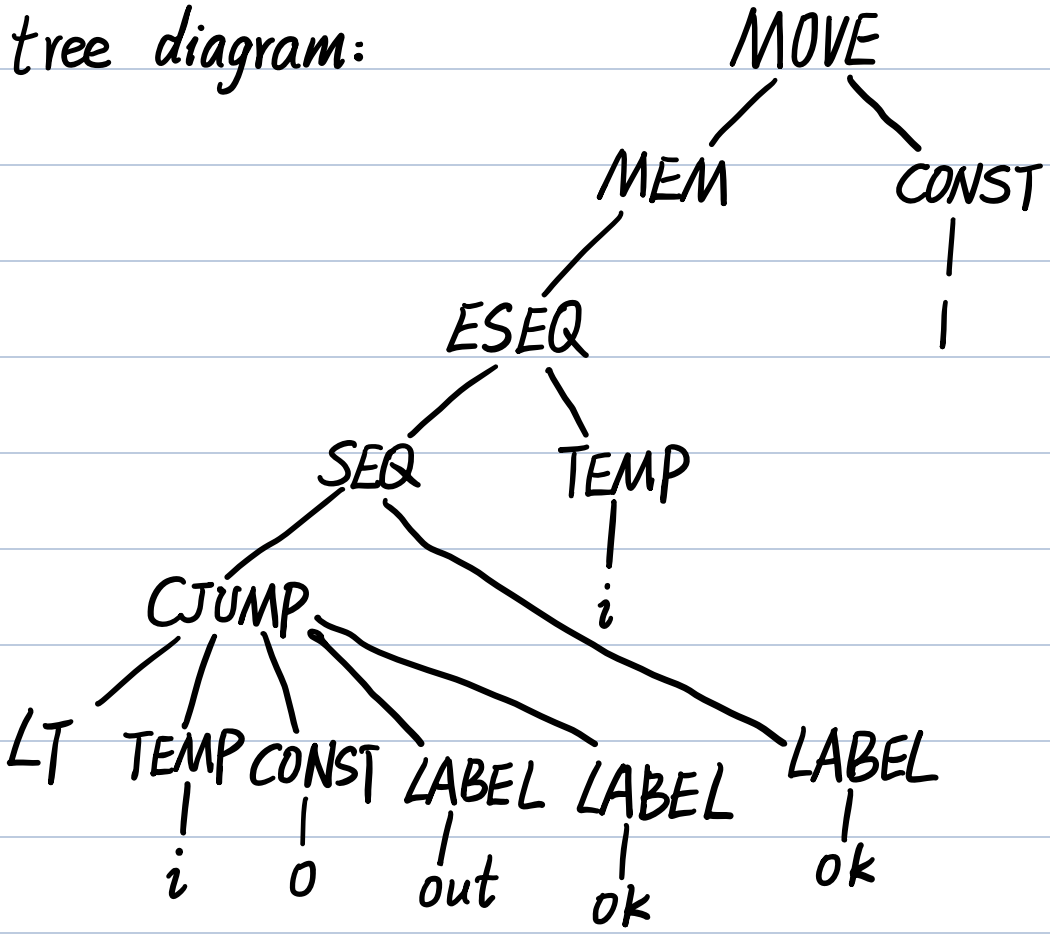
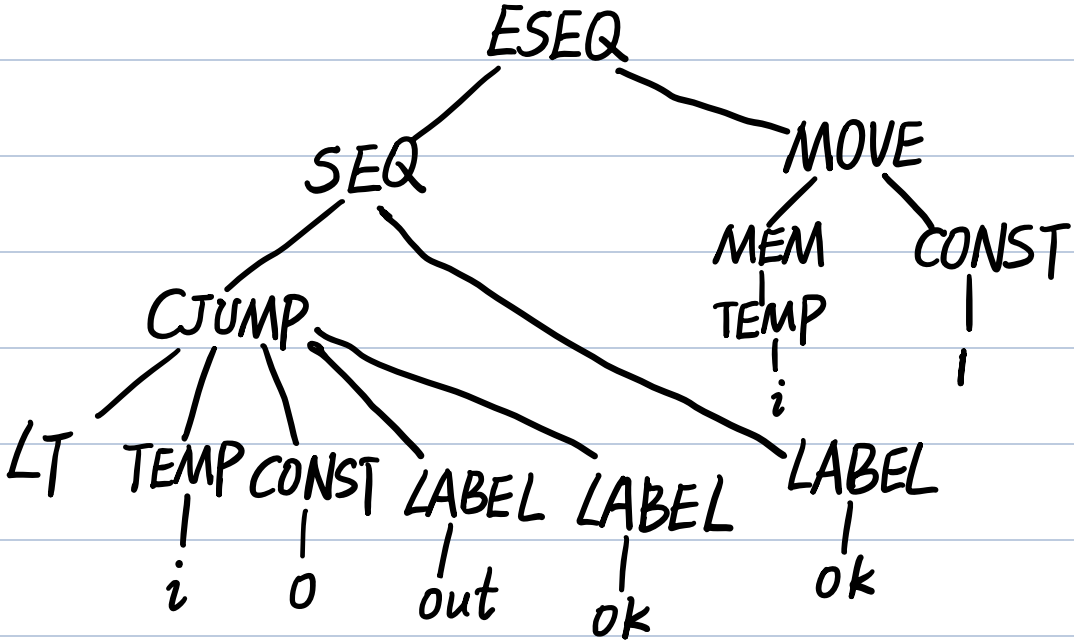
8.2

a. tree diagram:

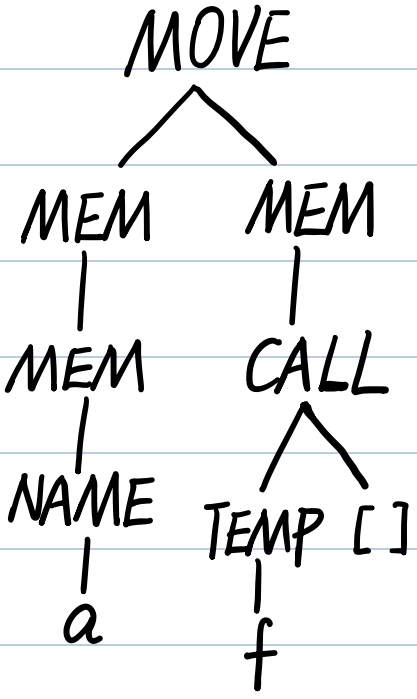


apply rules:

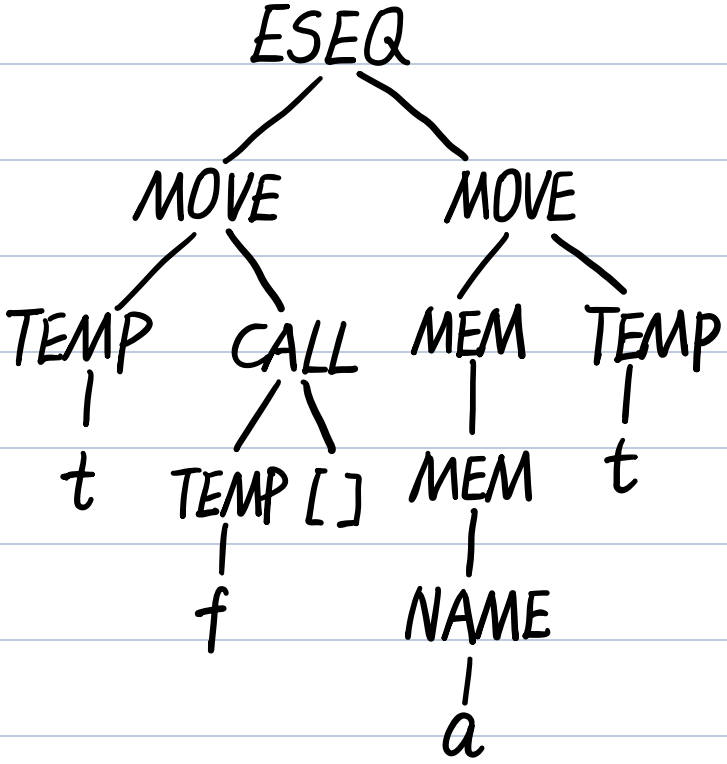


∴ ESEQ(SEQ(CJUMP(LT, TEMP i, CONST 0, LABEL out, LABEL ok), MOVE(MEM(TEMP i), CONST 1))

b. tree diagram:

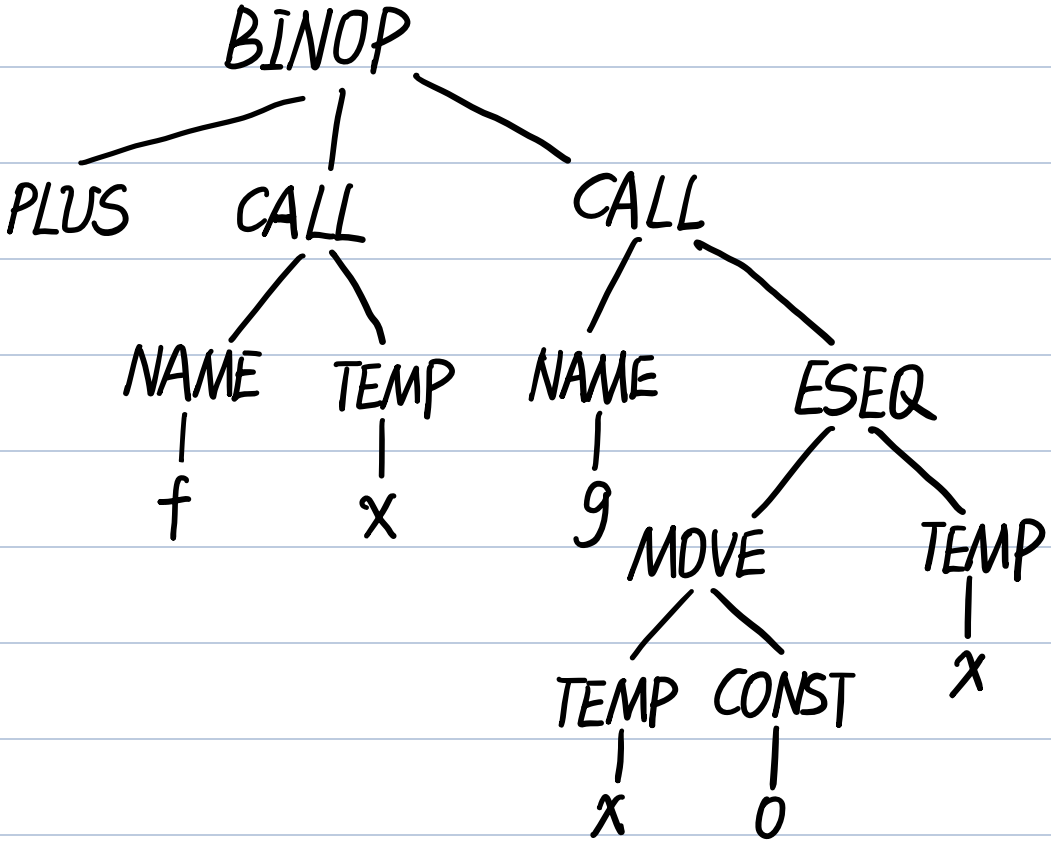


apply rules:

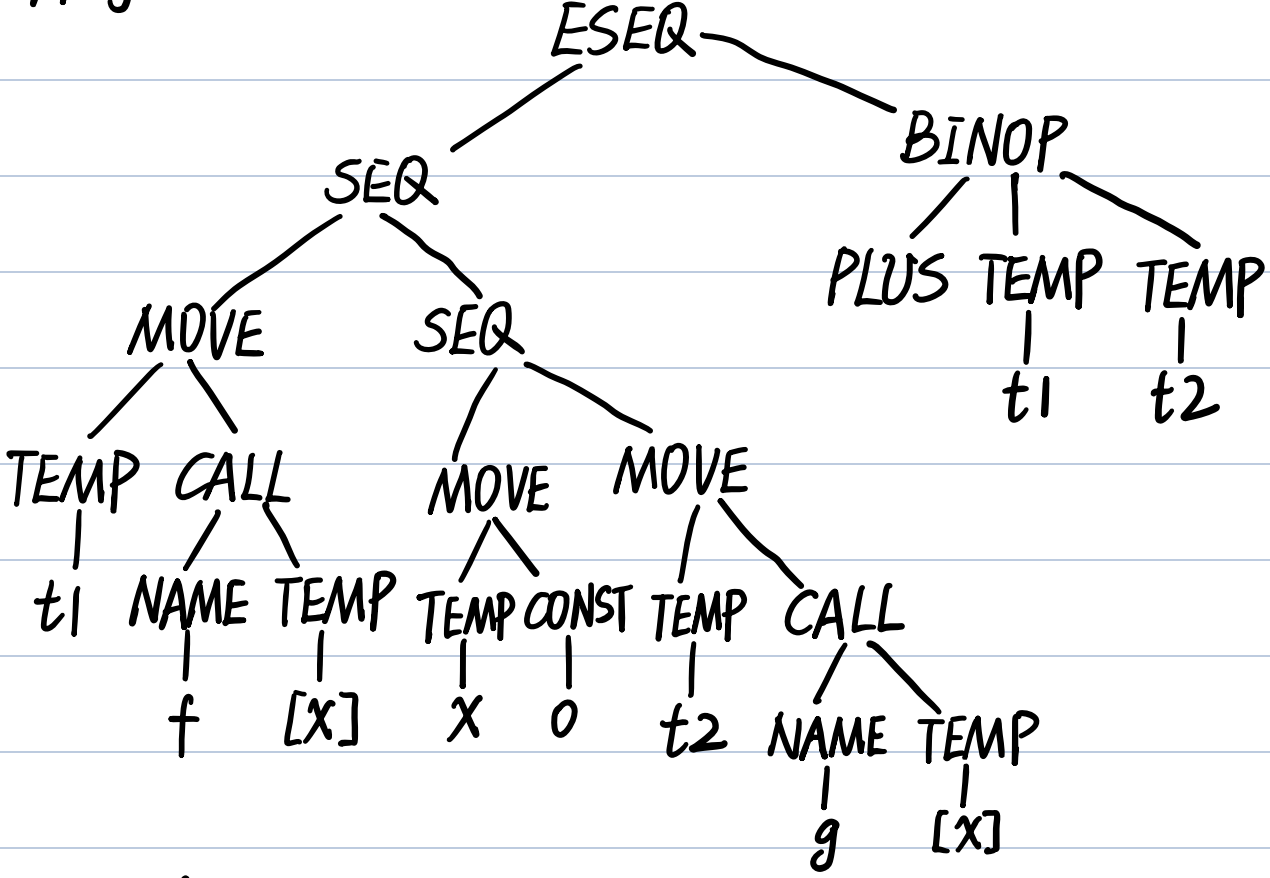


$\therefore$ ESEQ (MOVE(TEMP t, CALL(TEMP f, [])),
MOVE (MEM(MEM(NAME a)), TEMP t))

c. tree diagram:



apply rules:



∴ ESEQ(SEQ(MOVE(TEMP t1, CALL(NAME f, TEMP[x])),
SEQ(MOVE(TEMP x, CONST 0), MOVE(TEMP
t2, CALL(NAME g, TEMP[x])))),
BINOP(PLUS, TEMP t1, TEMP t2))

8.6

```
1   m ← 0
2   v ← 0
3   if v ≥ n goto 15
4   r ← v
5   s ← 0
6   if r < n goto 9
7   v ← v + 1
8   goto 3
9   x ← M[r]
10  s ← s + x
11  if s ≤ m goto 13
12  m ← s
13  r ← r + 1
14  goto 6
15  return m
```

1、2 block①
3 block②
4、5 block③
6 block④
7、8 block⑤
9、10、11 block⑥
12 block⑦
13、14 block⑧
15 block⑨

8.7 ① LABEL(Begin)
MOVE(TEMP m, CONST 0)
MOVE(TEMP v, CONST 0)
② LABEL(CompareofV)
CJUMP(GE, v, n, Exit, a)
③ LABEL(a)
MOVE(TEMP r, TEMP v)
MOVE(TEMP s, CONST 0)
④ LABEL(CompareofR)
CJUMP(LT, r, n, c, b)
⑤ LABEL(b)
MOVE(TEMP v, BINOP(PLUS, TEMP v, CONST 1))
JUMP(CompareofV)
⑥ LABEL(c)
MOVE(TEMP x, MEM(TEMP r))
MOVE(TEMP s, BINOP(PLUS, TEMP s, TEMP x))
CJUMP(LE, s, m, e, d)
⑦ LABEL(d)
MOVE(TEMP m, TEMP s)
⑧ LABEL(c)
MOVE(TEMP r, BINOP(PLUS, TEMP r, CONST 1))
CJUMP(CompareofR)

⑨ LABEL(Exit)
RETURN(m)

Trace:
Block ①→②→③→④→⑤
Block ⑥→⑦→⑧
Block ⑨