Flowcharts of Pass1 & Pass2

pass 1   Macro Definition

initialize $(MDTC, MNTC \leftarrow 1)$

@ → read card

MACRO op ? — no → copy of source card → END ? — yes → [goto pass 2]

no (END loop back to read card)

yes ↓

read card
(macro name line)

$MNT(MNTC) \leftarrow MDTC,$ macro name

MNT   macro name
MDTC   pointer
$(MNTC \leftarrow MNTC + 1)$

→ prepare ALA & MDT
macro name
$(mdtc \leftarrow mdtc + 1)$

$MDT(MDTC) \leftarrow$ s/c line

→ read card → macro body

$MDTC \leftarrow MDTC + 1$

→ MEND ?

no → (loop back to read card)

yes ↑ @
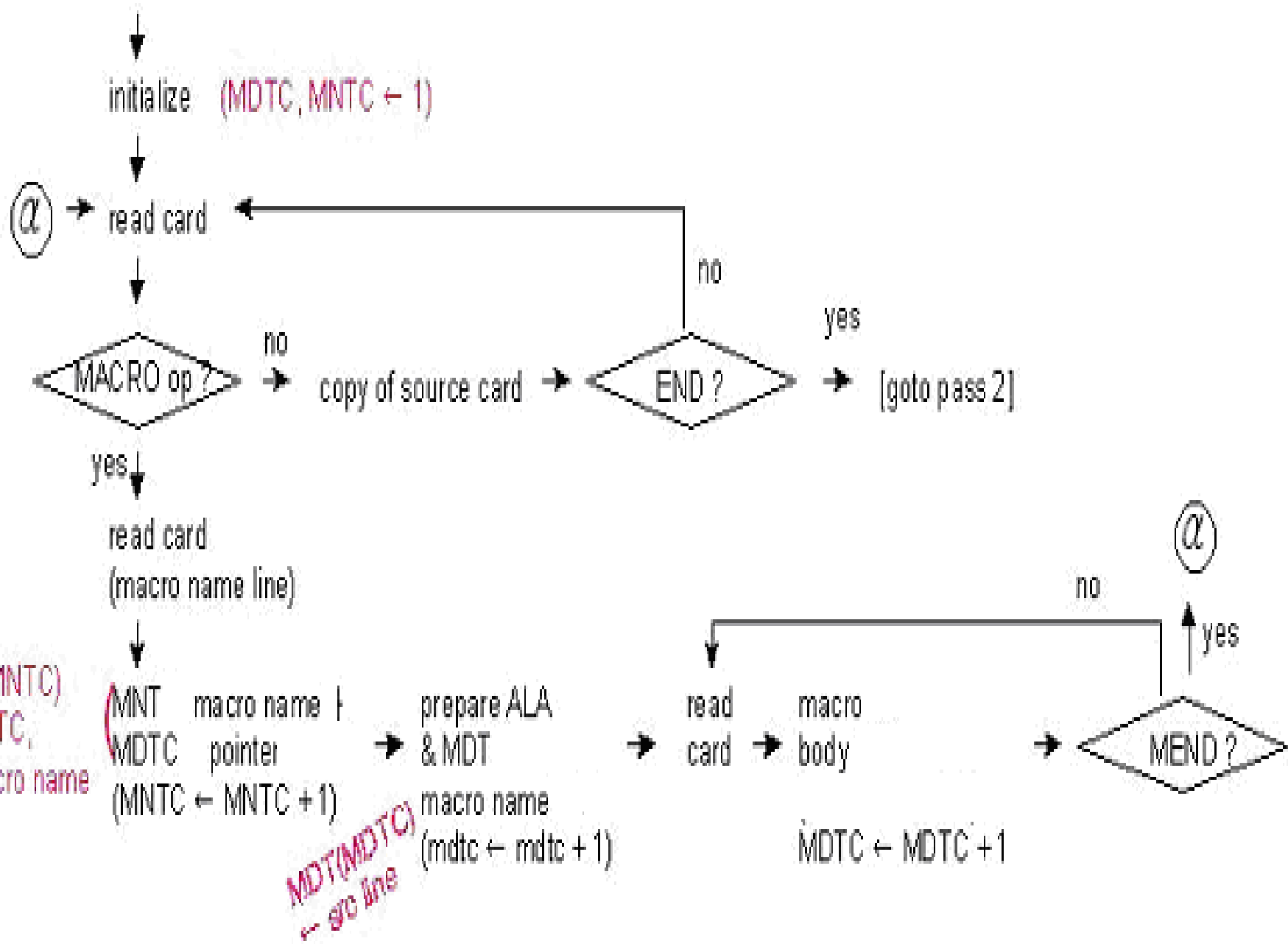
pass 2   Macro calls & expansion

(A) → read card   (from pass1)

↓

MNT

↓

MACRO name found ? —no→ expanded source에 첨가 → END ? —yes→ [goto assembler]

MNTC found

yes ↓

MDTP ← MDT index   (MNT(MNTC). index)

↓

ALA   set up (# i ↔ argument)

MDTP ← MDTP +1 → . MDT . arg.   line get ←
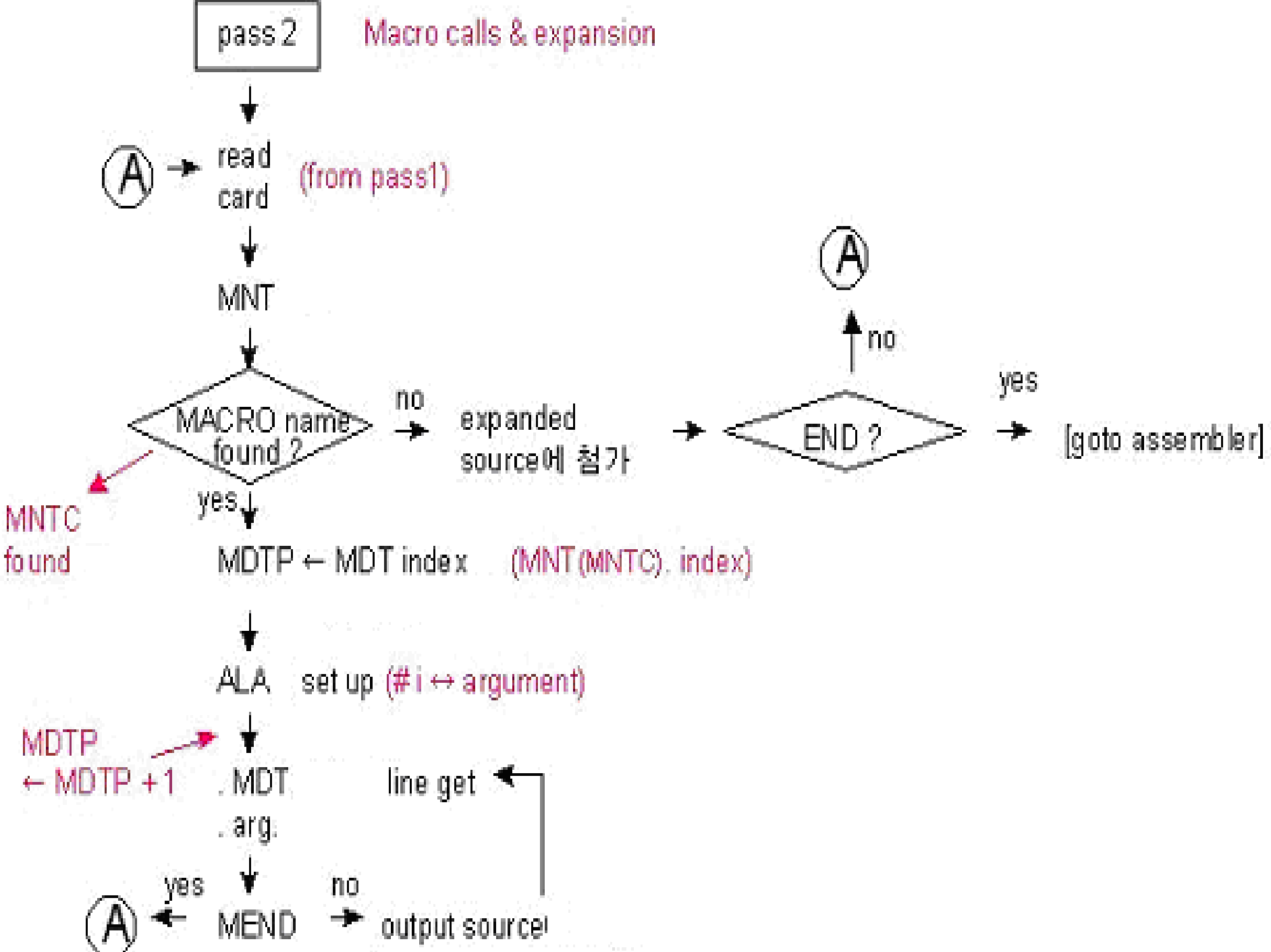
↓

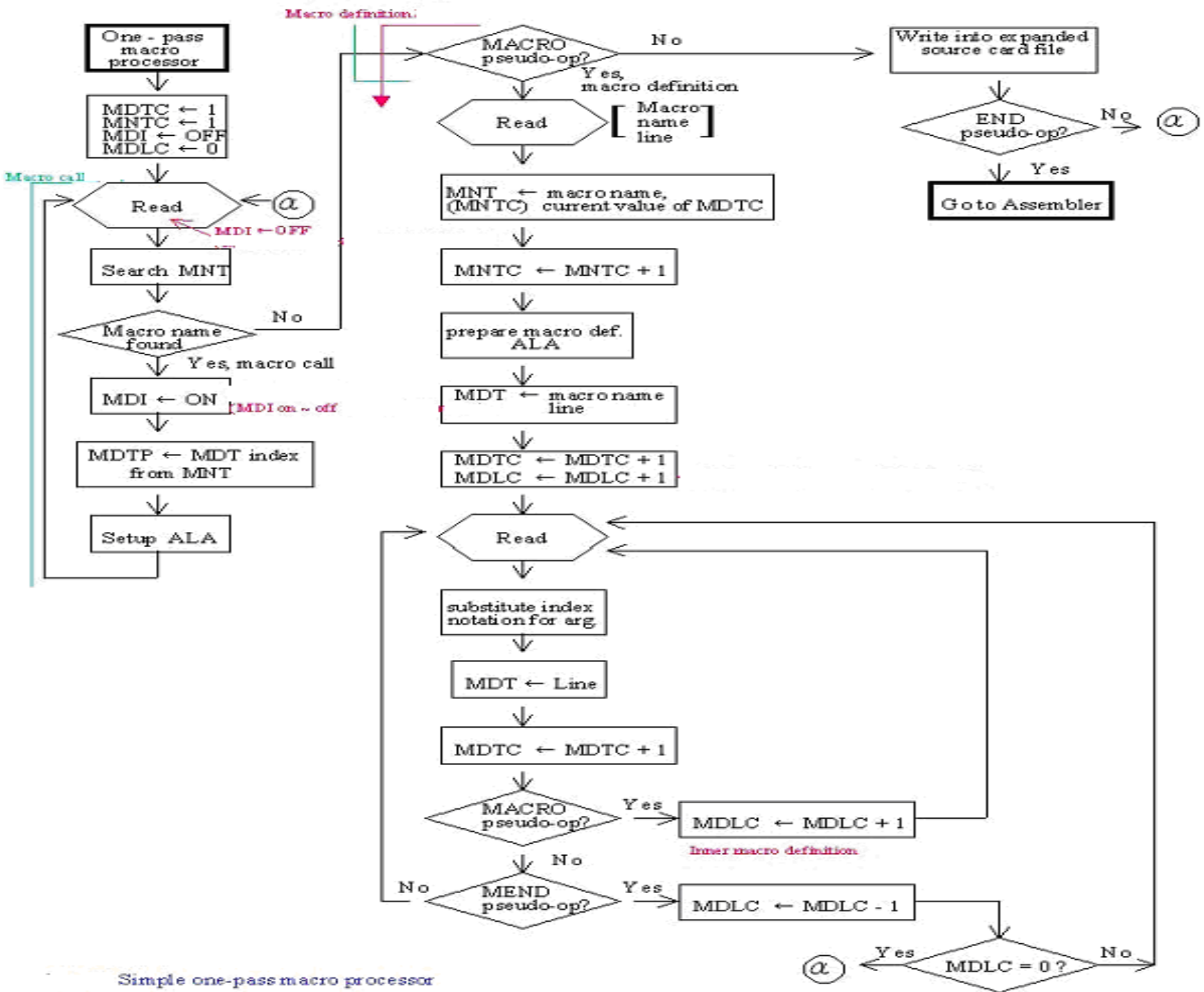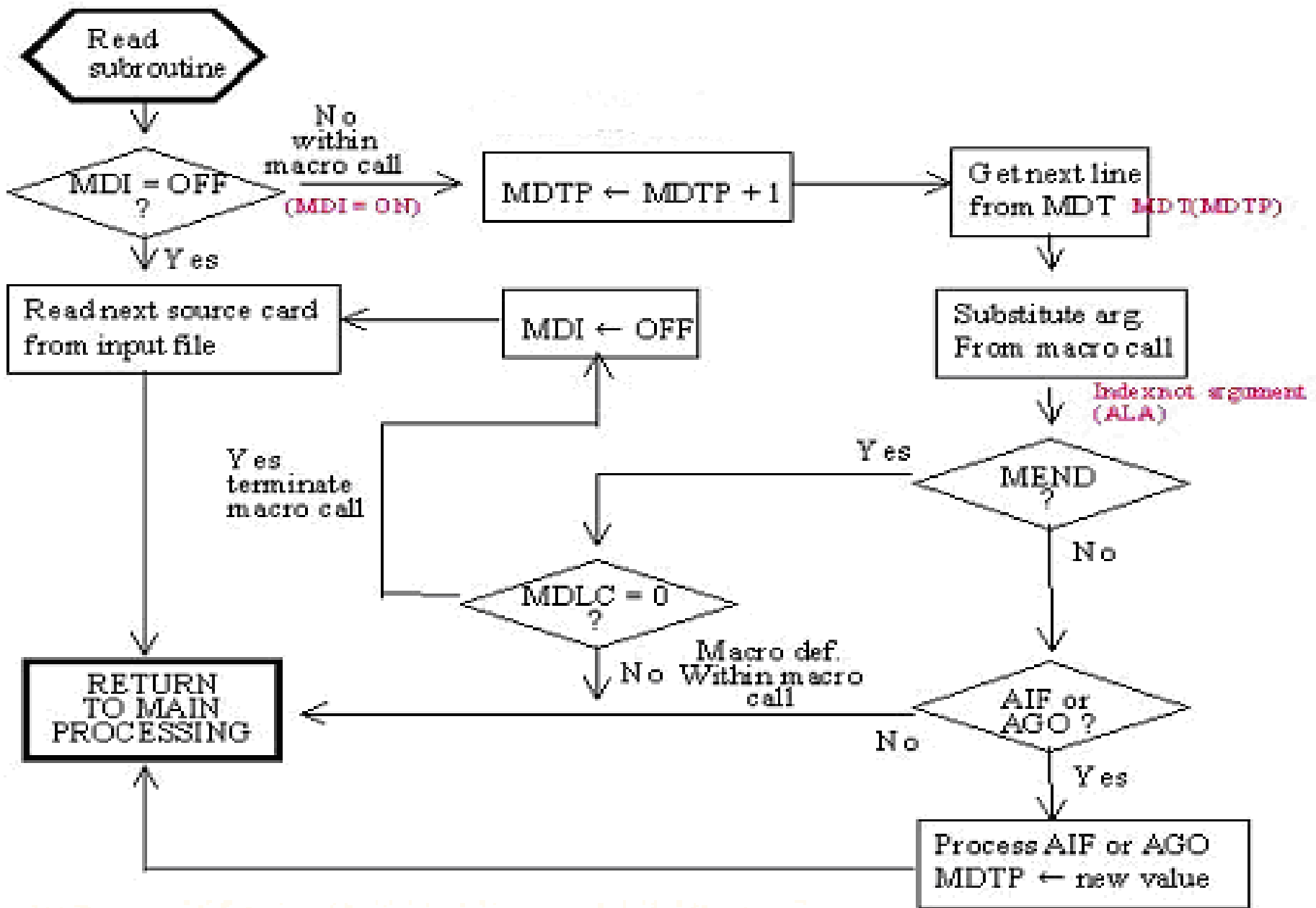(A) ←yes— MEND —no→ output source!

no ↑ (A)

Extra variables

◆ Two new variables

MDI – Macro definition input – it is on during expansion of macro, otherwise off.

MDLC- Macro definition level counter- increased by 1 when MACRO is encountered and decreased by 1 when MEND is encountered

Simple one-pass macro processor

Read subroutine

MDI = OFF ?

No within macro call (MDI = ON)

MDTP ← MDTP + 1

Get next line from MDT MDT(MDTP)

Yes

Read next source card from input file

MDI ← OFF

Substitute arg From macro call

Index not argument (ALA)

Yes

MEND ?

No

Yes terminate macro call

MDLC = 0 ?

Macro def. No Within macro call

RETURN TO MAIN PROCESSING

AIF or AGO ?

No

Yes

Process AIF or AGO MDTP ← new value

Detail of READ function used for macro expansion