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TE01
KI

Assignment 03

Title: Pass 1 of a two pass macro processor

Problem statement: Design suitable data structures and implement pass 1 of macro processor using OOP in Java.

Objective:

- I. Understand internals of language translators.
- II. Handle tools like YACC, LEX
- III. Understand OS internals and functionalities.

Outcomes:

Student will be able to

- I. Identify and create MDT, MNT
- II. Pass parameters to macro
- III. To separate macros from main program.

Requirements:

- OS: Windows 10 64 bit
- IDE: Eclipse
- language: Java.

Teacher's Signature

Theory:

Macros enable programmer to create modules (macros) and reuse them. Macro calls are expanded with the macro definition while macro processing.

Task done by macro processor:

1. Recognize macro definition
2. Save macro definition, recognize macro calls.
3. Expand macro calls.

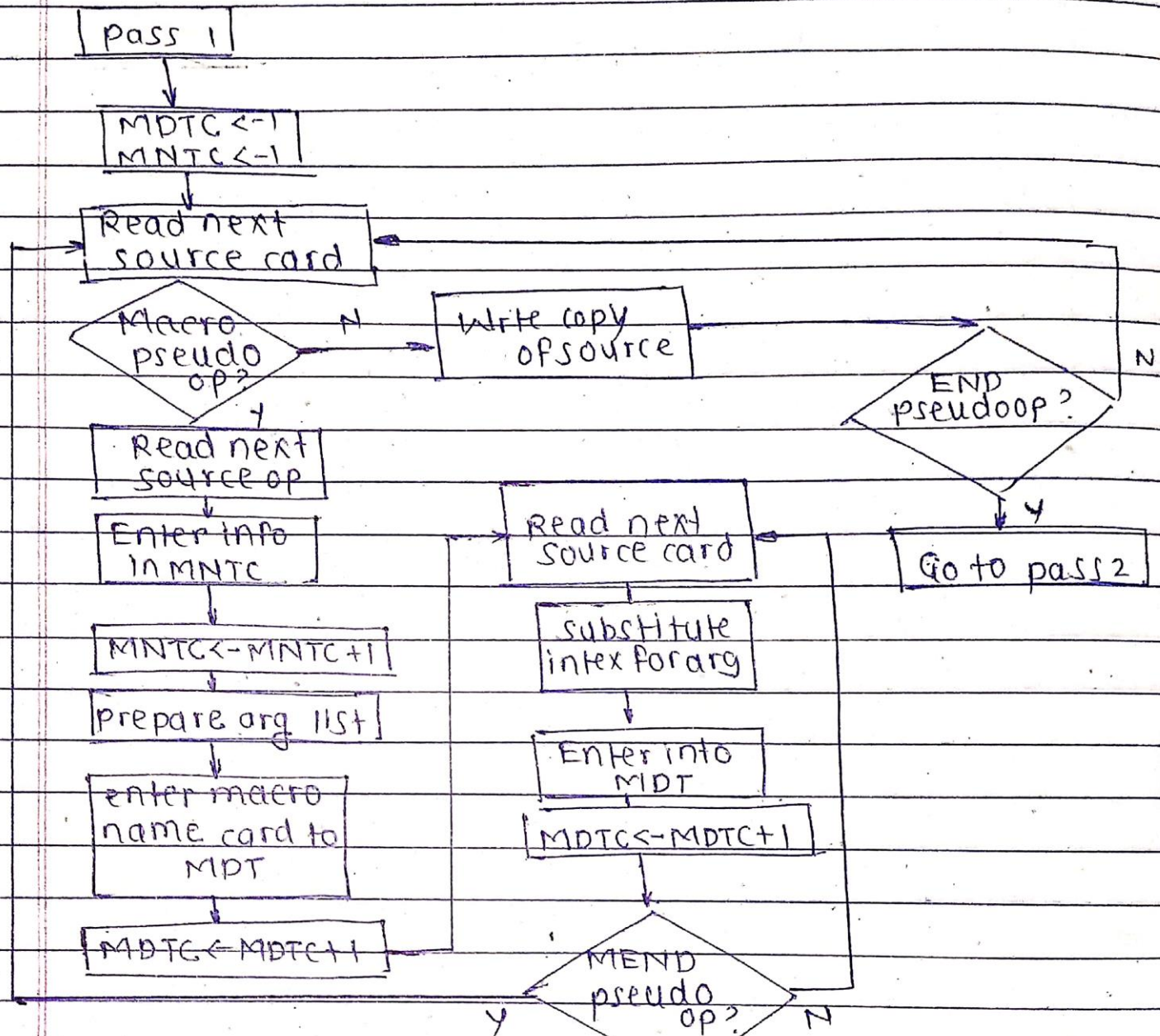
Tasks done in pass 1:

- i. Recognize macro definition
- ii. Save macro definition (MDT, MNT, ALA)
- perform AD processing
- iii. create intermediate code.

Algorithm:

- i. Read .asm file (in implementation.txt)
- ii. create MNT and MDT
- iii. create ALA
- iv. Create intermediate code file

Flowchart



pass 1 of 2 pass macro processor

Conclusion:

Pass 1 of two pass macro processor was implemented successfully using OOP concepts in Java.

input.txt

```
START
MACRO
INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
MEND
MACRO
PVG &ARG2 &ARG1
SUB AREG &ARG2
MOVER CREG & ARG1
MEND
INCR
DECR
DATA2
END
```

powershell

*****PASS-1 MACROPROCESSOR*****

MACRO NAME TABLE (MNT)
i macro loc

1 INCR 1
2 PVG 5

ARGUMENT LIST ARRAY(ALA) for Pass1

0 &ARG3
1 &ARG2

MACRO DEFINITION TABLE (MDT)

```
INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
MEND
PVG &ARG2 &ARG1
SUB AREG #1
MOVER CREG & ARG1
MEND
```

input.txt input.txt

```
START
MACRO
INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
MEND
INCR
DECR
DATA2
END
```

powershell

*****PASS-1 MACROPROCESSOR*****

MACRO NAME TABLE (MNT)

i macro loc

1 INCR 1

ARGUMENT LIST ARRAY(ALA) for Pass1

0 &ARG3

MACRO DEFINITION TABLE (MDT)

```
INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
MEND
```

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