TWO PASS MACROPROCESSOR

DEFINITION AND ALGORITHM

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- Specification of Problem
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SPECIFICATION OF PROBLEM

- In Pass-I the macro definitions are searched and stored in the macro definition table and the entry is made in macro name table
- In Pass-II the macro calls are identified and the arguments are placed in the appropriate place and the macro calls are replaced by macro definitions.

SPECIFICATION OF DATABASES

Pass 1:-

- The input macro source program.
- The output macro source program to be used by Pass2.
- Macro-Definition Table (MDT), to store the body of macro def^{ns}.
- Macro-Definition Table Counter (MDTC), to mark next available entry MDT.
- Macro- Name Table (MNT) - store names of macros.
- Macro Name Table counter (MNTC) - indicate the next available entry in MNT.
- Argument List Array (ALA) - substitute index markers for dummy arguments before storing a macro-def^{f}.

SPECIFICATION OF DATABASES

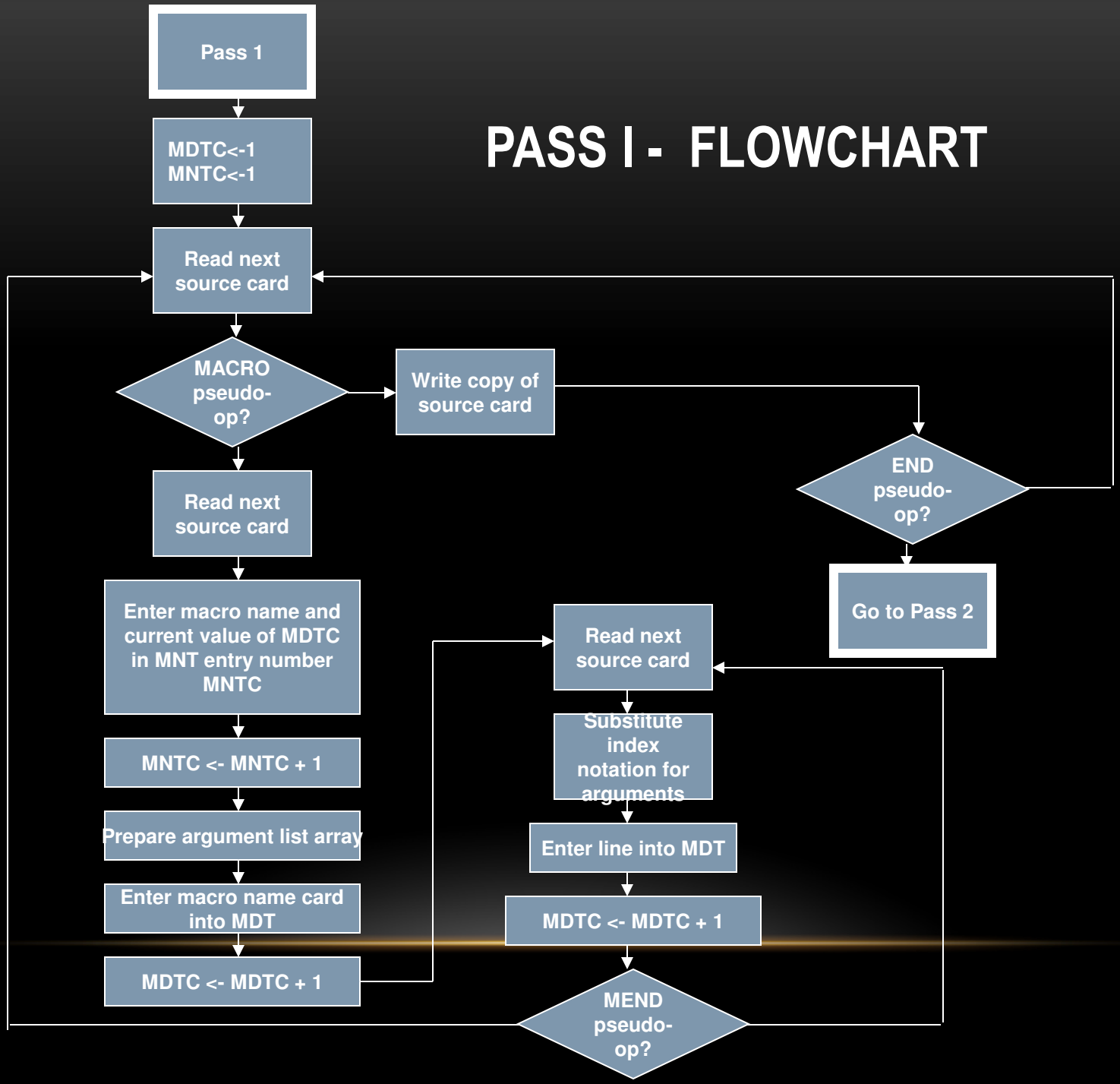
Pass 2:-

- The input is from Pass1.
- The output is expanded source to be given to assembler.
- MDT and MNT are created by Pass1.
- Macro-Definition Table Pointer (MDTP), used to indicate the next line of text to be used during macro-expansion.
- Argument List Array (ALA), used to substitute macro-call arguments for the index markers in the stored macro-def^{ns}

PASS I - ALGORITHM

- Pass1 of macro processor makes a line-by-line scan over its input.
- Set MDTC = 1 as well as MNTC = 1.
- Read next line from input program.
- If it is a MACRO pseudo-op, the entire macro definition except this (MACRO) line is stored in MDT.
- The name is entered into Macro Name Table along with a **pointer to the first location of MDT entry of the definition**.
- When the END pseudo-op is encountered all the macro-def^{ns} have been processed, so control is transferred to pass2

PASS I - FLOWCHART



PASS II - ALGORITHM

- This algorithm reads one line of i/p prog. at a time.
- for each Line it checks if op-code of that line matches any of the MNT entry.
- When match is found (i.e. when call is pointer called MDTF to corresponding macro def^{ns} stored in MDT.
- The initial value of MDTP is obtained from MDT index field of MNT entry.
- The macro expander prepares the ALA consisting of a table of dummy argument indices & corresponding arguments to the call.

PASS II - ALGORITHM

- Reading proceeds from the MDT, as each successive line is read, The values form the argument list one substituted for dummy arguments indices in the macro def^{n}.
- Reading MEND line in MDT terminates expansion of macro & scanning continues from the input file.
- When END pseudo-op encountered , the expanded source program is given to the assembler

PASS II - FLOWCHART