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Panel - 1

Page No.:

MIT WPU

SSC Theory

Assignment No. : 1

Q1] Construct an algorithm for Pass 1 of a 2 Pass Assembler.

Ans : ALGORITHM

1. Loccnt = 0
2. While next statement is not an end statement.
3. IF label is present then
4. This label = symbol in label field
5. IF an LTOG statement then

- i. Process literals LITTAB [pool tab - ptr] ... [ptr - 1] to accurate memory and put address field update Loc - cnt
- ii. Pool tab - ptr = pooltab ptr + 1
- iii. Pool tab [pool tab - ptr] = 1; if tab - ptr;

6. Enter (this label, loc cnt) in SYMTAB

7. IF start or origin statement then
Loc - cnt = Value in operand field

8. IF an EQU statement then
this address value of <address 3 per>;
update the symtab entry.

9. IF an declaration stmt then
code = code of declaration stmt,
size = size of reg. by DC / DS
update SYMTAB entry
 $loc_cntx = loc_cntx + size;$

10. IF an imperative stmt then
code = m/c code from MOT, $loc_cntx = loc_cntx + \text{length of instr.}$

11. IF operand is literal then
This. literal = literal in operand field
LITTAB [littab - ptr] = This - lit.
 $littab_ptr = littab_ptr + 1$
else This. entry = SYMTAB entry no. of operand
 $syntab_ptr = syntab_ptr + 1$

Q2] Summarize the problem of forward references in the design of assembler. List the different errors handled by 2 pass assembler.

Ans : 1. Rule for an assembly program states that the symbol should be declared somewhere in the program.

2. But in some cases there may be chances of using symbol prior to its definition which give rise to forward reference problem.

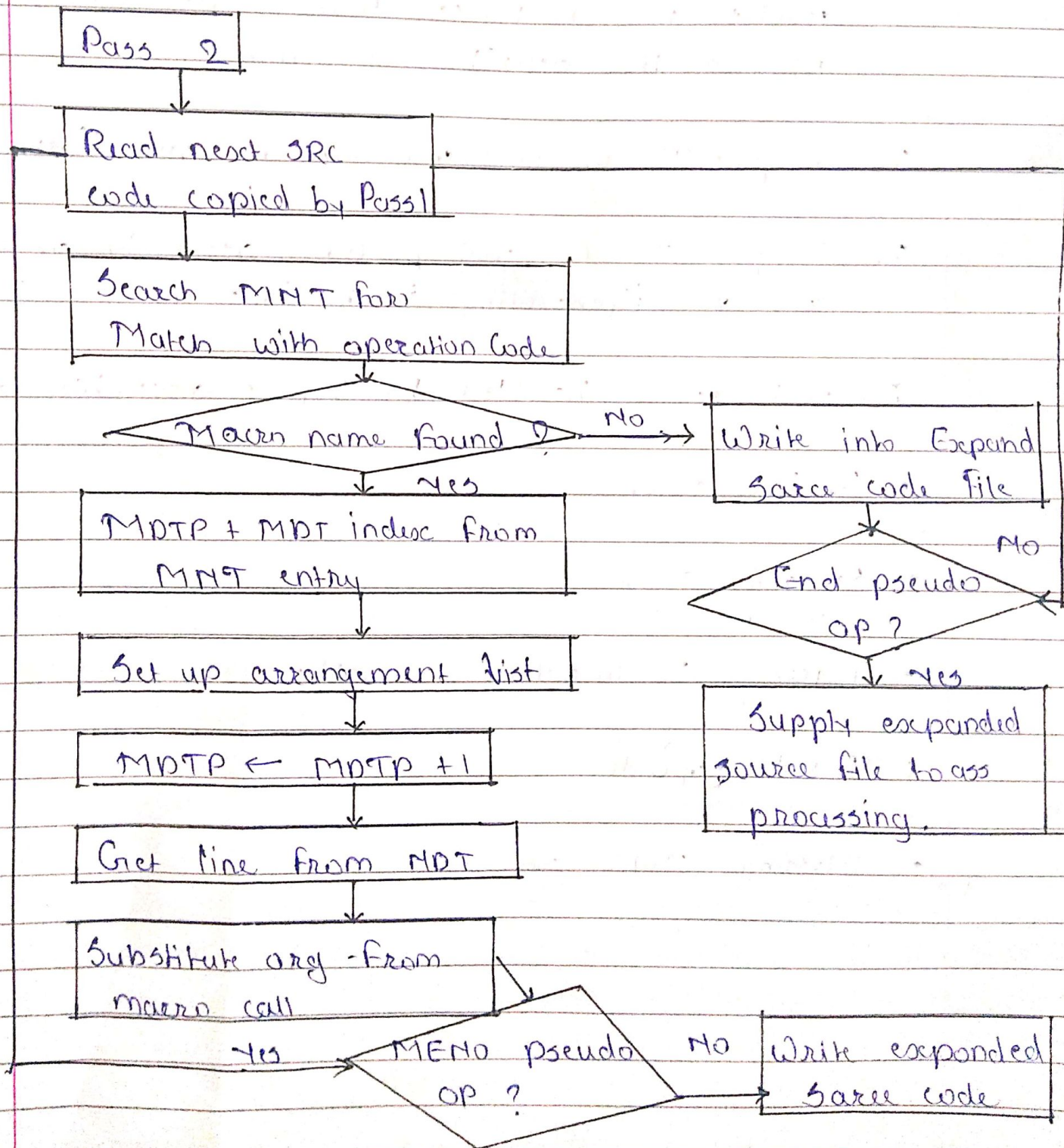
3. Due to this problem, assembler, went to be able to assemble the instruction and such problem is called forward of reference problem.
4. The solution for forward references problem is designing an assembler with 2 passes. It creates no. of passes that is necessary to process the definition of symbols.
5. In pass I we find out symbols and literals.
6. In pass II we will perform assembly of code and data (generating instruction of data).

Different errors handled by 2 pass assembler are:

- Syntax error
- Semantic error
- Reference to undefined variables.
- Invalid opcode
- Missing START or END.

Q3] Design the flowchart for Pass II of 2 pass assembler

Ans: MDT - Macro Defined Table
MNT - Macro Name Table
MDTP - Macro Definition Table Pointer



Q4. Explain the different type of arguments used with macro by giving example of each.

Ans: The different types of arguments used with macros are :-

- Positional arguments.
- Keyword arguments.
- Default arguments.
- Mixed arguments.

POSITIONAL ARGUMENTS — Copying actual parameter in place of formal parameter during macro call according to position.

eg. MACRO

M1, &P1, ~~&P1~~, of P2, of P3
MEND
Call — M1

BREG, A, B actual parameters written while macro is called.

KEYWORD PARAMETERS — Here the position of the parameter does not matter, they always end with '=' sign. While calling write the formal parameter along with actual parameter.