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2nd Assignment

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Aim :- To design data structure for pass 2 assembler

Problem stat :- Implement Pass II of 2 pass assembler for Pseudo mic in Java using object using feature. The o/p of assignment I should be input for this assignment

Theory :-

① Two pass assembler :-
- Performs 2 passes over the source program
- In 1 pass reads the entire source prog looking only for labels defination
- All labels are collected assigned address and placed in sym table in this pass
- In 2 pass the instruction are again read & assembled using symbol table
- Assembler goes line by line and generate mic code for that line

② Data Structure :-

① Location counter (LC)
Points to the next location where the code will be placed

② opcode translation table
Contains symbolic instruction their length and their opcodes.

③ Symbol table (ST)
contain lables and their values.

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④ String Storage buffer :-
Contains ASCII characters for string

⑤ Forward refrence table (FRT)
contains ptr to string in SSB and offset where its value will be inserted in the obj code

③ Algorithm :-

```
begin
    if starting address is given
        LOCCTR = starting address;
    else
        LOCCTR = 0;
    while OPCODE != END do ;    or EOF
        begin
        read a line from the code
        if there is a label
            if this label is in SYMTAB then error
            else insert (label, LOCCTR) into SYMTAB
            search OPTAB for opcode
        if found
            LOCCTR += N ;  N length of instn.
        else if this is assembly directore
            update LOCCTR as director
        else error
        write line to immediate file.
        end
```

Conclusion :-
Thus we have machine code for the souce Program.