8875 | vpranaya
Te-Comps-A

Postlab

1. Explain the structure of symbol table in the pass I of 2 pass assembler with example.

→ A two pass assembler means more than one pass is used by assembler. Examples of the two pass assembler are IBM 360/370 processor.

The advantages of 2 pass assembler over single pass assembler are

i) It is used to eliminate forward reference problem.

ii) No. of passes are created in multi pass assembler to process the definition of symbols.

First pass tasks.

i) scans the code
ii) Validate the tokens
iii) Create symbol Table

Second pass tasks

i) Resolves forward reference problem
ii) converts the code to machine code.

P.T.O →

Pass 1

It looks for label definition and introduces them into the symbols and literals.

It defines the Symbols and literals.

a) It keeps the track of location counter (LC)

b) Determines the length of machine instruction (MOT)

c) Keeps the track of the values of symbols until pass 2 is done (ST)

d) Process some Pseudo-opcode e.g. EQU, DS, DC (POT)

e) Stores the literals. (LT)

Pass 2

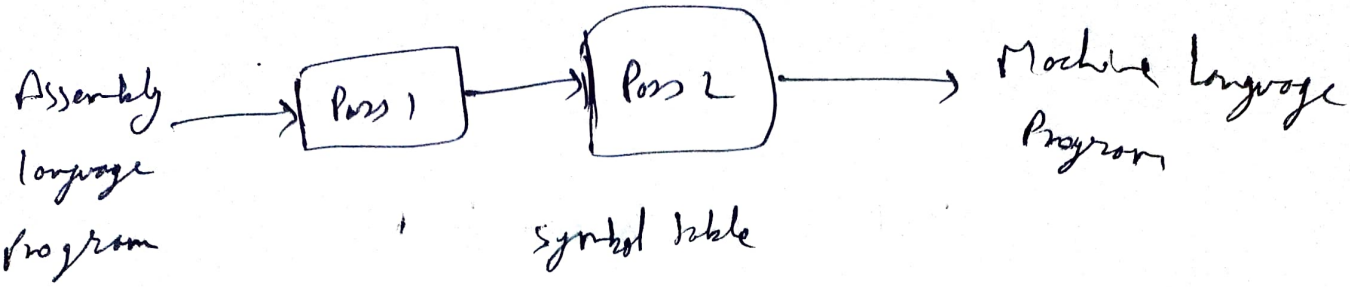
After the symbol table is completed in PASS1 it does the actual assembly by translating the operation and so on. The purpose of Pass 2 is to generate machine code.

a) It looks up the values of symbols (ST)

b) It generates the instructions (MOT)

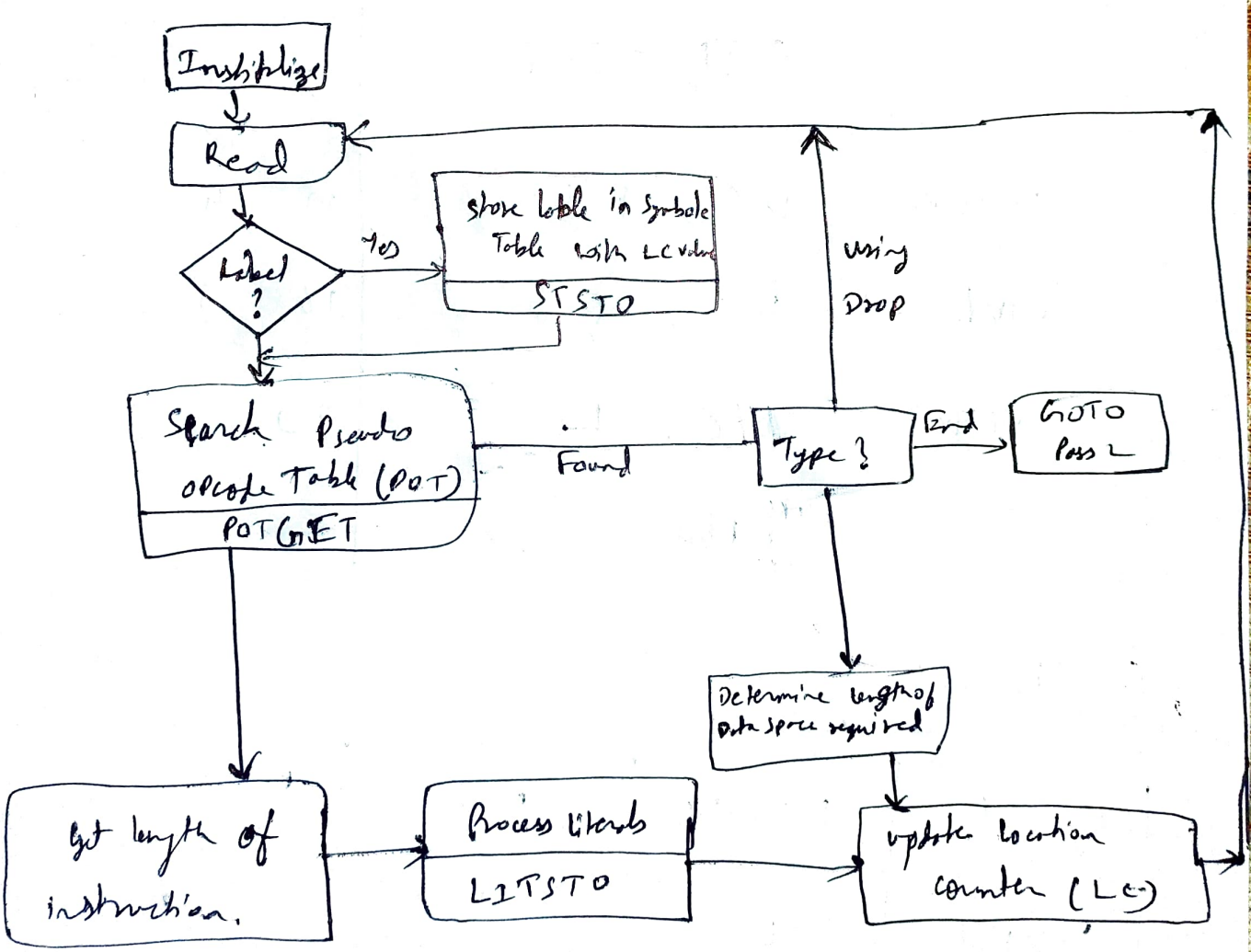
c) It generates the data (for DS, DC and literals)

d) Process some Pseudo-opcode. e.g. USING, DROP (POT)



A simple two pass Assembler.

Flow chart :-



Example

	SOURCE PROGRAM	FIRST PASS
JOHN	START 0	
	USING * , 15	
	L 1, FIVE	0 L 1, — (0,15)
	A 1, FOUR	4 A 1, — (0,15)
	ST 1, TEMP	8 ST 1, — (0,15)
FOUR	DC F'4'	12 4
FIVE	DC F'5'	16 5
TEMP	DC F	20 —
	END	

Symbol Table

Symbol	Level	Length	Relocate / Allocate
JOHN	0	1	R
FOUR	12	4	R
FIVE	16	4	R
TEMP	20	4	R