ASSIGNMENT: A04

→ Title: Pass II of a two pass Macroprocessor

→ Problem Statement:

write a Java program for pass II of a two pass macro processor. The output of assignment A03 (MNT, MDT and file without any macro definitions) should be input for this assignment.

→ objectives:

- understand macro expansion in pass II
- Replace formal parameters with actual parameters.
- understand the use of data structures developed in Macroprocessor Pass I

→ outcomes:

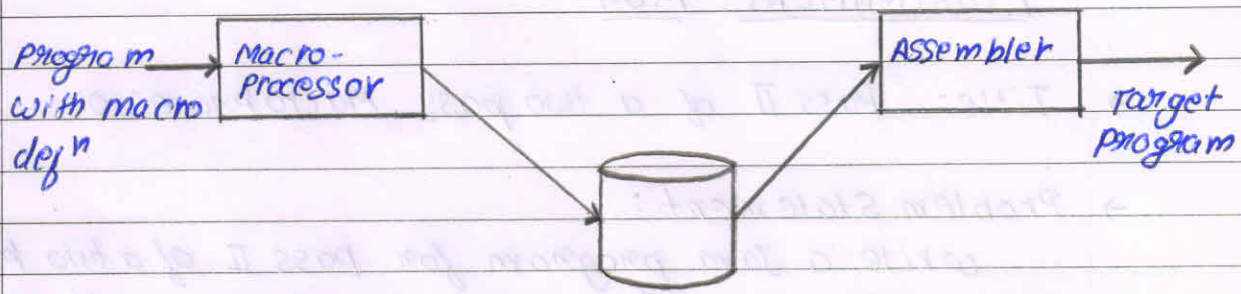
- Expand the macro call statements.
- Link the actual parameters with formal parameter
- Demonstrate the use of various data structures in pass II which are created in pass I

→ Software and hardware packages:

- Java SE 11, eclipse IDE
- operating System : ubuntu 18.04
- Processor : intel i5, 64 bit
- i/o devices

→ Theory:

Macroprocessor takes a source program containing macro definitions and macro calls and ~~transfors~~ translates into an assembly language program without any macro definitions or calls.



Macro allows a sequence of source language code to be defined once and then referred to by name each time it is referred, this name occurs in a program the sequence code is substituted at the point.

- Tasks in pass II of a two pass macro processor.
  - Recognize macro calls
  - use MNT, MDT and ALA to expand macro calls
  - create the output file.

- Algorithm of Pass II

i) Read the output code from Pass I (without macro def^n).
ii) Load MNT and MDT generated in pass I
iii) check the op code in the code file for Macro call.
   a) map formal and actual parameters for the macrocall
   b) replace actual paropeters in MDT definition for macro.
   c) replace macro call with replaced macro definition.
iv) create output file.

Each call to macro is replaced by its body during replacement, actual parameter is used in place of formal parameters.

→ Test Case:

	input	expected output	result
	CODE:		
	START 100	START 100	success.
	READ N1	READ N1	
	READ N2	READ N2	
	INCR N1,N2, REG=CREG	MOVER ·CREG ,N1	
	STOP	ADD CREG, N2	
	N1 DS 1	MOVEM ·CREG, N1	
	N2 DS 1	STOP	
	END	N1 DS 1	
		N2 DS 1	
	MDT:	END	
0	INCR &X, &Y, &REG=AREG		
1	MOVER #3, #1		
2	ADD #3, #2		
3	MOVEM #3, #1		
4	MEND		
	MNT:		
0	INCR 0		

→ Conclusion :

In this assignment we implemented pass II of two pass ~~assembler~~ macro processor using MDT, MNT and codefile generated from pass I of the Macro processor

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