

Government Engineering College, Thrissur
CS331 – System Software Lab
Documentation -
Exp 8 – Pass 1 of Two Pass Assembler

Date of Submission
16 October 2020

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Experiment 8

Implement pass one of a two pass assembler

Compilation of Code

Prerequisite

- The code is provided in the **program.c** along with this documentation. You can open the terminal in Linux (Ubuntu 18.04 tested). Then run the command

```
gcc program.c
```

```
./a.out
```

- We have **two** input files. One is *optab.txt* which denote the OPTAB of the assemblers. Also most importantly the source code is stored in the *input.txt*. Note in reality this file will be of *.asm extension. For the simplicity here we use *.txt extension

1. *optab.txt*: It stores the operation codes allowed in the assembly language. Format for the input is

<Opcode (String)> <Tab> <Hex Code corresponding to opcode (String)>

2. *input.txt*: We store the assembly language in this file. The assembly language used is SIC (Simple Instruction Computer)

- Output of the code will be printed on the **console** and the SYMTAB will be stored to *symtab.txt* file
- Note: Please see the output.txt file for the output I got on my machine.**
- Note: There is no specific input file for this program**

Output / Screenshots

Input

Source code – input.txt

```
Exp8 > ≡ input.txt
 1  COPY    START    1000
 2  -      LDA  ALPHA
 3  -      ADD  ONE
 4  -      SUB  TWO
 5  -      STA  BETA
 6  ALPHA   BYTE     C 'KLNCE'
 7  ONE     RESB     2
 8  TWO     WORD     5
 9  BETA    RESW     1
10  -      END  -
11
```

OPTAB – optab.txt

```
Exp8 > Uploads > optab.txt
1  LDA 0
2  STA 23
3  ADD 1
4  SUB 5
```

Output

Output to console

```
hp@hp-hp ~/Documents/S5/Lab/Exp8 <master*>
$ gcc program.c
hp@hp-hp ~/Documents/S5/Lab/Exp8 <master*>
$ ./a.out
COPY      START      1000
1000      -           LDA      ALPHA
1003      -           ADD      ONE
1006      -           SUB      TWO
1009      -           STA      BETA
1012      ALPHA      BYTE      C'KLNCE'
1017      ONE        RESB      2
1019      TWO        WORD      5
1022      BETA       RESW      1
1025      -          END      -
Program length = 25
```

SYMTAB – symtab.txt

```
Exp8 > symtab.txt
1  1012  ALPHA
2  1017  ONE
3  1019  TWO
4  1022  BETA
5
```