



# Government Engineering College Thrissur

System Software Lab

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# One-Pass Assembler

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## AIM

Implement a one pass assembler. \*

## THEORY

An Assembler translates assembly language programs to object programs or machine code

- One-pass assemblers are used when
  - it is necessary or desirable to avoid a second pass over the source program
  - the external storage for the intermediate file between two passes is slow or is inconvenient to use
- Main problem: forward references to both data and instructions
- One simple way to eliminate this problem: require that all areas be defined before they are referenced.
  - It is possible, although inconvenient, to do so for data items.
  - Forward jump to instruction items cannot be easily eliminated.

## RESULT

The single-pass assembler was implemented with successful output.

# Output Screenshots

Terminal Output:

```
navaneeth@navaneeth-lap:~/Documents/NAV/Cprog/Exp10/POU-v$ ./a.out

-----ONE-PASS ASSEMBLER-----
Enter the input file name: input.txt
Enter OPTAB name: optab.txt

Output generated
[info] output -> output.txt
[info] Symbol table -> symtab.txt
[info] Object program -> result.txt
```

Files Generated:

File	Content
output.txt	<pre>Exp10 &gt; v2.0 &gt; output.txt 1  00  0 2  23  0 3  1001 1006 4  1004 1009</pre>
result.txt	<pre>Exp10 &gt; v2.0 &gt; result.txt 1  H^COPY ^001000^00000c 2  T^001000^0c^000000^230000 3  T^1001^02^1006 4  T^1004^02^1009 5  E^001000</pre>
symtab.txt	<pre>Exp10 &gt; v2.0 &gt; symtab.txt 1  ALPHA  * 2  BETA   * 3  ALPHA  1006 4  BETA   1009</pre>