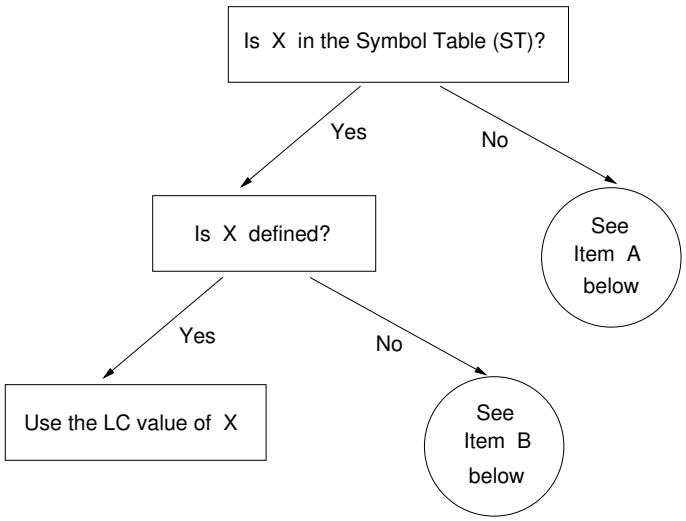
CSI 402 – Systems Programming – Handout 5.1

Outline for a One-Pass Load-and-Go Assembler

Note: The following outline shows only how the modified symbol table (ST) is used in the one-pass assembler. The other details are similar to those for the two-pass assembler.

I. Symbol seen in the operand field:

Note: In the following description, L denotes the LC value of the current instruction and X denotes the symbol seen in the operand field.



Item A:

1. Insert X into ST with Defined = `false`.
2. Create a node containing the LC value L and let that node be the first node of the linked list corresponding to X in ST.

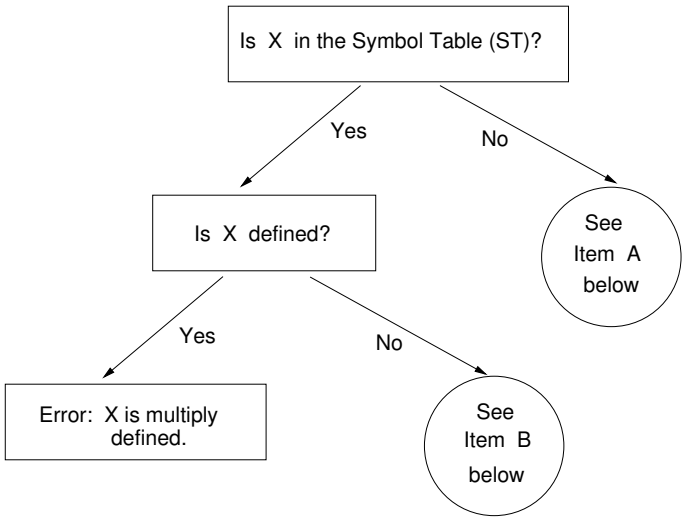
Item B:

1. Create a node containing the LC value L.
2. Insert the node into the linked list corresponding to X in ST.

(over)

II. Symbol seen in the label field:

Note: In the following description, L denotes the LC value of the current instruction and X denotes the symbol seen in the label field.



Item A:

1. Insert X into ST with Defined = `true` and LC value = L.
2. Set the linked list's head pointer to `NULL`. (We won't need a list for the symbol X.)

Item B:

1. In the ST, change the Defined value for X to `true` and the LC value for X to L.
2. Patch bytes using the linked list for X.
3. Delete the nodes in the linked list for X and set the head pointer to `NULL`. (From this point, we won't need a list for the symbol X.)