Definition of Sequential Labeling Task:

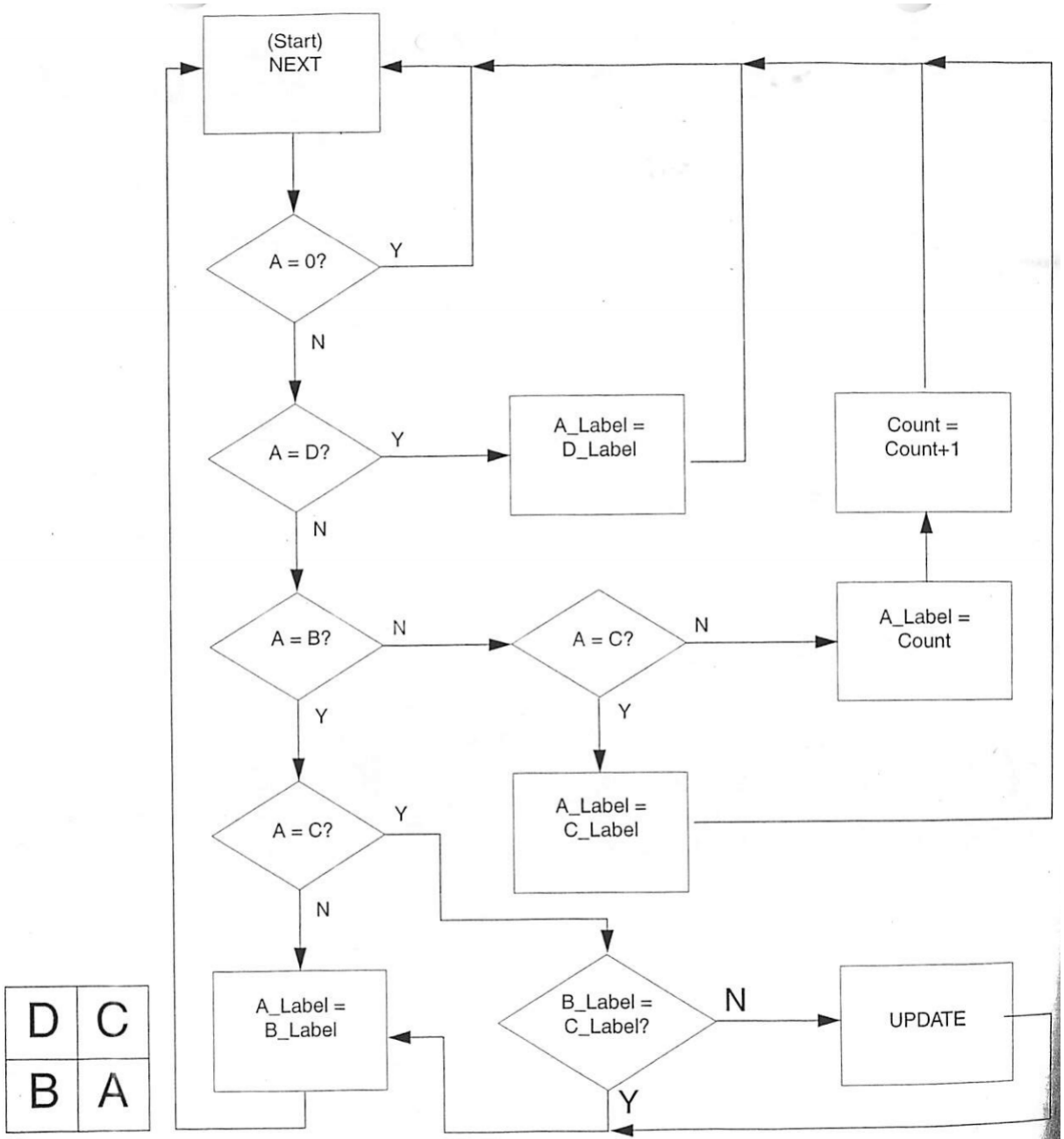
Given a binary image with several foreground objects (‘1’ pixels) in a black background (‘0’ pixels), mark all pixels belonging to the same object with a unique label.

Main Ideas of Sequential Labeling Algorithm:

Scan through the image only twice.
1st scan: Determine object labels.
2nd scan: Fix cases where more than 1 label appears in an object.

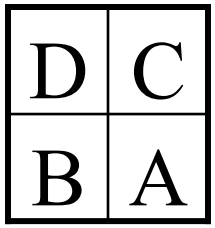
During 1st scan: Find the label of pixel 'A' based on the labels of pixels 'B', 'C', and 'D':

D	C
B	A



a, Current pixel is pixel A. B, C, and D are neighboring pixels, as shown.

b. Flowchart.



Sequential Labeling Algorithm

Case 1:

Neither B,C, or D labeled

Case 2:

D labeled
B, C not

Case 3:

Either B or C labeled

Case 4:

B, C labeled

same different