

Lab 7

Area Fill

An image is represented as a two-dimensional array of characters. Elements of the array, called pixels, (picture elements) have values `.` (white) and `x` (black). An image may have a number of arbitrary shaped blobs, contours, isolated pixels, etc. With each white pixel in an image we can associate a certain white area called the connectivity component of that pixel. This is defined as the set of all white pixels that can be connected to the given pixel with a continuous chain of white pixels.

	Before	After
The AreaFill(...) function takes a	.....xx.....	.....xx.....
specified white pixel in an image and fills	....x..xx.....	....xxxxx.....
the connectivity component of that pixel	....x....xxxx..	....xxxxxxxxxx..
with black, as illustrated at right. A pixel	..x.....xxx	..xxxxxxxxxxxxx
is said to be connected to pixels that are	..x...*.....	..xxxxxxxxxxxxxx
adjacent horizontally or vertically.	....x.....xx.	....xxxxxxxxxxxxx
	....x..xxx...x.x	....xxxxxxxxxxxxx
	....x..x..x.x...	....xxxxx..xxx...
	....xxxx...x....	....xxxxx...x....

- Write a program using a minimum of three functions that will perform the following tasks:
 - Prompt the user for the name of the image file.
 - Read in the matrix (using a vector of vectors) from the text file of unknown size.
 - Display it to the screen.
 - Ask for the location of the starting pixel.
 - Display the new image to the screen.
- The function AreaFill(...) that will change the matrix must be recursive. In writing your recursive function, be sure you remain within the image boundaries and do not refill pixels that are already black.