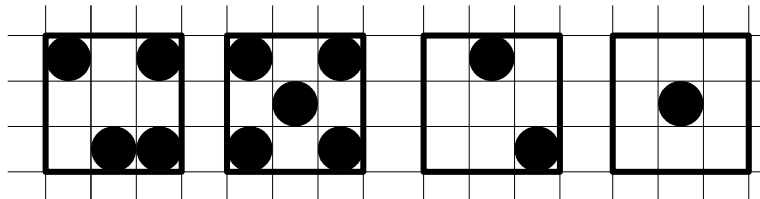


Exercise Computer graphics – (till October 26, 2006)

Ordered dithering

Exercise 12: Ordered dithering meant that a gray value is approximated by different patterns like these:



For imaging devices being able to display a small number of gray levels, an extension was proposed that does not only consist of black and white pixels like shown above but that consists of shades of gray.

0	0	1	1	1	1	1	1	2	2	3	2
0	0	0	1	1	1	1	2	1	2	2	2
0	1	0	1	1	1	1	2	1	2	2	3

Explain how to use these gray-level patterns if the resolution of an image must not be increased.

Exercise Computer graphics – (till October 26, 2006)

Ordered dithering

Exercise 13: Color dithering

- (a) In the lecture we have seen the Floyd-Steinberg dithering algorithm for gray-scale images. How does the approach have to be extended in order to handle color images?
- (b) Change our example program such that color images are quantized and dithered.
- (c) If you did not yet finish (b) do so now. It can be done making only a few changes in the code.

Exercise Computer graphics

Line clipping according to Cyrus Beck

Exercise 14: Line clipping

Let a clipping polygon be defined by the vertices (5, 5), (20, 2), (16, 10), (10, 10)

and a line between (1,2) and (23, 12)

(a) Perform the Cyrus Beck clipping algorithm. Find out for each intersection parameter t whether it is “entering” or “leaving” and finally determine which parameters for t are of interest only.

(b)

In the general case of an n -sided polygon: How many intersections have to be performed at most for every line to be displayed?

