

Computer Aided Design of Digital Systems - COE572  
Homework III.  
Date: Fall 2003.

Question 1.

For the floorplanning example discussed in class (Figure 3.21), assume that an aspect ratio of 1 is highly unacceptable. Therefore you have to choose the second alternate of height and width for the bounding box (even though the area is larger).

1. Work backwards to find out what orientations of each block were used.
2. Determine the lower left corner for each block.
3. Assume that each block is connected to one other block in the following fashion; block 1 to block 2, block 2 to 3, and so on, until the last block (block 6) is connected back to the first block. Let the weights of all the wires be 1. Determine the estimate of wirelength required using Manhattan geometry.
4. If you did not delete the redundant blocks while working towards the root to find the minimum bounding box, would your answer have been different?

Question 2.

Consider the polish expression:

$$E = 12V3H4V5H$$

Each rectangle can have only two possible heights and widths (as indicated in the table below). The rectangles can also have free orientations, that is, they can be rotated by 90 degrees. Compute the area of the minimum bounding rectangle.

Mod Num	$w_1, h_1$	$w_2, h_2$
1	(4,4)	(16,1)
2	(4,1)	(2,2)
3	(6,6)	(9,4)
4	(1,9)	(3,3)
5	(8,8)	(4,16)