Detailed routing project

Problem Statement

Implement a 2-layer detailed router to complete channel routing problems. You can use any rip-up and reroute based detailed router or greedy channel routing algorithm.

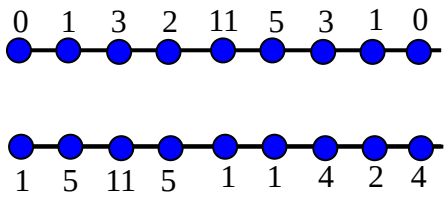
Input/Output Format

Input:

Input Example.

0 1 3 2 11 5 3 1 0

1 5 11 5 1 1 4 2 4



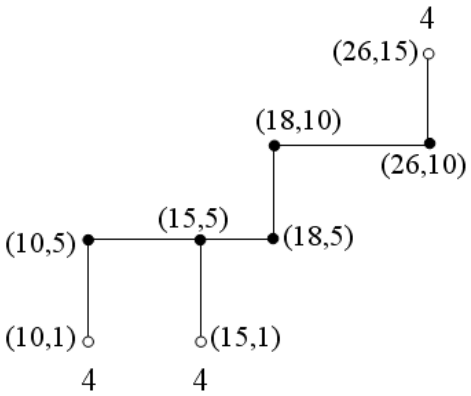
Three test cases, case1, case2, and Deutsch difficult, can be downloaded on the web site.

Output:

Text: print out all horizontal and vertical paths of every net in a file "case_name.out".

Format:

.begin net_name
.H lef_x lef_y rig_x
.V bot_x bot_ _y top_y
.end



Example. The above figure displays the routing of net 4 (three pins and 5 vias).

.begin 4

.H 10 5 18

.V 10 1 5

.V 15 1 5
.V 18 5 10
.H 18 10 26
.V 26 10 15
.end

Note that. There is no fixed wire segment order. A via is induced by the intersection of one horizontal and one vertical wire segment of the same net. If two wire segments of different nets with the same direction overlap, a short error occurs. You can use the verifier to examine the routing errors.

Graphic (optionally): You can draw the routing results on the screen to make debugging easier.

Ranking

A. Can run small case but fail in Deutsch difficult (cannot generate routing result) – 60
B. Ranking is mainly based on the correctness of routing results and the required number of tracks to complete the routing. If the routing result is correct, ranking is categorized into following sets:

Maximum tracks	Minimum tracks	Base score
infinity	51	60
50	41	65
40	31	70
30	27	75
26	25	80
24	22	85
21	21	90
20	20	95
19	19	100

C. If two routing results demand the same track number, the bonus is determined by the total number of vias and total wirelength.
D. No spill-over area is allowed.
E. Grading policy for delay submission
   - Within one week: if score ≥ 80, score=MAX(score-6, 80); else score = MAX(score-6, 70);
   - More than one week: score = 0;

Due date: 1/17