

CAD Design Project 5 – Channel Routing

Due: 23:55, Jan. 2, 2020

Channel routing is a special routing problem. Wires are connected within a rectangular routing region, denoted as channel. All pins are located along the opposite sides of the channel. The cost/area of a routing channel is represented by the number of required routing tracks inside the channel. Conventionally, the channel is oriented horizontally and all pins are on the top and bottom of the channel. In this project, you are required to implement a 3-layer (VHV model) channel router according to the following requirements:

1. Read a pin list file with at most 10,000 pins in each side of a channel.
2. Perform left-edge channel routing algorithm.
3. Report the number of required tracks in the channel.
4. Create an X window based graphical display for your routing result.
5. Create necessary user interface to access the graphical display.
6. Output your routing result in (at least) one graphics file format.
7. Upload your source code tarball (*.tgz) to moodle (including your Makefile).

https://en.wikipedia.org/wiki/Image_file_formats

(NOTE: The uploaded file name should be the same with your student ID.)

Pin list Example: sample.pin

```
0 1 6 1 2 5 3 5
6 3 5 6 0 4 2 4
```

SYNOPSIS

```
%> route PIN_LIST_FILE
```

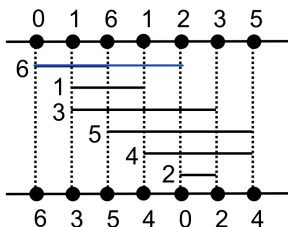
Run-time Example:

```
%> route sample.pin
Number of tracks: 4
```

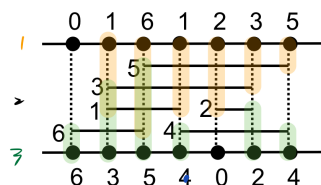
```
%> ls
route    sample.pin  sample.eps  sample.png
```

白墨图

1. Sort by left end points

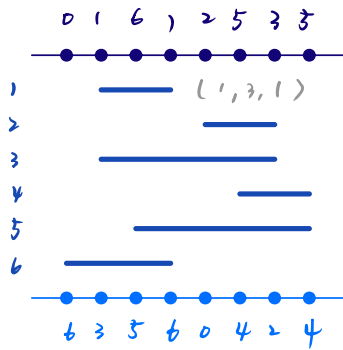


2. Place nets greedily

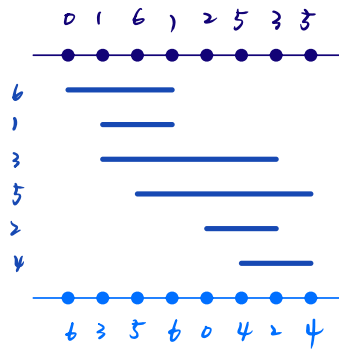


✓

pin	0	1	2	3	4	5	6	7
	0	1	6	1	2	5	3	3
	6	3	5	6	0	4	2	4

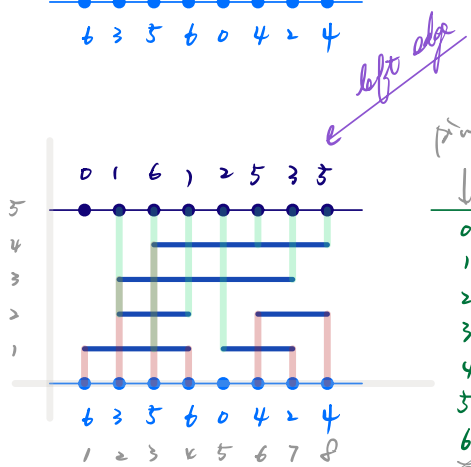


sort →



priority = glue

sort T
(0, 3, 6)
(1, 3, 1)
(1, 6, 3)
(2, 5, 5)
(4, 6, 2)
(5, 7, 4)



↓

trunks
0 4
1 1 3 1 ✓
2 4 6 0
3 1 6 2
4 5 7 1
5 2 7 3
6 0 3 0

track

0	(0, 3, 6), (4, 6, 1)
1	(1, 3, 1), (5, 7, 4)
2	(1, 6, 3)
3	(2, 5, 5)

