National Chiao Tung University
Dept. of Computer & Information Science
Introduction to VLSI Design, Fall 2000

November 28, 2000
Handout #14
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Project #2 (due December 15, 2000)

Basic requirements (90 pts): Implement the constrained left-edge channel routing algorithm using any programming language such as C, C++, etc.
Input format: You should allow input from a data file. Each input file gives a sequence pair of pins, with the first (second) number denoting the pin on the top (bottom) boundary. Specification of channel columns is separated by **End-of-Line**.

```
1   2 /* top pin; bottom pin; pins 1 and 2 are both source nodes */
1   3 /* pin 1 is a sink while pin 3 is a source
0   2
3   3
0   1
```

Here give two 0.18 μm parameters: unit resistance $\hat{r} = 0.08\Omega/\mu m$; unit capacitance $\hat{c} = 0.12fF/\mu m$. Let the first encountered pin be the source of the associated net and the remaining the sinks. Assume each sink has a capacitive load of $25fF$, and a unit grid is of length $1\mu m$.

Output format: The output for graphic display for the sample circuit given about is shown in Figure 1. Please also report the following three results: (1) number of tracks, (2) number of vias, (3) total wirelength (in grid unit or μm), (4) critical path delay computed by the Elmore delay approximation based on the π model, and (5) average path delay. (Weights: (1)–(3): 70%; (4)–(5): 20%.)

User Interface (10 pts): Text or graphical display.

Bouns (10 pts): Checking for cyclic constraints.

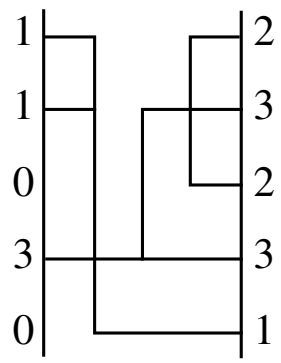

Figure 1: Output format.