**Programming Assignment #2: Channel Routing**

**(due date on Ceiba)**

## Problem Statement

## This programming assignment asks you to write a Constraint Left-Edge Channel Router. The objective is to read an input file and produce a solution for the channel routing problem. In this assignment, we assume there is no vertical constraint cycle.

(Note: a vertical constraint cycle is a loop in vertical graph just like figure1.)

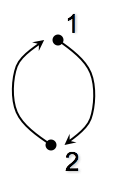


Figure 2.

## 

## Give it a try!

Download the file from Ceiba and uncompress it. There should have a bin directory.

cd bin/

./route <input file> <output file>

For example, you can type ./route c0.input c0.output. The should have a output file in your current directory.

## 3. Input Format

Your program is designed to read the input files with the following formats:

0 2 1 0 2

1 0 0 3 3

The first line represents the upper boundary of the intervals (nets) that you need to do channel route. The second line represents the lower boundary of the intervals(nets). The above two lines are presenting the following figure.

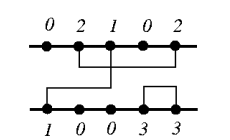


Figure 2.

## 4. Output Format

Your program should generate an output file with the following format.

Track1: i1 i3

Track2: i2

Each line specify a track and the intervals (nets) that are routing in this track.

Bonus point will be added for those who provide GUI (Graphic User Interface) to show the channel routing results.

## 4. Execution

Your program should read an input file and produce an output file. The output file name should be provided by user. Your program will be tested by the following command.

*./executable\_file input\_file output\_file*

## 5. Submission

Please submit the following files onto the website.

1. Your source code.

2. A readme file to briefly describe how to compile your code.

3. Your report. Please also hand in a hard copy of the report in class.

Note: The report should include two things. 1. How do you implement the constraint left-edge algorithm. 2. The result of the test cases.

Submission Rule:

1. Upload ONLY your source code (.c or .cpp) to the course website. DO NOT upload your

executable file or any object files.

2. If your source code contains multiple files, write a Make File to compile your program.

3. Please compress the files into .tgz format.

## 6. Grading

Correctness: 80%

Report: 20%

GUI: 10%(Bonus)

**COPYING RESULTS in ZERO GRADES FOR BOTH STUDENTS!**