CS6135 VLSI Physical Design Automation
Homework 5: Global Routing
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1. Goal

Implement an algorithm to solve the global routing problem with 2-pin nets by using c/c++.

2. Design concept

本次作業大致使用的方法是用 Lee Algorithm。

一開始先根據 input capacity 建立 maze。

```
struct Tile
{
    int path = -1;
    bool isVisited = false;
    int cap_1;
    int cap_2;
    int cap_3;
    int cap_4;
};
```

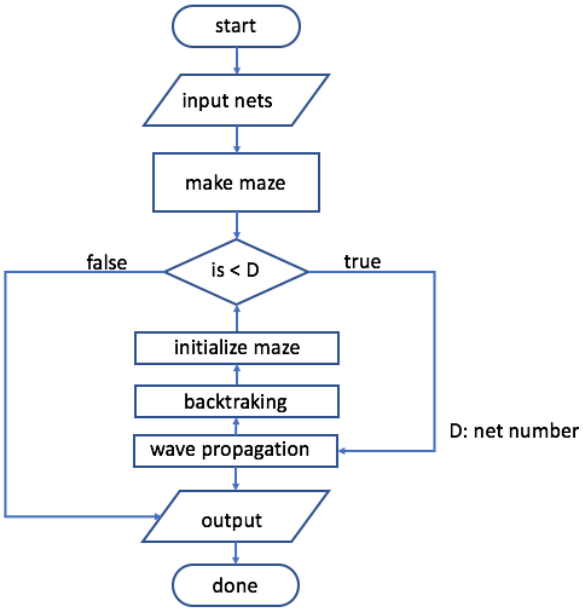
maze 是一個 struct Tile 的 2D vector。
每一個 Tile 有四個根據 input capacity 所建立的容量上限。

接下來要處理的 net 則是根據 wirelength 由大到小排序好。就可以依序做 Routing 工作。

Lee Algorithm:
可分為兩個部分。
wave propagation: 使用 BFS 的方式填 maze。
back tracking: 嘗試 4 個方向，是否為現在位置 path-1，並且選擇剩餘 capacity 最大者。

3. Discussion

(1) The details of your implementation. You have to use flow chart(s) to help elaborate your algorithm, and please follow the symbols usually used in flow charts.



(2) What tricks did you do to speed up your program or to enhance your solution quality? Also plot the effects of those different settings like the ones shown below.

因為 net ordering 會影響 routing 結果，所以先將 net 做排序。

(3) The total overflow, the total wirelength and the runtime of each testcase.

	ibm01	ibm02	ibm04
overflow	3145	7122	6273
wirelength	56773	153784	154288
runtime (s)	0.06	0.14	0.15

4. Review

感覺這次作業一開始選的演算法太簡單了，導致 performance 結果很差。