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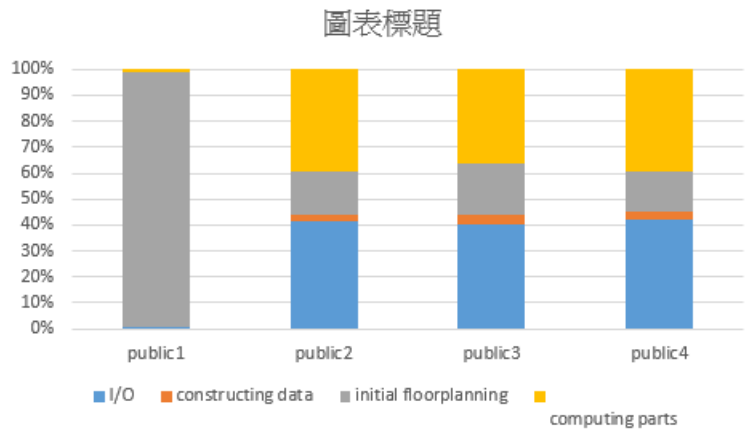
(2)

```
--- How to compile ---
command:  $ make
To generate the executable file "hw3" in "HW3/bin/"
command:  $ make clean
To remove the executable file in "HW3/bin/"
--- How to run ---
In this directory , enter the following command:
command:  ../bin/<exe> <testcase file> <output file>
ex. :
$ ../bin/hw2 ../testcases/public1.txt ../output/public1.floorplan

In "HW2/bin/" , enter the following command:
command:  ./<exe> <testcase file> <output file>
ex. :
$ ./hw2 ../testcases/public1.txt ../output/public1.floorplan
```

(3) Runtime

以下圖表是在個人電腦非工作站執行，主要以參考趨勢為主，可以發現到新的方法在某些案例中會花上比較多時間群找擺放位置，但是這也可以幫助未來的 floorplan 工作更加順利。



Wirelength

testcase	wirelength	runtime	status
public1	213006620	4.45	success
public2	28053024	1.67	success
public3	3699235	2.21	success
public4	126847275	1.85	success

(4) 上次的做法會產生太多 white space 讓 module 擺不下，這次我改成先看空間，比照空間寬，不行的話比照下寬，再不行以最貼近正方形的方式擺放。

(5)

A. Initial floorplan

先尋找空間點，找到可以擺放的空間點之後決定形狀，這樣可以讓 white space 有效減少，尋找空間點也加入一些計巧讓整體更快速，例如裡用前

一個 module，root 用最左下角尋找，如果都不行再從全部的 placement 裡面找。

B. Perturb
   1. Rotate the module
   2. Swap two module
   3. Move one module to another space

C. SA

   Different between previous work: Set the getworse to 0. If the condition can satisfy and is the best case, record the best case and getworse to 0. If the condition can satisfy but is not best case getworse++. If the condition can't satisfy neglect the adjustment, and getworse++. Suspending until getworse bigger than setting or time up;

(6) I set different proportion in perturb, choose public1 be the testcase

Proportion=>Rotate:swap:move

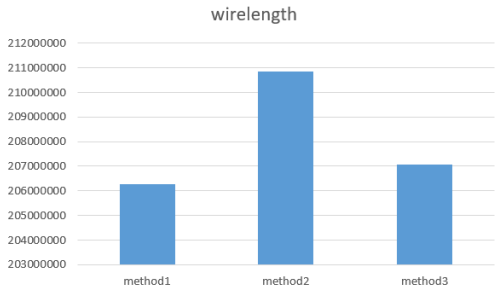
Method1=>2:4:6

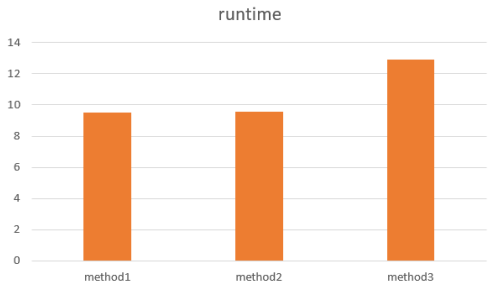
Method2=>4:4:4

Method3=>2:8:2

I found that rotate won't make a lot of influence to wire length, and move fail easily so I give it more chance to try move. Swap is the most useful trick for wirelength.

	A	B	C
1		wirelength	runtime
2	method1	206274790	9.53
3	method2	210856690	9.58
4	method3	207064020	12.93



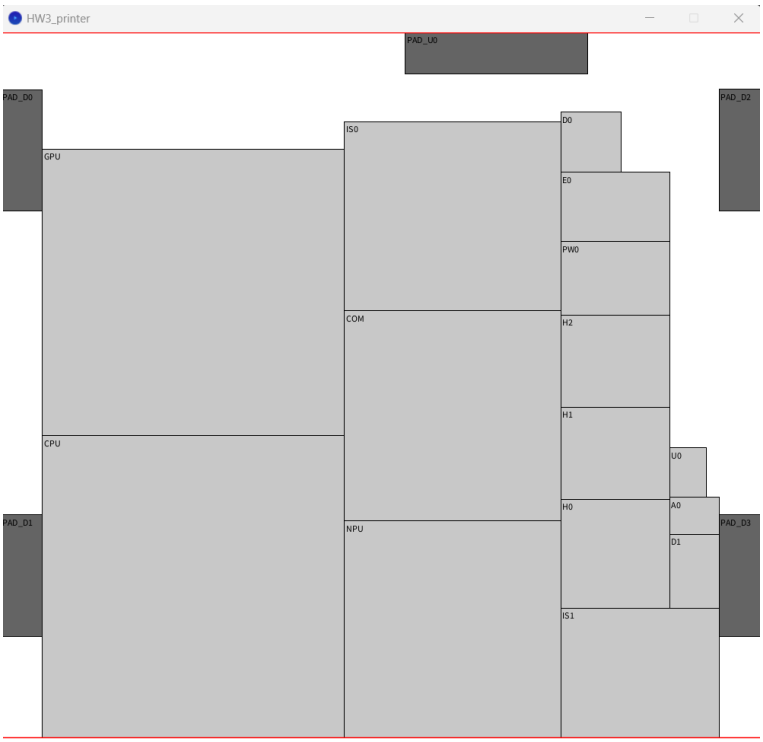


(7) No parallelization

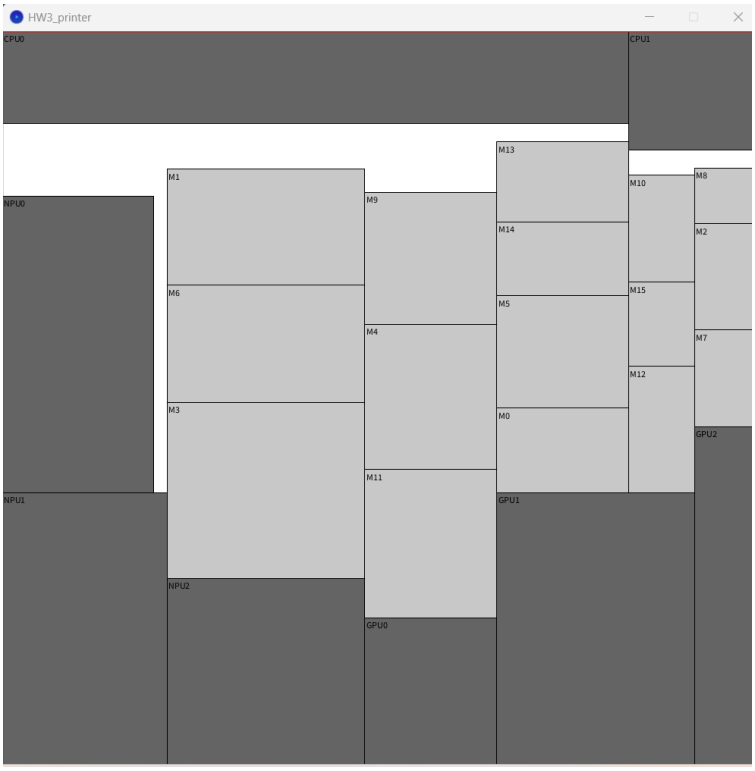
(8) This is the very interesting problem. I have tried a lot of method, but it may not suitable for every testcase. First time I put hard block in to b-tree. But it may produce a lot of problem in perturb. Keep trying and never give up is what I learn in this homework.

The figure of each floorplan result

Public1



Public2



Public3


HW3_printer
PAD8
PAD7
M16
M2
M22
M9
M5
M23
PAD6
M12
M10
M13
M1
M25
M17
M0
PAD5
M4
M11
M24
M3
PAD4
M19
M26
M6
M8
PAD3
M14
M7
M20
M27
M18
M15
M21

Public4


HW3_printer
PAD5
PAD4
CPU2
VIDEO
DSP
PAD6
PAD3
CPU5
GPU2
ISP
MODEM
NPU1
CPU0
NPU2
CPU1
GPU0
CPU7
PAD7
NPU0
CPU3
CPU4
GPU3
GPU1
GPU4
PAD2
CPU6
PAD0
PAD1