

Problem B: Routing with Cell Movement Advanced

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Q&A

Q1. Whether a grid belongs to at most one voltage area or not? Whether a cell instance belongs to at most one voltage area or not?

A1. Both of the answers are yes.

Q2. Would the rules of input files follow the orders in the instruction?

A2. Yes. order will be followed.

Q3. Is there a maximum of the number of gGrid?

A3. The maximum number of rows will be ≤ 2000 .

The maximum number of columns will be ≤ 2000 .

The maximum number of layers will be ≤ 32 .

Q4. Does the gGridBoundaryIdx always begin with 1?

A4. Yes.

Q5. Does the layer ID always begin with 1?

A5. Yes.

Q6. Would the routing direction of the layer with odd ID always be horizontal?

A6. Yes

Q7. Should we use 2-segments routing or 4-segments routing to describe the graticule?

A7. It should not have both X direction routing and Y direction routing on the same layer since each layer needs to follow its preferred direction.

For X-Z or Y-Z intersection, 2-segments routing would be fine. 4-segments routing is also a valid output. Please refer to Section 3.3 in the problem description for details.

Q8. Could we use (1,2), (2,3) to describe the line (1,3)?

A8. Yes. That is a valid output too.

Q9. If the pin of two cell are completely the same, could we consider that as directly connection? In this case, if a net has min layer, will it connect to the eGrid?

A9. Yes, it will increase the demand by 1.

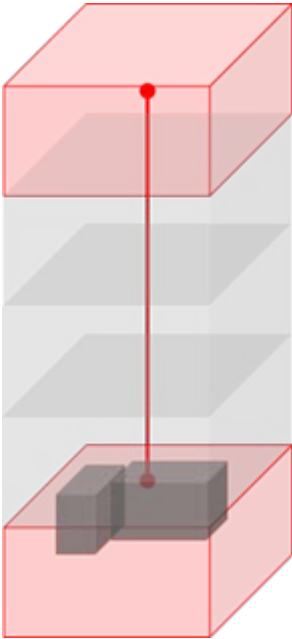
You can imagine as that every pin will automatically consume 1 routing demand to the gGrid it located(no matter how much same net pin in one gGrid) since we ask that all pin must be connected.

The two or more pins in same gGrid (row,col,lay are all equivalent) are considered connected by nature but still consume 1 demand.

Contestants do not need output net segments(routes) with same start/end gGrid.

If a net has min routing layer constraint. Even two or more pins are in the same gGrid, contestants must output a wire from pin location to the gGrid above which on min routing layer. (please see example in picture)

Otherwise it will be considered as open. If the two or more pins are all located equal to or above min routing layer, then this wire is not needed.



For easier understanding, you can imagine that every net with min routing layer constraint has duplicated pin locate on the gGrid above on min routing layer (if the pin is under min layer). And you must connect all pins and duplicated pins.

Q10. Please help to advise if each pin will connect to exactly one net.

A10. Each pin can be connected to one net or no net. If a pin is not connected to a net, you don't need to create routing for this pin.

Q11. If a pin is not connected to a net, will it consume one demand?

A11. If a pin is not connected to a net, it will NOT consume demand.

Q12. Can we just ignore the blockage whose demand is 0?

A12. Yes. You can just ignore 0 demand blockage.

Q13. Can we assume that each voltage area is a connected component if each grid at (x, y) only connects to the ones at $(x + 1, y)$, $(x - 1, y)$, $(x, y + 1)$, $(x, y - 1)$?

A13. Yes.

Q14. Are there any ranges about the numbers of significant digits of the layer power factor and net weight? In other words, will there be something like 1.333333333333333?

A14. The value of layer power factor and net weight would be with 2 significant digits at most.

Q15. Is it possible to release a Windows executable or the source code of the evaluator?

A15. No. You need to have your program be executable on Linux. And, the provided evaluator is executable on Linux only as well.

Q16. Is it possible that the cell without blockage from the contest data is no blockage?

A16. Yes. It is possible.

Q17. Is it possible that the cell without blockage from the contest data is no “pin”?

A17. Yes. It is possible.

Q18. Is it possible that the power factor is “nondecreasing” from top to down?

A18. Yes. You can do this assumption.

Q19. In our code, we used two additional files POST9.dat and POWV9.dat. Can they be used if we upload them to the same folder as the binary code?

A19. Yes. Sides files are allowed.

Q20. Could you please advise how many threads are allowed in Problem B? Thank you.

A20. It is stated in section 5.1 in the problem description. 8 cores will be allocated in the evaluation.

Q21. Is it possible that a cell contains two or more pins of one net? Thank you.

A21. Yes. It is possible. Even there are two or more pins associated to the same net in a cell, it would only require 1 routing segment of the net to connect to this gGrid to complete the connection for all the same net pins at this gGrid.

Q22. According to the Q&A20, it described that "the threads definition is stated in section 5.1 in the problem description. 8 cores will be allocated in the evaluation."

Since there may be more than one thread in a core, does it mean that we can use at most eight threads? Thank you.

A22. We will guarantee there is no other job that compete the CPU resource at the same time during the evaluation. So, you can assume you will always have the 8 cores available for you to use. As for how many threads you can/should create, it is up to you. Even, you can create more than 8 thread if you want. However, the CPU resource that allocated is 8 cores.

Q23. As we can see, each case size and move num is different.

So, could you please advise what's the percent of each case in Problem B contest. Thank you.

A23. The max cell move count would be around 30% of the total cells in each case.

Q24. I have a question about problem B as below.

If our program doesn't terminate in 1hr but does output results in 1hr, will our score be evaluated by our output file? Or will we get a 0 score since our program doesn't terminate in 1hr? Thank you.

A24. We will auto terminate your program when hit 1 hour limit.

In Alpha and Beta evaluation, if we terminated your program, you got 0 score.

However, In the Final evaluation, as long as you have outputted the result no matter your program is end smoothly or terminated by us, we will use the outputted file for doing evaluation.