Problem B: 3D Placement with Macros

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Q&A

Q1. After reading the document, I have the following questions about Hybrid bonding terminal.
First: Can the position of terminal overlap with that of macros or std cells on the die?
Second: Are all the terminals square? If not, can we rotate the terminal?
Third: If terminals can be placed at any location as long as the spacing between 2 terminals terminal and die boundary is far enough.
A1. Here are the answers for these questions.
First: Yes. Terminal are on the top-most layer of the die while macros and std cells are placed on the bottom metal and device layers. Thus, terminals can overlap with all the cells.
Second: Yes. It would always be square.
Third: Yes.

Q2. I would like to ask the question of Problem B : 3D Placement with Macros (Synopsys, Inc.)
Is the median elapse time mentioned in the runtime factor the median of the times of all participants, or is the median elapse time a fixed value? Thank you for your answer.
A2. The median elapse time is the median runtime result among all participants which have result.

Q3. I would like to ask if Top-Level IOs will be provided for Problem B, since their placement will influence the final placement significantly.
Moreover, is it possible to specify the driving pin of each net?
Potentially, it can help to improve the QoR of the 3D Placer.
Thank you.
A3. There will be no top-level IOs. To simplify the problem, top-level IOs are omitted.
No driver/sink information in this contest.

Q4. For problem B in ICCAD2023, I have the following 7 questions.
1) The <techName> will always be "TA" and "TB" ? Is it possible to be "TC" or other names?
2) Following question 1., does the Top Die always use TA, and the Bottom Die always use TB?
3) Does (<LowerLeftX> , <LowerLeftY>) of DieSize always be (0,0)?
4) Following Question 3., does <rowLength> always equal to <upperRightX> of DieSize?
5) Following Question 3., does <rowHeight> times <repeatCount> always equal to the <upperRightY> of DieSize?

6) Do you provide any P&R tools in the contest?

7) What is the environment where the evaluator can be executed?

Thank you!

A4. Here are the answers for these questions:

1) You can assume the <techName> will always be "TA" and/or "TB".

2) No, Top Die and Bottom Die can be either TA or TB

3) Yes, you can have this assumption.

4) Yes, you can have this assumption.

5) No, <rowHeight> times <repeatCount> would always be less than or equal to the <upperRightY> of DieSize.

6) No. we don't provide any P&R tools in the contest.

7)The evaluator can be executed on the Linux platform.

Q5. I have the following question about problem B. Could you please advise when the other testcases will be released? Thank you!

A5. More public testcases will be released before May/15.

Q6. I am writing to ask a few questions regarding "Problem B - 3D Placement with Macros."

1) I was wondering how you plan to rank each team in the final submission. Will it be based on the sum of the final scores of each case, or are there other scoring functions that will be used?

2) I would like to ask if we are allowed to produce coordinates that contain fractional parts in our output file. This information will be very helpful for our team to ensure that our submission meets all the necessary requirements.

Thank you for taking the time to read my email.

A6. Here are the answers for these questions:

1) Yes. It would be the summation of the final scores of each case.

2) I don't understand this question. All valid results would be with the resolution of integer. That means – Any result with fractional numbers would definitely be a "incorrect" answer of the given case.

Don't understand how the result with fractional numbers can help to ensure the submission meets all the necessary requirements given that the result itself is "incorrect"..

Contestants can print necessary debugging messages on console. If the outputted result does not meet the requirements, we can help provide the printed messages on console (<100 lines) for contestants to review.

Q7. For problem B in ICCAD2023, I have the following 1 question.

Does (<startX> <startY>) of TopDieRows and BottomDieRows always be (0,0)?

Thanks.

A7. Yes. You can have this assumption.

Q8. After reading the document, I have the following questions about netlist.

1) What does 'TerminalCost<val>' mean? Area or something else?

2) In case 1, we observed that the height of the macro cell is larger than the height of the row.

Can the size of the macro cell be larger than the height of the row?

3) Following Question 2, If it is possible, does that mean the macro cell can be placed at any position on the die?

Thank you!

A8. Here are the answers for these questions.

1) TerminalCost is given from input. Every terminals in the case result will have the same TerminalCost.

2) Yes. Macro cell height and width can be any integer value.

3) Yes. Macro cell can be placed at any position on the die.

Q9. I am writing to inquire about "Problem B - 3D Placement with Macros" and would like to ask a few questions.

Specifically, in case 3, there seems to be a net named "N61" that is connected to 32618 pins. This appears to be an unusually large net, and its presence may significantly impact the placement procedure. I am curious to know if this is a bug in case 3 or if we are indeed expected to handle such cases.

Thank you for your attention to this matter.

A9. Thanks for pointing this out. We will remove this large net and provide a new version of case3.

Q10. Can you please check that the total Instance area can be placed onto the 2 dies without violating the maximum utility of both die? It seems that this constraint can't be met in case 2. Can you help me make sure that the case is right? Thanks for your help!

A10. We had verified that case2 is placeable without violating the maximum utility of both dies. The case2 is good without problem.

Q11. I am writing to inquire about "Problem B - 3D Placement with Macros" and would like to ask a few questions. Specifically, in case 4, there are four nets containing more than 10000 pins:

· N27429 has 12937 pins

· N27457 has 12848 pins

· N27488 has 10013 pins

· N27489 has 10013 pins

This appears to be an unusually large net, and its presence may significantly impact the placement procedure. I am curious to know if this is a bug in case 4 or if we are indeed expected to handle such cases. Thank you for your attention to this matter.

A11. We will revise the case with a new version.

Q12. We are writing to inquire about "Problem B - 3D Placement with Macros" and have a question

regarding the upcoming alpha submission.

We would like to inquire if there will be a hidden case for case1 in the problem.

Thank you for your attention.

A12. There will be hidden cases with the same scale as case2, case3, & case4.

Q13. For problem B in ICCAD2023, I have the following questions.

1) In case4, we found that the y coordinate of the pin positions of all cells is 0.

2) In case4, the width of all cells under TA and TB technologies are the same.

Please help confirm whether case4 is normal.

Thank you!

A13. Thanks for pointing out the issue in Case4. We have uploaded a new Case4 on website.