

Version: 1.0



Selection

Sky_Scraper

Summary

Develop a program to solve a 4x4 visibility puzzle by correctly arranging box heights based on input constraints.

#C

#Impativerive

#Unix

42

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Chapter 1

Instructions

- The group WILL be registered to defense automatically.
- Do not cancel it, you won't get a second one.
- Any question concerning the subject would complicate the subject.
- You have to follow the submission procedures for all your exercises.
- This subject could change up to an hour before submission.
- The program must compile with the following flags: -Wall -Wextra -Werror; and uses cc.
- If your program doesn't compile, you'll get 0.
- Your program must be written in accordance with the Norm. If you have bonus files/functions, they are included in the norm check and you will receive a 0 if there is a norm error inside.
- You must do the project with the imposed team and show up at the defense slot you've selected, with all of your teammates.
- Your project must be done by the time you get to defense. The purpose of defense is for you to present and explain any and all details of your work.
- Each member of your group must be fully aware of the works of the project. Should you choose to split the workload, make sure you all understand what everybody's done. During defense, you'll be asked questions, and the final grade will be based on the worst explanations.
- Gathering the group is your responsibility. You've got all the means to get in contact with your teammates: phone, email, carrier pigeon, spiritism, etc. So don't bother blurping up excuses. Life isn't always fair, that's just the way it is.
- However, if you've really tried everything one of your teammates remains unreachable : do the project anyway, and we'll try and see what we can do about it during defense. Even if the group leader is missing, you still have access to the submission directory.
- Enjoy !

● Context

The C Piscine is intense. It's your first big challenge at 42 — a deep dive into problem-solving, autonomy, and community.

During this phase, your main objective is to build your foundation — through struggle, repetition, and especially **peer-learning** exchange.

In the AI era, shortcuts are easy to find. However, it's important to consider whether your AI usage is truly helping you grow — or simply getting in the way of developing real skills.

The Piscine is also a human experience — and for now, nothing can replace that. Not even AI.

For a more complete overview of our stance on AI — as a learning tool, as part of the ICT curriculum, and as a growing expectation in the job market — please refer to the dedicated FAQ available on the intranet.

● Main message

- 👉 Build strong foundations without shortcuts.
- 👉 Really develop tech & power skills.
- 👉 Experience real peer-learning, start learning how to learn and solve new problems.
- 👉 The learning journey is more important than the result.
- 👉 Learn about the risks associated with AI, and develop effective control practices and countermeasures to avoid common pitfalls.

● Learner rules:

- You should apply reasoning to your assigned tasks, especially before turning to AI.
- You should not ask for direct answers to the AI.
- You should learn about 42 global approach on AI.

● Phase outcomes:

Within this foundational phase, you will get the following outcomes:

- Get proper tech and coding foundations.
- Know why and how AI can be dangerous during this phase.

● Comments and example:

- Yes, we know AI exists — and yes, it can solve your activities. But you're here to learn, not to prove that AI has learned. Don't waste your time (or ours) just to demonstrate that AI can solve the given problem.
- Learning at 42 isn't about knowing the answer — it's about developing the ability to find one. AI gives you the answer directly, but that prevents you from building your own reasoning. And reasoning takes time, effort, and involves failure. The path to success is not supposed to be easy.
- Keep in mind that during exams, AI is not available — no internet, no smartphones, etc. You'll quickly realise if you've relied too heavily on AI in your learning process.
- Peer learning exposes you to different ideas and approaches, improving your interpersonal skills and your ability to think divergently. That's far more valuable than just chatting with a bot. So don't be shy — talk, ask questions, and learn together!
- Yes, AI will be part of the curriculum — both as a learning tool and as a topic in itself. You'll even have the chance to build your own AI software. In order to learn more about our crescendo approach you'll go through in the documentation available on the intranet.

✓ Good practice:

I'm stuck on a new concept. I ask someone nearby how they approached it. We talk for 10 minutes — and suddenly it clicks. I get it.

✗ Bad practice:

I secretly use AI, copy some code that looks right. During peer evaluation, I can't explain anything. I fail. During the exam — no AI — I'm stuck again. I fail.

Chapter 2

Foreword

Here are some cool quotes from some random movies :

1. "Find a truly original idea. It is the only way I will ever distinguish myself. It is the only way I will ever matter."

-A Beautiful Mind

2. "You don't have to be the bad guy. You are the most talented, most interesting, and most extraordinary person in the universe. And you are capable of amazing things. Because you are the Special. And so am I. And so is everyone. The prophecy is made up, but it's also true. It's about all of us. Right now, it's about you. And you... still... can change everything."

-The Lego Movie

3. "Sometimes it is the people who no one imagines anything of who do the things that no one can imagine." -The Imitation Game

4. "There should be no boundaries to human endeavor. We are all different. However bad life may seem, there is always something you can do, and succeed at. While there's life, there is hope."

-The Theory of Everything

5. "Just because someone stumbles and loses their path, doesn't mean they're lost forever."

-X-Men Days of Future Past

6. "Where we're going we don't need roads"

-Back to the futur

7. "I'm bad, and that's good. I will never be good, and that's not bad. There's no one I'd rather be than me."

-Wreck-it Ralph

8. "KA-ME-HA-ME-HAAAAAAAAAAAA"

-Various movies

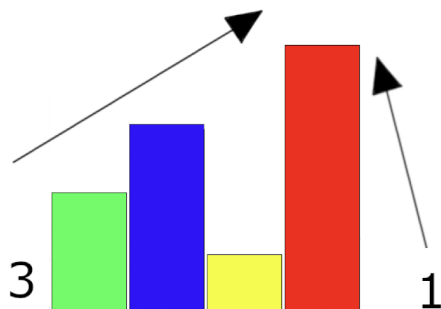
Movie culture won't help for this project even if it's important.

Chapter 3

Mandatory

	Exercise: 00	
Rush-01		
Directory: ex00/		
Files to Submit: All necessary files		
Authorized: write, malloc, free		

- Your source code will be compiled as follows: `cc -Wall -Wextra -Werror -o rush-01 *.c`
- Your submission directory must have all files required to compile your program.
- Create a program that solves the following problem:
- Given a map of 4x4, place boxes of height 1 to 4 on each available square in a way that every row and column sees the correct number of boxes from each the possible points of view (left/right for rows, up/down for columns).
- Ex: The box of height 3 will hide the box of height 1 from the left, so we have 3 visible boxes, and only one from the right, because the box of height 4 is hiding everything.



- Each of the views (2 per row and 2 per column) will have a given value. Your program must place the boxes correctly, while making sure each row and column only has one box of each size.

- Your output will contain the first solution you encounter
- Here's how we'll launch your program :

Terminal Output:

```
$> ./rush-01 "col1up col2up col3up col4up col1down col2down  
col3down col4down row1left row2left row3left row4left row1right  
row2right row3right row4right"
```

- (cf. annex 1)
- "col1up" is the value for the left column upper point of view. Each of these represent a characters string of values ranged between '1' and '4'.
- This is the ONLY acceptable input for your program. Any other input must be considered an error.
- Here's an example of intended input/output for a valid set.

Terminal Output:

```
$> ./rush-01 "4 3 2 1 1 2 2 2 4 3 2 1 1 2 2 2" | cat -e  
1 2 3 4$  
2 3 4 1$  
3 4 1 2$  
4 1 2 3$
```

- (cf. annex 2 and 3)
- In case of error or if you can't find any solutions, display "Error" followed by a line break.

Chapter 4

Annexe

What follows is an artistic view of your program. Obviously, you need to turn in a program as described in the previous chapter.

These representations' only goal is to help you understand the project.

- Annex 1:

	col1up	col2up	col3up	col4up	
row1left					row1right
row2left					row2right
row3left					row3right
row4left					row4right
	col1down	col2down	col3down	col4down	

- Representation of your program using col_up, col_down, row_left and row_right
- Annex 2:

	4	3	2	1	
4					1
3					2
2					2
1					2
	1	2	2	2	

- By replacing col* et row*, we get this.
- Annexe 3:

	4	3	2	1	
4	1	2	3	4	1
3	2	3	4	1	2
2	3	4	1	2	2
1	4	1	2	3	2
	1	2	2	2	

- Your program must fill in the blanks inside using the rules given in the first part.

Chapter 5

Submission and peer-evaluation

Turn in your assignment in your `Git` repository as usual. Only the work inside your repository will be evaluated during the defense. Don't hesitate to double check the names of your files to ensure they are correct.

As these assignments are not verified by a program, feel free to organize your files as you wish, as long as you turn in the mandatory files and comply with the requirements.



You need to return only the files requested by the subject of this project.