Version: 1.0

Selection

C-System-Interface

Summary

Develop C programs that interact with system arguments and command-line interfaces, manipulating program parameters dynamically.

#C #SysProg #CLI

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Chapter 1

Instructions

- Only this page will serve as a reference: do not trust rumors.
- Watch out! This document could potentially change up until submission.
- Make sure you have the appropriate permissions on your files and directories.
- You have to follow the submission procedures for all your exercises.
- Your exercises will be checked and graded by your fellow classmates.
- Additionally, your exercises will be checked and graded by a program called Moulinette.
- Moulinette is very meticulous and strict in its evaluation of your work. It is entirely automated, and there is no way to negotiate with it. So, to avoid bad surprises, be as thorough as possible.
- Moulinette is not very open-minded. It won't try to understand your code if it doesn't adhere to the Norm. Moulinette relies on a program called `norminette` to check if your files respect the norm. TL;DR: it would be foolish to submit work that doesn't pass `norminette`'s check.
- These exercises are carefully laid out by order of difficulty - from easiest to hardest. We `will not` consider a successfully completed harder exercise if an easier one is not perfectly functional.
- Using a forbidden function is considered cheating. Cheaters get -42, and this grade is non-negotiable.
- You'll only have to submit a main() function if we ask for a program.
- Moulinette compiles with these flags: -Wall -Wextra -Werror, and uses `cc`.
- If your program doesn't compile, you'll get `0`.
- You cannot leave any additional files in your directory other than those specified in the subject.
- Got a question? Ask your peer on the right. Otherwise, try your peer on the left.
- Your reference guide is called `Google / man / the Internet / ...`.
- Check out the Slack Piscine.

- Examine the examples thoroughly. They could very well call for details that are not explicitly mentioned in the subject...
- By Odin, by Thor! Use your brain!!!

Do not forget to add the *standard 42 header* in each of your .c/.h files. Norminette checks its existence anyway!

Norminette must be launched with the *-R CheckForbiddenSourceHeader* flag. Moulinette will use it too.

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 projects. 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

The Mysterious Hexagon on Saturn

- **Location:** Saturn's North Pole
- **Description:** Saturn's North Pole features a massive, persistent hexagonal storm. This hexagon is larger than Earth, with each side approximately 14,500 kilometers long.
- **Discovery:** First observed by the Voyager spacecraft in the early 1980s, the hexagon has been a subject of fascination and study ever since.
- **Characteristics:** The hexagon rotates with a period of about 10 hours and 39 minutes, matching Saturn's radio emissions but not its overall rotation.
- **Theories:** Scientists have proposed various theories to explain this phenomenon, including atmospheric waves and jet streams, but no single theory fully explains the hexagon's stability and longevity.
- **Significance:** The hexagon on Saturn remains one of the most intriguing and enduring mysteries in our solar system, showcasing the complex dynamics of gas giants.

Chapter 3

Exercise 0: ft_print_program_name

	Exercise0	
ft_print_program_name		
Directory: *ex0/*		
Files to Submit: `ft_print_program_name.c`		
Authorized: `write`		

- We're dealing with a program here, you should therefore have a function `main` in your `.c` file.
- Create a program that displays its own name followed by a new line.

Terminal output

```
?>./a.out | cat -e
./a.out$
?>
```

Chapter 4

Exercise 1: ft_print_params

	Exercise1	
ft_print_params		
Directory: *ex1/*		
Files to Submit: `ft_print_params.c`		
Authorized: `write`		

- We're dealing with a program here, you should therefore have a function `main` in your `.c` file.
- Create a program that displays its given arguments.
- One per line, in the same order as in the command line.
- It should display all arguments, except for `argv[0]`.

Terminal output

```
> ./a.out test1 test2 test3 | cat -e
test1$
test2$
test3$
>
```

Chapter 5

Exercise 2: ft_rev_params

	Exercise2	
ft_rev_params		
Directory: *ex2/*		
Files to Submit: `ft_rev_params.c`		
Authorized: `write`		

- We're dealing with a program here, you should therefore have a function `main` in your `.c` file.
- Create a program that displays its given arguments.
- One per line, in the reverse order of the command line.
- It should display all arguments, except for `argv[0]`.

Chapter 6

Exercise 3: ft_sort_params

	Exercise3	
ft_sort_params		
Directory: *ex3/*		
Files to Submit: `ft_sort_params.c`		
Authorized: `write`		

- We're dealing with a program here, you should therefore have a function `main` in your `.c` file.
- Create a program that displays its given arguments sorted by ascii order.
- It should display all arguments, except for `argv[0]`.
- One argument per line.

Chapter 7

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.

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