



C Piscine

C 02

*Summary: This document is the subject for the C 02 module of the C Piscine @ 42.*

*Version: 4*

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# Chapter I

## Instructions

- Only this page will serve as reference: do not trust rumors.
- Watch out! This document could potentially change up before 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.
- On top of that, 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 if you want to avoid bad surprises, be as thorough as possible.
- Moulinette is not very open-minded. It won't try and understand your code if it doesn't respect the Norm. Moulinette relies on a program called `norminette` to check if your files respect the norm. TL;DR: it would be idiotic to submit a piece of 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** take into account 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 `gcc`.
- If your program doesn't compile, you'll get 0.
- You cannot leave any additional file in your directory 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 "C Piscine" part of the forum on the intranet, or 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 !!!



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

# Chapter II

## Foreword

Here is a discuss extract from the Silicon Valley serie:

- I mean, why not just use Vim over Emacs? (CHUCKLES)
- I do use Vim over Emacs.
- Oh, God, help us! Okay, uh you know what? I just don't think this is going to work. I'm so sorry. Uh, I mean like, what, we're going to bring kids into this world with that over their heads? That's not really fair to them, don't you think?
- Kids? We haven't even slept together.
- And guess what, it's never going to happen now, because there is no way I'm going to be with someone who uses spaces over tabs.
- Richard! (PRESS SPACE BAR MANY TIMES)
- Wow. Okay. Goodbye.
- One tab saves you eight spaces! - (DOOR SLAMS) - (BANGING)

. . .


(RICHARD MOANS)

- Oh, my God! Richard, what happened?
- I just tried to go down the stairs eight steps at a time. I'm okay, though.
- See you around, Richard.
- Just making a point.

Hopefully, you are not forced to use emacs and your space bar to complete the following exercises.

# Chapter III

## Exercise 00 : ft\_strcpy


	Exercise 00
ft_strcpy	
Turn-in directory : <i>ex00/</i>	
Files to turn in : <b>ft_strcpy.c</b>	
Allowed functions : None	

- Reproduce the behavior of the function **strcpy** (man strcpy).
- Here's how it should be prototyped :

```
char *ft_strcpy(char *dest, char *src);
```

# Chapter IV

## Exercise 01 : ft\_strncpy


	Exercise 01
	ft_strncpy
	Turn-in directory : <i>ex01/</i>
	Files to turn in : <b>ft_strncpy.c</b>
	Allowed functions : None

- Reproduce the behavior of the function **strncpy** (man strncpy).
- Here's how it should be prototyped :

```
char      *ft_strncpy(char *dest, char *src, unsigned int n);
```

# Chapter V

## Exercise 02 : ft\_str\_is\_alpha

	Exercise 02
	ft_str_is_alpha
Turn-in directory : <i>ex02/</i>	
Files to turn in : <b>ft_str_is_alpha.c</b>	
Allowed functions : None	

- Create a function that returns 1 if the string given as a parameter contains only alphabetical characters, and 0 if it contains any other character.
- Here's how it should be prototyped :


```
int ft_str_is_alpha(char *str);
```

- It should return 1 if **str** is empty.



# Chapter VI

## Exercise 03 : ft\_str\_is\_numeric

	Exercise 03
ft_str_is_numeric	
Turn-in directory : <i>ex03/</i>	
Files to turn in : <code>ft_str_is_numeric.c</code>	
Allowed functions : None	


- Create a function that returns 1 if the string given as a parameter contains only digits, and 0 if it contains any other character.
- Here's how it should be prototyped :

```
int      ft_str_is_numeric(char *str);
```

- It should return 1 if `str` is empty.

# Chapter VII

## Exercise 04 : ft\_str\_is\_lowercase

	Exercise 04
ft_str_is_lowercase	
Turn-in directory : <i>ex04/</i>	
Files to turn in : <b>ft_str_is_lowercase.c</b>	
Allowed functions : None	


- Create a function that returns 1 if the string given as a parameter contains only lowercase alphabetical characters, and 0 if it contains any other character.
- Here's how it should be prototyped :

```
int      ft_str_is_lowercase(char *str);
```

- It should return 1 if **str** is empty.

# Chapter VIII

## Exercise 05 : ft\_str\_is\_uppercase

	Exercise 05
	ft_str_is_uppercase
	Turn-in directory : <i>ex05/</i>
	Files to turn in : <b>ft_str_is_uppercase.c</b>
	Allowed functions : None


- Create a function that returns 1 if the string given as a parameter contains only uppercase alphabetical characters, and 0 if it contains any other character.
- Here's how it should be prototyped :

```
int ft_str_is_uppercase(char *str);
```

- It should return 1 if **str** is empty.

# Chapter IX

## Exercise 06 : ft\_str\_is\_printable

	Exercise 06
ft_str_is_printable	
Turn-in directory : <i>ex06/</i>	
Files to turn in : <b>ft_str_is_printable.c</b>	
Allowed functions : None	


- Create a function that returns 1 if the string given as a parameter contains only printable characters, and 0 if it contains any other character.
- Here's how it should be prototyped :

```
int ft_str_is_printable(char *str);
```

- It should return 1 if **str** is empty.

# Chapter X

## Exercise 07 : ft\_strupcase

	Exercise 07
	ft_strupcase
	Turn-in directory : <i>ex07/</i>
	Files to turn in : <b>ft_strupcase.c</b>
	Allowed functions : None


- Create a function that transforms every letter to uppercase.
- Here's how it should be prototyped :

```
char *ft_strupcase(char *str);
```

- It should return **str**.

# Chapter XI

## Exercise 08 : ft\_strlowercase

	Exercise 08
	ft_strlowercase
	Turn-in directory : <i>ex08/</i>
	Files to turn in : <b>ft_strlowercase.c</b>
	Allowed functions : None


- Create a function that transforms every letter to lowercase.
- Here's how it should be prototyped :

```
char *ft_strlowercase(char *str);
```

- It should return **str**.

# Chapter XII

## Exercise 09 : ft\_strcapitalize

	Exercise 09
	ft_strcapitalize
	Turn-in directory : <i>ex09/</i>
	Files to turn in : <b>ft_strcapitalize.c</b>
	Allowed functions : None

- Create a function that capitalizes the first letter of each word and transforms all other letters to lowercase.
- A word is a string of alphanumeric characters.
- Here's how it should be prototyped :

```
char *ft_strcapitalize(char *str);
```

- It should return `str`.
- For example:


```
salut, comment tu vas ? 42mots quarante-deux; cinquante+et+un
```

- Becomes:

```
Salut, Comment Tu Vas ? 42mots Quarante-Deux; Cinquante+Et+Un
```

# Chapter XIII

## Exercise 10 : ft\_strlcpy

	Exercise 10
	ft_strlcpy
	Turn-in directory : <i>ex10/</i>
	Files to turn in : <b>ft_strlcpy.c</b>
	Allowed functions : None


- Reproduce the behavior of the function **strlcpy** (man strlcpy).
- Here's how it should be prototyped :

```
unsigned int ft_strlcpy(char *dest, char *src, unsigned int size);
```



# Chapter XIV

## Exercise 11 : ft\_putstr\_non\_printable

	Exercise 11
ft_putstr_with_non_printable	
Turn-in directory : <i>ex11/</i>	
Files to turn in : <b>ft_putstr_non_printable.c</b>	
Allowed functions : <b>write</b>	

- Create a function that displays a string of characters onscreen. If this string contains characters that aren't printable, they'll have to be displayed in the shape of hexadecimals (lowercase), preceded by a "backslash".
- For example :

```
Coucou\ntu vas bien ?
```

- The function should display :


```
Coucou\0atu vas bien ?
```

- Here's how it should be prototyped :

```
void      ft_putstr_non_printable(char *str);
```

# Chapter XV

## Exercise 12 : ft\_print\_memory

	Exercise 12
	ft_print_memory
Turn-in directory : <i>ex12/</i>	
Files to turn in : <b>ft_print_memory.c</b>	
Allowed functions : <b>write</b>	

- Create a function that displays the memory area onscreen.
- The display of this memory area should be split into three "columns" separated by a space :
  - The hexadecimal address of the first line's first character followed by a ':'.
  - The content in hexadecimal with a space each 2 characters and should be padded with spaces if needed (see the example below).
  - The content in printable characters.
- If a character is non-printable, it'll be replaced by a dot.
- Each line should handle sixteen characters.
- If **size** equals to 0, nothing should be displayed.

- Example:

```
$> ./ft_print_memory
000000010a161f40: 426f 6e6a 6f75 7220 6c65 7320 616d 696e Bonjour les amin
000000010a161f50: 6368 6573 090a 0963 2020 6573 7420 666f ches...c est fo
000000010a161f60: 7509 746f 7574 0963 6520 7175 206f 6e20 u.tout.ce qu on
000000010a161f70: 7065 7574 2066 6169 7265 2061 7665 6309 peut faire avec.
000000010a161f80: 0a09 7072 696e 745f 6d65 6d6f 7279 0a0a ..print_memory..
000000010a161f90: 0a09 6c6f 6c2e 6c6f 6c0a 2000      ..lol.lol. .
$> ./ft_print_memory | cat -te
0000000107ff9f40: 426f 6e6a 6f75 7220 6c65 7320 616d 696e Bonjour les amin$
0000000107ff9f50: 6368 6573 090a 0963 2020 6573 7420 666f ches...c est fo$
0000000107ff9f60: 7509 746f 7574 0963 6520 7175 206f 6e20 u.tout.ce qu on $
0000000107ff9f70: 7065 7574 2066 6169 7265 2061 7665 6309 peut faire avec.$
0000000107ff9f80: 0a09 7072 696e 745f 6d65 6d6f 7279 0a0a ..print_memory..$
0000000107ff9f90: 0a09 6c6f 6c2e 6c6f 6c0a 2000      ..lol.lol. .$
$>
```

- Here's how it should be prototyped :

```
void      *ft_print_memory(void *addr, unsigned int size);
```

- It should return addr.