

C Piscine C 02

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

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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 <u>cannot</u> leave <u>any</u> 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.

- $\bullet$  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  $\mbox{-R CheckForbiddenSourceHeader}$  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 Emac.
- 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)

. . ,

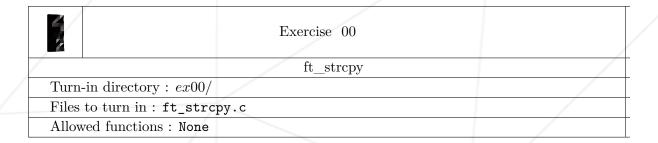
#### (RICHARD MOANS)

- 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 exercices.

#### Chapter III

Exercise 00: ft\_strcpy

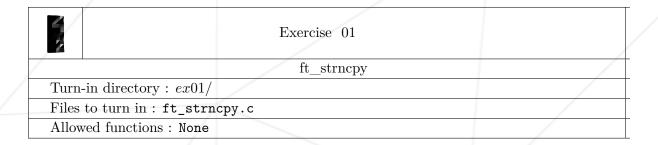


- Reproduce the behavior of the function strcpy (man strcpy).
- Here's how it should be prototyped :

char \*ft\_strcpy(char \*dest, char \*src);

#### Chapter IV

#### Exercise 01 : ft\_strncpy



- 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	
	$ft\_str\_is\_alpha$	
Turn-in directory : a	ex02/	
Files to turn in: ft	_str_is_alpha.c	
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);

#### Chapter VI

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

	Exercise 03	
	ft_str_is_numeric	
Turn-in directory : $ex03/$		
Files to turn in : ft_str_	is_numeric.c	/
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);

#### Chapter VII

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

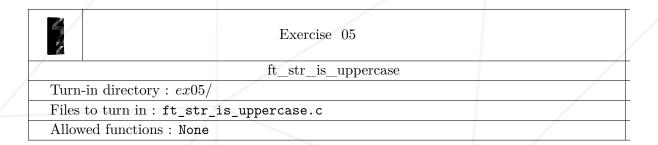
Exercise 04	
ft_str_is_lowercase	/
Turn-in directory : $ex04/$	
Files to turn in : ft_str_is_lowercase.c	/
Allowed functions: None	

- 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);

#### Chapter VIII

### 



- 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);

#### Chapter IX

Exercise 06: ft\_str\_is\_printable

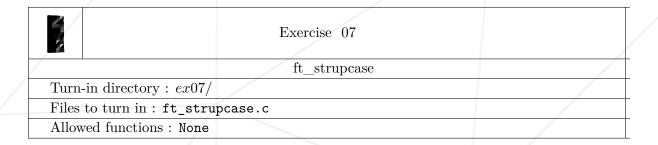
	Exercise 06	
	$ft\_str\_is\_printable$	
Turn-in directory : $e$	x06/	
Files to turn in : ft_	str_is_printable.c	
Allowed functions: 1	lone	

- 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);

#### Chapter X

#### Exercise 07: ft\_strupcase



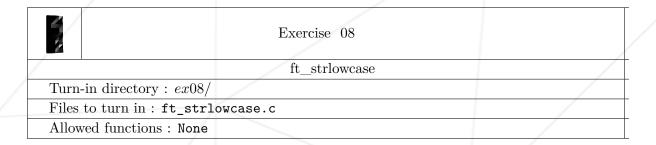
- Create a function that transforms every letter to uppercase.
- Here's how it should be prototyped :

char \*ft\_strupcase(char \*str);

• It should return str.

#### Chapter XI

#### Exercise 08: ft\_strlowcase



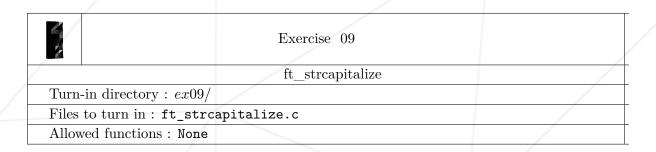
- Create a function that transforms every letter to lowercase.
- Here's how it should be prototyped:

char \*ft\_strlowcase(char \*str);

• It should return str.

#### Chapter XII

#### Exercise 09: ft\_strcapitalize



- 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:

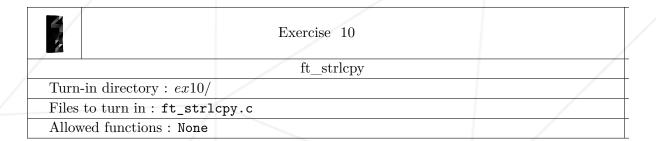
```
salut, comment tu vas ? 42mots quarante-deux; cinquante+et+un
```

• Becomes:

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

#### Chapter XIII

Exercise 10: ft\_strlcpy



- 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 : $ex11$	/	
Files to turn in : ft_put	str_non_printable.c	
Allowed functions : writ	te	

- 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\Oatu 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 : $ex12/$	
Files	to turn in : ft_print_memory.c	/
Allo	ved functions: write	

- 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.

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• Example:

```
$> ./ft_print_memory
00000010a161f40: 426f 6e6a 6f75 7220 6c65 7320 616d 696e Bonjour les amin
00000010a161f50: 6368 6573 090a 0963 2020 6573 7420 666f ches...c est fo
00000010a161f60: 7509 746f 7574 0963 6520 7175 206f 6e20 u.tout.ce qu on
00000010a161f70: 7065 7574 2066 6169 7265 2061 7665 6309 peut faire avec.
00000010a161f80: 0a09 7072 696e 745f 6d65 6d6f 7279 0a0a ..print_memory..
00000010a161f90: 0a09 6c6f 6c2e 6c6f 6c0a 2000 ..lol.lol. .

$> ./ft_print_memory | cat -te
000000107ff9f40: 426f 6e6a 6f75 7220 6c65 7320 616d 696e Bonjour les amin$
000000107ff9f50: 6368 6573 090a 0963 2020 6573 7420 666f ches...c est fo$
000000107ff9f60: 7509 746f 7574 0963 6520 7175 206f 6e20 u.tout.ce qu on $
000000107ff9f70: 7065 7574 2066 6169 7265 2061 7665 6309 peut faire avec.$
000000107ff9f80: 0a09 7072 696e 745f 6d65 6d6f 7279 0a0a ..print_memory..$
000000107ff9f90: 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.