Quest03

Subject | 1 Solution | Additional Resources (3)

Quest03

Remember to git add && git commit && git push each exercise!

We will execute your function with our test(s), please DO NOT PROVIDE ANY TEST(S) in your file

For each exercise, you will have to create a folder and in this folder, you will have additional files that contain your work. Folder names are provided at the beginning of each exercise under `submit directory` and specific file names for each exercise are also provided at the beginning of each exercise under `submit file(s)`.

Introduction

Let's practice.

We will proceed to rebuild some of the C library function to understand how they work.

Control Center

roup formation

Progress

ubmitted

est review

Finished: approved

Go To DoCode

Access:

READ WRITE

Go To Gitea

Keep Working On This Soluti

Also working on the project

Objective:
More pointers, more loops, more string and a beginning of struct. :-)

Complexity will be one loop with multiple variables.
strstr is specially you will touch the one loop with one nested loop. :-)

Last notion is `struct`, it's a big box of variables :-)

Quest03	Reverse String
Submit directory	ex00
Submit file	reverse_string.c

Description

Write a program that takes a string as argument returns its reverses.

Your algorithm must be IN PLACE. (What is in place?)
An in-place algorithm is an algorithm which transforms input using no auxiliary data structure.

Example 00:

```
Input: "Hello"
Output: "olleH"
```

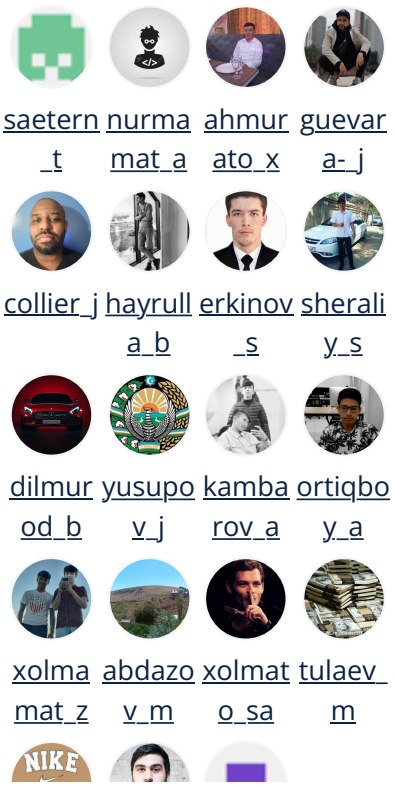
Example 01:

```
Input: "LoL"
Output: "LoL"
```

Example 02:

```
Input: "Nothing Else Matters"
Output: "srettaM eslE gnihtoN"
```

Just finished



Example 03:

```
Input: ""
Output: ""
```

Function prototype (c)

```c
/*
**
** QWASAR.IO -- reverse_string
**
** @param {char*} param_1
**
** @return {char*}
**
*/

char* reverse_string(char* param_1)
{

}
```

Tip
(In C)

```c
/*
Example of main
*/
int main() {
  char my_str[] = "Hello";

  printf("Before reverse -> %s
", my_str);
  printf("Reverse -> %s
", reverse_string(my_str));
  return 0;
}
```

sayfullaahmadiyerlanu
_k av_a l_a

Type
Project

Group Size
1 Participant

Review system
Test Review (Gandalf)

Difficulty
Initiation

Average duration
1 Week

Project's Metadata

Project

id: 33

name: quest03

visible: True

Quest03	My Strcmp
Submit directory	ex01
Submit file	my_strcmp.c

Description

Reproduce the behavior of the function strcmp.
The strcmp() function compares string1 with string2 to see if there are equals.

Tip
Return value is connected to ASCII values ;-)

Function prototype (c)

```c
/*
**
** QWASAR.IO -- my_strcmp
**
** @param {char*} param_1
** @param {char*} param_2
**
** @return {int}
**
*/

int my_strcmp(char* param_1, char*
param_2)
{

}
```

Example 00

```
Input: "abc" && "bd"
Output:
Return Value: -1
```

Example 01

```
Input: "bd" && "abc"
Output:
Return Value: 1
```

Example 02

```
Input: "abc" && "abc"
Output:
Return Value: 0
```

Tip
(In C)

```
/*
Example of main
*/
int main() {
  char *s1 = "Hello";
  char *s2 = "Hello";

  printf("my_strcmp -> %d\n",
my_strcmp(s1, s2));
  return 0
}
```

Quest03	My Strcpy
Submit directory	ex02
Submit file	my_strcpy.c

Description

Reproduce the behavior of the function strcpy.
The strcpy() and strncpy() functions copy the string source (src) to destination (dst).

First parameter is destination and second parameter is source. The strcpy() and strncpy() functions return destination.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_strcpy
**
** @param {char*} param_1
** @param {char*} param_2
**
** @return {char*}
**
*/

char* my_strcpy(char* param_1, char*
param_2)
{

}
```

Example 00

```
Input: "" && "abc"
Output:
Return Value: "abc"
```

Example 01

```
Input: "" && "RaInB0w d4Sh! "
Output:
Return Value: "RaInB0w d4Sh! "
```



```
Return Value: ""
```

Tip
(In C)

```
/*
Example of main
*/
#include <stdio.h>

int main() {
  char dst[100] = {0};
  char *src     = "Hello";

  printf("my_strcpy -> %s\n",
my_strcpy(dst, src));
  return 0;
}
```

Quest03	My Strncpy
Submit directory	ex03
Submit file	my_strncpy.c

Description

Reproduce the behavior of the function strncpy.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_strncpy
**
** @param {char*} param_1
** @param {char*} param_2
** @param {int} param_3
**
** @return {char*}
**
*/

char* my_strncpy(char* param_1, char*
param_2, int param_3)
{

}
```

Example 00

```
Input: "" && "abc" && 2
Output:
Return Value: "ab"
```

Example 01

```
Input: "" && "RaInB0w d4Sh! " && 6
Output:
Return Value: "RaInB0"
```

Example 02

```
Input: "" && "Hello World" && 0
Output:
Return Value: ""
```

Quest03	My Strchr
Submit directory	ex04
Submit file	my_strchr.c

Description

Searches for the first occurrence of the character *c* (an unsigned char) in the string pointed to by the argument *str*. The terminating null character is considered to be part of the string. Returns a pointer pointing to the last matching character, or null if no match was found.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_strchr
**
** @param {char*} param_1
** @param {char} param_2
**
** @return {char*}
**
*/

char* my_strchr(char* param_1, char
param_2)
{

}
```

Example 00

```
Input: "abcabc" && "b"
Output:
Return Value: "bcabc"
```

Example 01

```
Input: "121212" && "2"
Output:
Return Value: "21212"
```

Example 02

```
Input: "abc" && "d"
Output:
Return Value: nil
```

Tip
(In C)
`nil` in C is `NULL`

Quest03	My Strrchr
Submit directory	ex05
Submit file	my_strrchr.c

Description

Searches for the last occurrence of the character *c* (an unsigned char) in the string pointed to by the argument *str*. The terminating null character is considered to be part of the string. Returns a pointer pointing to the last matching character, or null if no match was found.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_strrchr
**
** @param {char*} param_1
** @param {char} param_2
**
** @return {char*}
**
*/

char* my_strrchr(char* param_1, char
param_2)
{

}
```

Example 00

```
Input: "abcabc" && "b"
Output:
Return Value: "bc"
```

Example 01

```
Input: "121212" && "2"
Output:
Return Value: "2"
```

Example 02

```
Input: "abc" && "d"
Output:
Return Value: nil
```

Tip
(In C)
`nil` in C is `NULL`

Quest03	My Strstr
Submit directory	ex06
Submit file	my_strstr.c

Description

Implement strStr().

Returns a pointer to the first occurrence of needle in haystack, or **NULL** if needle is not part of haystack.

Clarification:

What should we return when `needle` is an empty string? This is a great question to ask during an interview.

For the purpose of this problem, we will return `haystack` when `needle` is an empty string.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_strstr
**
** @param {char*} param_1
** @param {char*} param_2
**
** @return {char*}
**
*/

char* my_strstr(char* param_1, char*
param_2)
{

}
```

Example 00

```
Input: "hello" && "ll"
Output:
Return Value: "llo"
```

Example 01

```
Input: "aaaaa" && "bba"
Output:
Return Value: nil
```

Example 02

```
Input: "" && "a"
Output:
Return Value: nil
```

Tip
(In C)
pseudo-code:

```
while letter_s1 in s1
  while letter_s2 in s2
    if letter_s1 != letter_s2
      break
  if reach end of s2
    return &s1[index]
return NULL
```

Quest03	My First Struct
Submit directory	ex07
Submit file	my_first_struct.c

Description

Structure in C are similar to the concept of `package`.

You can have multiple object inside your package and with a `struct` you can have multiple variable in it.

A `struct` is a type.

You are defining a `struct` of type `struct s_box` which will contains variables.

example:

```
struct s_coordinate {
  int x;
  int y;
}

int main() {
  struct s_coordinate coord;

  coord.x = 0;
  coord.y = 0;
  return 0;
}
```

A struct has a special behavior if it's a pointer on a struct or not.

If it's a pointer on a struct, in order to reach the variable you will use `->`
example:

```
struct s_coordinate {
  int x;
  int y;
}

int main() {
  struct s_coordinate coord;
  struct s_coordinate* ptr_on_coord =
&coord;

  ptr_on_coord->x = 0;
  ptr_on_coord->y = 0;
  return 0;
}
```

Let's dive in. :-)

In this exercise you will receive a struct integer_array.
You have to print its size and its content following this format: size\narray[0]\narray[1]...
Iterate throught the variable size to iterate throught the struct.

If the size is 0, just print 0\n.

You can use printf() to print.

Function prototype (c)

```
/*
**
** QWASAR.IO -- my_first_struct
**
** @param {integer_array*} param_1
**
** @return {void}
**
*/
#ifndef STRUCT_INTEGER_ARRAY
#define STRUCT_INTEGER_ARRAY
typedef struct s_integer_array
{
    int size;
    int* array;
} integer_array;
#endif


void my_first_struct(integer_array*
param_1)
{

}
```

Example 00

```
Input: [0]
Output: 1
0

Return Value: nil
```

Example 01

```
Input: [1, 2, 3]
Output: 3
1
2
3

Return Value: nil
```

Example 02

```
Input: [10, 2, 3, 3, 0, -1]
Output: 6
10
2
3
3
0
-1

Return Value: nil
```

Quest03	My Is Sort
Submit directory	ex08
Submit file	my_is_sort.c

Description

Let's create a function which will tell us if an array is sorted or not. What is `sorted`? :-)

Write a function that takes an integer array as a parameter (input) and returns a boolean (true/false).

Your function should return `true` if the integer array is sorted in either ASC(ascending) or DESC(descending) order.
Your function should return `false` if the integer array is not sorted.

Numbers will be from -2_000_000 to 2_000_000
Array might have duplicate(s).

Function prototype (c)

```c
/*
**
** QWASAR.IO -- my_is_sort
**
** @param {integer_array*} param_1
**
** @return {bool}
**
*/
#include <stdbool.h>
#ifndef STRUCT_INTEGER_ARRAY
#define STRUCT_INTEGER_ARRAY
typedef struct s_integer_array
{
    int size;
    int* array;
} integer_array;
#endif


bool my_is_sort(integer_array* param_1)
{

}
```

Example 00

```
Input: [1, 1, 2]
Output:
Return Value: true
```

Example 01

```
Input: [2, 1, -1]
Output:
Return Value: true
```

Example 02

```
Input: [4, 7, 0, 3]
Output:
Return Value: false
```

Example 03

```
Input: []
Output:
Return Value: true
```

Tips
(In C)
In C, we have defined `boolean` on `char` so you can use the type `boolean` :)
(In C)
Curious about the integer_array type?

```
typedef struct s_integer_array {
  int size;
  int* array;
} integer_array;
```

integer_array_variable->size
will give you the size of the array

integer_array_variable->array
will give you the access to the array

integer_array_variable->array[0]
=> is the first cell of the array

Please do not define the struct in your code when sending to gandalf.

Google: what is a Boolean
Google: sort ascending