TP 2 - Problem 8 - I

```cpp
#include <cstring>
#include <iostream>

#define SHOW(arg) std::cout << "Macro SHOW " #arg "": " << (arg) << '\n';

// Only to learn pointer arithmetic.
void reverseString1(char *chr_ptr) {
  // The "strlen" function returns a size_t variable which is an unsigned
  // one.
  size_t n{std::strlen(chr_ptr)};
  if (n > 1) {
    char *end_ptr{chr_ptr + n};
    n /= 2;
    // We know that n > 0 so it is safe to decrement it.
    do {
      char tmp{*chr_ptr};
      *chr_ptr++ = *--end_ptr;
      *end_ptr = tmp;
    } while (--n > 0);
```

TP 2 - Problem 8 - II

```
20      }
21    }
22
23    // Only to learn pointer arithmetic.
24    void reverseString2(char *chr_ptr) {
25      char *end_ptr{chr_ptr};
26      // Search for the null character.
27      while (*end_ptr != '\0')
28        ++end_ptr;
29      // Now, "end_ptr" points to the null character: it will be
30      // pre-decremented before dereferencing.
31      while (chr_ptr < end_ptr) {
32        char tmp{*chr_ptr};
33        *chr_ptr++ = *--end_ptr;
34        *end_ptr = tmp;
35      }
36    }
37
38    int main() {
39      {
```

```
40        char string[]{""};
41        reverseString1(string);
42        SHOW(string)
43        reverseString2(string);
44        SHOW(string)
45      }
46      {
47        char string[]{"a"};
48        reverseString1(string);
49        SHOW(string)
50        reverseString2(string);
51        SHOW(string)
52      }
53      {
54        char string[]{"ab"};
55        reverseString1(string);
56        SHOW(string)
57        reverseString2(string);
58        SHOW(string)
59      }
```

TP 2 - Problem 8 - IV

```
60    {
61      char string[]{"abc"};
62      reverseString1(string);
63      SHOW(string)
64      reverseString2(string);
65      SHOW(string)
66    }
67
68    return 0;
69  }
```

TP 2 - Problem 8 - V

Output:

```
1    Macro SHOW "string":
2    Macro SHOW "string":
3    Macro SHOW "string": a
4    Macro SHOW "string": a
5    Macro SHOW "string": ba
6    Macro SHOW "string": ab
7    Macro SHOW "string": cba
8    Macro SHOW "string": abc
```