

*CPS 188 Lab 7 : Strings &
Recursion*

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1 Problem Sets

1.1 Problem 1

1.1.1 Computer Program

```
1 #include <stdio.h>
2 #include <string.h>
3 #include <ctype.h>
4
5 #define NUM_CHARACTER 1000
6 #define INDEX_0 0
7 #define INDEX_1 1
8
9 int b = 0, c = 0;
10
11 void reverse(char before[], char after[]);
12
13 void clean(char before[], char after[]);
14
15 void clean(char before[], char after[])
16 {
17     while (before[c] != '\0')
18     {
19         if (isalnum(before[c]))
20         {
21             after[b++] = tolower(before[c]);
22         }
23         c++;
24     }
25     after[b] = '\0';
26 }
27
28 void reverse (char before[], char after[])
29 {
30     int len = strlen(before);
31     if(len == 0)
32     {
33         after[INDEX_0] = '\0';
34     }
35     else
36     {
37         reverse(&before[INDEX_1], after);
38         strncat(after, before, INDEX_1);
39     }
```

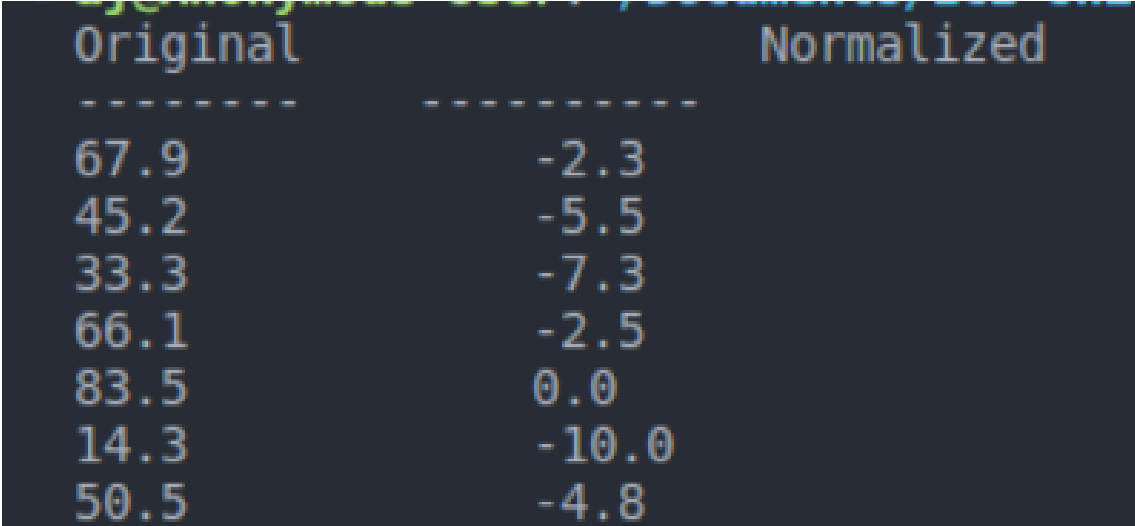
```

40 }
41
42 void main(void)
43 {
44     char phrase[NUM_CHARACTER], reversing[NUM_CHARACTER],
cleaning[NUM_CHARACTER];
45     printf("Please enter a string: ");
46     fgets(phrase, NUM_CHARACTER, stdin);
47     printf("Original structure of the string: %s", phrase);
48     clean(phrase, cleaning);
49     printf("Clean structure of the string: %s\n", cleaning);
50     reverse(cleaning, reversing);
51     printf("Reverse structure of the string: %s\n", reversing
);
52     if (strcmp(cleaning, reversing) != 0)
53     {
54         printf("This is not a palindrome.\n");
55     }
56     else
57     {
58         printf("This is a palindrome.\n");
59     }
60 }

```

Listing 1.1:

1.1.2 Program Output Screenshot



Original	Normalized
67.9	-2.3
45.2	-5.5
33.3	-7.3
66.1	-2.5
83.5	0.0
14.3	-10.0
50.5	-4.8