

CS2263 Assignment 2

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- Feb 16th 2024
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Question 1

For my **htags1** program, I used a while loop to read in 1 character from stdin with `getchar()`. From this character, I would determine if I was inside a tag or not by keeping track of a boolean variable that told me so. If I was in the proper opening tag (and not a comment) I would keep reading and printing to the terminal with `putchar()` until the closing bracket was met. I would also keep track if I was in a comment or not with a boolean variable & only printed characters if the condition of being in the tag & not in a comment was met.

Question 2

```
#include <stdio.h>
#include <stdbool.h>
#include <string.h>

void printArr(char a[], int n)
{
    int i;

    for (i = 0; i < n; i++)
    {
        putchar(a[i]);
    }
    putchar('\n');
}

int main()
{
    int c, d;
    int opener = '<';
    bool inTag = false;
    bool in_comment = false;

    char title[] = "Output of htags:\n";
    printArr(title, strlen(title));

    while ((c = getchar()) != EOF)
    {
        // inside tag
        if (c == '<')
        {
            d = getchar();
            // we know it is a comment
            if (d == '!')
            {
                in_comment = true;
            }
            else
            {
                // not in comment, add in the extra characters back
```

```
        inTag = true;
        putchar(opener);
        putchar(d);
        continue;
    }
}
// outside tag
else if (c == '>')
{
    // check if we are still in the comment
    if (in_comment)
    {
        in_comment = false;
        continue;
    }
    else
    {
        putchar(c);
        putchar('\n');
        inTag = false;
    }
}
if (inTag && !in_comment)
{
    putchar(c);
}
}
```

Question 3

A similar approach was used for **htext1**, however, the character that would determine starting & stopping points was switched. So instead, I was looking for **>** for my start & **<** for my end.

I used the same iterative approach by reading and printing characters out one-by-one.

Question 4

```
#include <stdio.h>
#include <stdbool.h>
#include <string.h>

void printArr(char a[], int n)
{
    int i;

    for (i = 0; i < n; i++)
    {
        putchar(a[i]);
    }
    putchar('\n');
}

int main()
{
    int c;
    bool inTag = false;
    bool outTag = false;

    char title[] = "Output of htext:\n";
    printArr(title, strlen(title));

    while ((c = getchar()) != EOF)
    {
        // outside of the tag, also the start position
        if (c == '>')
        {
            outTag = true;
            continue;
        }
        // inside of a tag, also the stop position
        else if (c == '<')
        {
            inTag = true;
            outTag = false;
        }
        // keep printing until we reach another opening tag
        if (outTag)
        {
```

```
        putchar(c);  
    }  
    }  
    putchar('\n');  
}
```

Question 5

htags1 Output 1

```
rinor@rinors-mac Assgn2 % ./htags1_3 < another_test.html
Output of htags:

<html>
<b>
</b>
</html>
rinor@rinors-mac Assgn2 %
```

htext1 Output 1

```
rinor@rinors-mac Assgn2 % ./htext1_2 < another_test.html
Output of htext:

TEST
rinor@rinors-mac Assgn2 %
```

Question 6

htags1 Output 2

```
rinor@rinors-mac Assgn2 % ./htags1_3 < A2W2024.html
Output of htags:

<html>
<head>
<meta http-equiv=Content-Type content="text/html; charset=unicode">
<meta name=Generator content="Microsoft Word 15 (filtered)">
<style>
</style>
</head>
<body lang=EN-CA link=blue vlink=purple style='word-wrap:break-word'>
<div class=WordSection1>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal style='text-align:justify'>
<span lang=EN-US
style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoNormal>
<u>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
<b>
</b>
</span>
</u>
</p>
<p class=MsoNormal>
```



```
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoNormal>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
<a href="https://www.educba.com/types-of-tags-in-html/">
<span
style='text-decoration:none'>
</span>
</a>
</span>
</p>
<p class=MsoNormal>
<span style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:0cm;margin-bottom:.0001pt;text-indent:0cm;line-
height:12.0pt'>
<i>
<span
style='font-family:"Times New Roman",serif'>
</span>
</i>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:7.1pt;margin-bottom:.0001pt;text-indent:0cm;line-
height:12.0pt'>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-family:"Courier New"'>
</span>
<span lang=EN-US
style='font-family:"Times New Roman",serif'>
<b>
</b>
</span>
<span lang=EN-US style='font-family:"Courier New"'>
</span>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
<a
href="https://linuxcommand.org/lc3_lts0070.php">
</a>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:7.1pt;margin-bottom:.0001pt;text-indent:18.0pt;line-
height:
```

[illegible]

```

<b>
<span lang=EN-US
style='font-family:"Courier New"'>
</span>
</b>
<span lang=EN-US
style='font-family:"Times New Roman",serif'>
</span>
<b>
<span lang=EN-US style='font-family:"Courier New"'>
</span>
</b>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<b>
<span lang=EN-US style='font-family:"Courier New"'>
</span>
</b>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span lang=EN-US style='font-family:"Courier New"'>
</span>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span style='font-family:"Times New Roman",serif'>
<u>
</u>

```

```
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span style='font-family:"Times New Roman",serif'>
<u>
</u>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
12.0pt;margin-left:43.1pt;text-indent:-18.0pt;line-height:12.0pt'>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span style='font-family:"Times New Roman",serif'>
<br>
<br>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
```

```
<span style='font-family:"Times New Roman",serif'>
</span>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<span style='font-family:"Times New Roman",serif'>
</span>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;text-indent:0cm;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;text-indent:0cm;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoNormal>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
</div>
</body>
</html>
```

rinor@rinors-mac Assgn2 %

htext1 Output 2

```
rinor@rinors-mac Assgn2 % ./htext1_2 < A2W2024.html
Output of htext:
```

CS 2263

Assignment 2

Due: Feb. 21, 2024 (before midnight)

Assignments
are to be completed individually (not as a group work).

Sample
reference: <https://www.educba.com/types-of-tags-in-html/>

Processing strings

Develop and test two
utility programs called `htags1` and `htext1` to process an HTML file. The
`htags1` program should print all
HTML tags, except the HTML comment tags `<!-- -->`, one per line of
output. The `htext1` program should print
all plain text extracted from the source HTML file, i.e. just the text, no
tags. The utility programs should read from standard input and may use the
input redirection to access
a file. (This means that your program code should read from standard
input, and
NOT perform any file operations, like `fopen()` etc. You may capture the

output

from your program using output redirection, or you may just output to the terminal window and print the screen, your choice.)

Assume an

HTML tag is any text enclosed between `<` and `>`, including these delimiter

characters. The end tags, like `</p>`, are valid tags. For example, in a sample input HTML file containing:

```
<body lang=EN-CA link=blue vlink="#954F72">
<div class=WordSection1>
<p class=MsoNormal><b><span lang=EN-US
style='font-size:14.0pt;font-family: "Times New
Roman",serif'>CS
2263</span></b></p>
<p class=MsoNormal><b><span lang=EN-US
style='font-size:14.0pt;font-family: "Times New
Roman",serif'>Assignment 2</span></b></p>
```

we find the following tags:

```
<body lang=EN-CA link=blue vlink="#954F72">
<div class=WordSection1>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family: "Times New
Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family: "Times New
Roman",serif'>
</span>
</b>
</p>
```

and the plain text in this sample input is:

CS 2263 Assignment 2

When outputting the plain text you may keep new line characters present in the input, or you may replace them with space characters.

The data to your program should be read from standard input (use the input redirection to read from the HTML file) using the `getchar()` function. The output should be

heading
for each exercise 1 to 7, including the source code of each completed
program
and the screenshots of the terminal window (or the contents of the file
with the
redirected program output) showing the test runs. In case of multiple
submission the most recent item in your Dropbox will be graded.

rinor@rinors-mac Assgn2 %

Question 7

This **HTML** file is from the Assignment 1 D2L page for CS2263.

htags1 Output 3

```
rinor@rinors-mac Assgn2 % ./htags1_3 < A1W2024.html
Output of htags:

<html>
<head>
<meta http-equiv=Content-Type content="text/html; charset=unicode">
<meta name=Generator content="Microsoft Word 15 (filtered)">
<style>
</style>
</head>
<body lang=EN-CA style='word-wrap:break-word'>
<div class=WordSection1>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal>
<b>
<span lang=EN-US style='font-size:14.0pt;font-family:
"Times New Roman",serif'>
</span>
</b>
</p>
<p class=MsoNormal style='text-align:justify'>
<span lang=EN-US
style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:0cm;margin-bottom:.0001pt;text-indent:0cm;line-
height:12.0pt'>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
<u>
```

```

<b>
</b>
</u>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:0cm;margin-left:7.1pt;margin-bottom:.0001pt;text-indent:0cm;line-height:12.0pt'>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
<br>
</span>
<i>
<span style='font-family:"Times New Roman",serif'>
</span>
</i>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:0cm;margin-left:7.1pt;margin-bottom:.0001pt;text-indent:0cm;line-height:12.0pt'>
<span
style='font-family:"Times New Roman",serif'>
<i>
</i>
<i>
</i>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:0cm;margin-left:7.1pt;margin-bottom:.0001pt;text-indent:0cm;line-height:12.0pt'>
<span
style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:12.0pt;margin-left:43.1pt;text-indent:-18.0pt;line-height:12.0pt'>
<span
style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<i>
</i>
<br>
<br>
<br>
<span style='font-family:"Courier New"'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:

```

0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-height:12.0pt'>

<i>
</i>

<i>
</i>
<i>
</i>

<u>
</u>

</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-height:12.0pt'>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-right:0cm;margin-bottom:0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-height:12.0pt'>

<i>
</i>


```
<span style='font-family:"Courier New"'>
</span>
<span
style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
12.0pt;margin-left:43.1pt;text-indent:-18.0pt;line-height:12.0pt'>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<i>
</i>
<br>
<span
style='font-family:"Courier New"'>
</span>
<span style='font-family:"Courier New"'>
</span>
<span
style='font-family:"Times New Roman",serif'>
</span>
<span style='font-family:
"Courier New"'>
</span>
<strong>
<span
style='font-family:Times'>
</span>
</strong>
<span
style='font-family:"Courier New"'>
</span>
<span style='font-family:"Courier New"'>
</span>
<span style='font-family:"Courier New"'>
</span>
<span style='font-family:"Courier New"'>
</span>
<br>
<br>
<span style='font-family:"Courier New"'>
</span>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
```

```
12.0pt;margin-left:43.1pt;text-indent:-18.0pt;line-height:12.0pt'>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:43.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<i>
</i>
<br>
<i>
<u>
</u>
</i>
<i>
<u>
</u>
</i>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:79.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:79.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
<i>
</i>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:79.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:79.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:79.1pt;margin-bottom:.0001pt;text-indent:-18.0pt;line-
height:
12.0pt'>
<span style='font-size:7.0pt;font-family:"Times New Roman",serif'>
</span>
```

```
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;margin-
right:0cm;margin-bottom:
0cm;margin-left:0cm;margin-bottom:.0001pt;text-indent:0cm;line-
height:12.0pt'>
<span
lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;text-indent:0cm;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
<i>
</i>
</span>
</p>
<p class=MsoBodyTextIndent style='margin-top:6.0pt;text-indent:0cm;line-
height:
12.0pt'>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
<b>
<u>
<span style='color:red'>
</span>
</u>
</b>
</span>
</p>
<p class=MsoNormal>
<span lang=EN-US style='font-family:"Times New Roman",serif'>
</span>
</p>
</div>
</body>
</html>
rinor@rinors-mac Assgn2 %
```

htext1 Output 3

```
rinor@rinors-mac Assgn2 % ./htext1_2 < A1W2024.html
Output of htext:
```

CS 2263

Assignment 1

Due: January 29, 2024 (before midnight)

Assignments are
to be completed individually (not as a group work).

getchar(),
putchar(), functions

On this assignment you are asked to
use the character input/output operations (getchar(), putchar()) rather
than formatted input output (please do not use scanf, printf).

;

1.;

Exercise 1 (display a prompt using putchar())

Write a function that accepts a character array of length n and prints all
n

characters from this array one character at a time using putchar() to the
console. Then use this function in a program that prints the Hello World
message.

```
void printArr(char a[], int n)
```

2.;

digits reversed and the result should be printed with the digits reversed as well. So, for example, if the user wanted to add twenty five to one hundred twenty three, they would enter 321 for the first number, 52 for the second and get the result 841 representing $123+25=148$. Use the functions developed for exercises 1, 2, 3 and 4. Your program should:

a.

b. ;

Read characters from the console (one at a time, using `getchar()`) representing the two integers to be added (assume maximum of 10 digits for each number, no spaces, each number on the input is terminated by the `\n` character), and store them in two arrays,

c.

d.

Print the result of adding the two numbers entered by the user, with the digits printed in the reversed order (use the function from Exercise 2 for printing).

[illegible]

Reminder:

use only the `getchar()`, `putchar()` functions for input/output. Include minimal comments in your programs (use Section 11.4 and the programming examples in the textbook as a guide).

Submit a

SINGLE PDF FILE with your Assignment Report and it should include: cover page , headings for each exercise, the source code of each completed program

and the screenshots showing couple test runs for each exercise. When testing functions in exercises 1, 2, 3 and 4 you may need to write a driver program.