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Assignment 4

1. My program has 5 functions including the main(). display() just prints out the tags and how many times they were found. tagCounter() counts the tags and updates everytime the same tag is encountered. fileReader() reads the HTML file and checks for the tags and calls the tagCounter() to update the number of times the tag is found. memoryFreeing() frees the heap memory.

htag.c

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

#define MAX_SIZE 100000
#define TOTAL_TAGS 100
#define MAX_TAG_SIZE 30

void display(char **tagArr, int *tagCounter)
{
    printf("Tag\tCount");
    printf("\n");

    for(int i = 0; i < TOTAL_TAGS; i++)
    {
        if(tagCounter[i] != -1)
        {
            printf("%s \t %d\n", tagArr[i], tagCounter[i]);
        }
    }
}

void tagCounter(char *charac, char **tagArr, int *counter)
{
    int i = 0;
    int tag = 0;

    for(i = 0; i < TOTAL_TAGS; i++)
    {
        if(tagArr[i] == NULL)
        {
            break;
        }
        else if(strncmp(charac, tagArr[i], strlen(charac)) == 0)
        {
            tag = 1;
        }
    }
}
```

```

        break;
    }
}
if (tag)
{
    counter[i] = counter[i]+1;
}
else
{
    tagArr[i] = charac;
    counter[i] = 1;
}
}

void memoryFreeing(char *ch, char **tagsArr, int *counting)
{
    free(ch);

    for(int i = 0; i < TOTAL_TAGS; i++)
    {
        free(tagsArr[i]); //freeing each element of tagsArr array
    }
    free(tagsArr); //freeing tagsArr array
    free(counting); //freeing counting Array
}

int fileReader(char *charac1, char **tag, int *counter)
{
    int len = 0;
    int num = 0;
    char *tagPtr = NULL;
    int indexPos = 0;

    if ((len = read(0, charac1, MAX_SIZE)))
    {
        for(int i = 0; i < len; i++)
        {
            if (num == 0)
            {
                //checking for HTML tags
                if(charac1[i] == '<')
                {
                    tagPtr = (char *)malloc(MAX_TAG_SIZE);

```

```

        memset(tagPtr, '\0', MAX_TAG_SIZE);
        num = 1;
    }
}
else
{
    if(charac1[i] == '>' || charac1[i] == '/' || charac1[i] == ' ')
    {
        num = 0;
        indexPos = 0;
        if(charac1[i]!='!')
        {
            tagCounter(tagPtr, tag, counter);
        }
        else
        {
            free(tagPtr);
        }
    }
    else
    {
        tagPtr[indexPos++] = charac1[i];
    }
}
}
}

int main()
{
    char *input=NULL;
    char** tagPtr=NULL;
    int *tagsCounter=NULL;

    input = (char *)malloc(sizeof(char) * MAX_SIZE+1);
    tagPtr = (char **) malloc(sizeof(char *) * TOTAL_TAGS);
    tagsCounter = (int *) malloc(sizeof(int) * TOTAL_TAGS);
    memset(input, '\0', MAX_SIZE+1);

    for(int i = 0; i < TOTAL_TAGS; i++)
    {
        tagPtr[i]=NULL;
        tagsCounter[i]=-1;
    }
}

```

```

fileReader(input, tagPtr, tagsCounter); //reading the file
display(tagPtr, tagsCounter); //printing the output
memoryFreeing(input, tagPtr, tagsCounter); //freeing all the heap memory
return EXIT_SUCCESS;
}

```

Outputs:

```

C:\Users\srvk\OneDrive\Desktop\UNB\Summer2020\CS2263\Assignments\Assignment4>a.exe < HelloWorld.html
Tag      Count
!DOCTYPE      6
html        1
!--         1
head        1
meta        1
title       1
body        1
p           1

C:\Users\srvk\OneDrive\Desktop\UNB\Summer2020\CS2263\Assignments\Assignment4>a.exe < Sample.html
Tag      Count
!DOCTYPE     13
html        1
!--         3
head        1
meta        1
title       1
body        1
strong      1
ol          2
li          2
blink       1
p           2

```

Testing a function

htag2.c

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "htag3.h"

#define TOTALTAGS 100

int main(int argc, char** argv)

```

```
{  
    printf("Count: \n");  
}
```

htag3.h

```
#define TOTAL_TAGS 100  
void tagCounter(char *charac, char **tagArr, int *counter)  
{  
    int i = 0;  
    int tag = 0;  
  
    for(i = 0; i < TOTAL_TAGS; i++)  
    {  
        if(tagArr[i] == NULL)  
        {  
            break;  
        }  
        else if(strncmp(charac, tagArr[i], strlen(charac)) == 0)  
        {  
            tag = 1;  
            break;  
        }  
    }  
  
    if (tag)  
    {  
        counter[i] = counter[i]+1;  
    }  
    else  
    {  
        tagArr[i] = charac;  
        counter[i] = 1;  
    }  
}
```