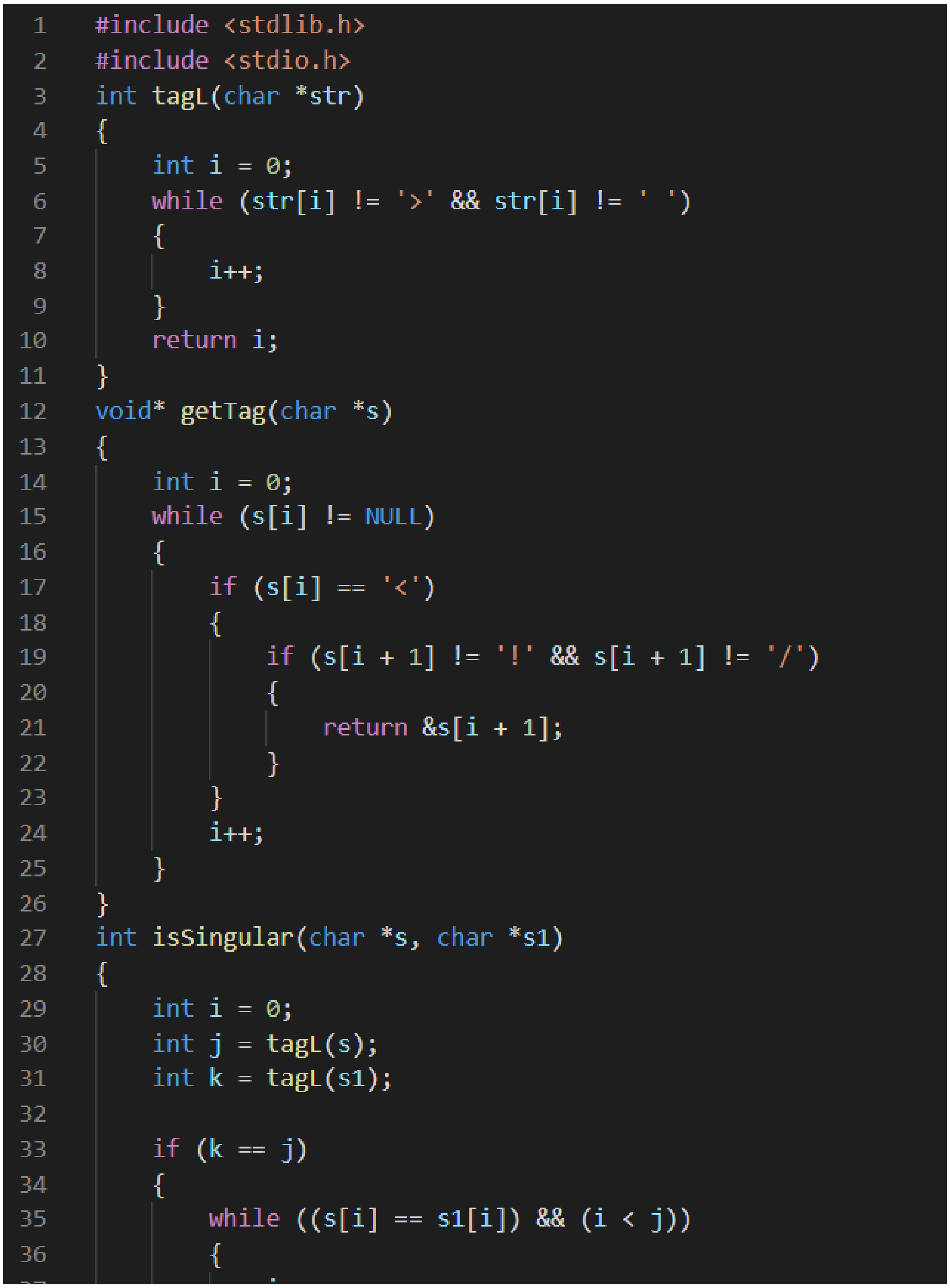
Assignment 4

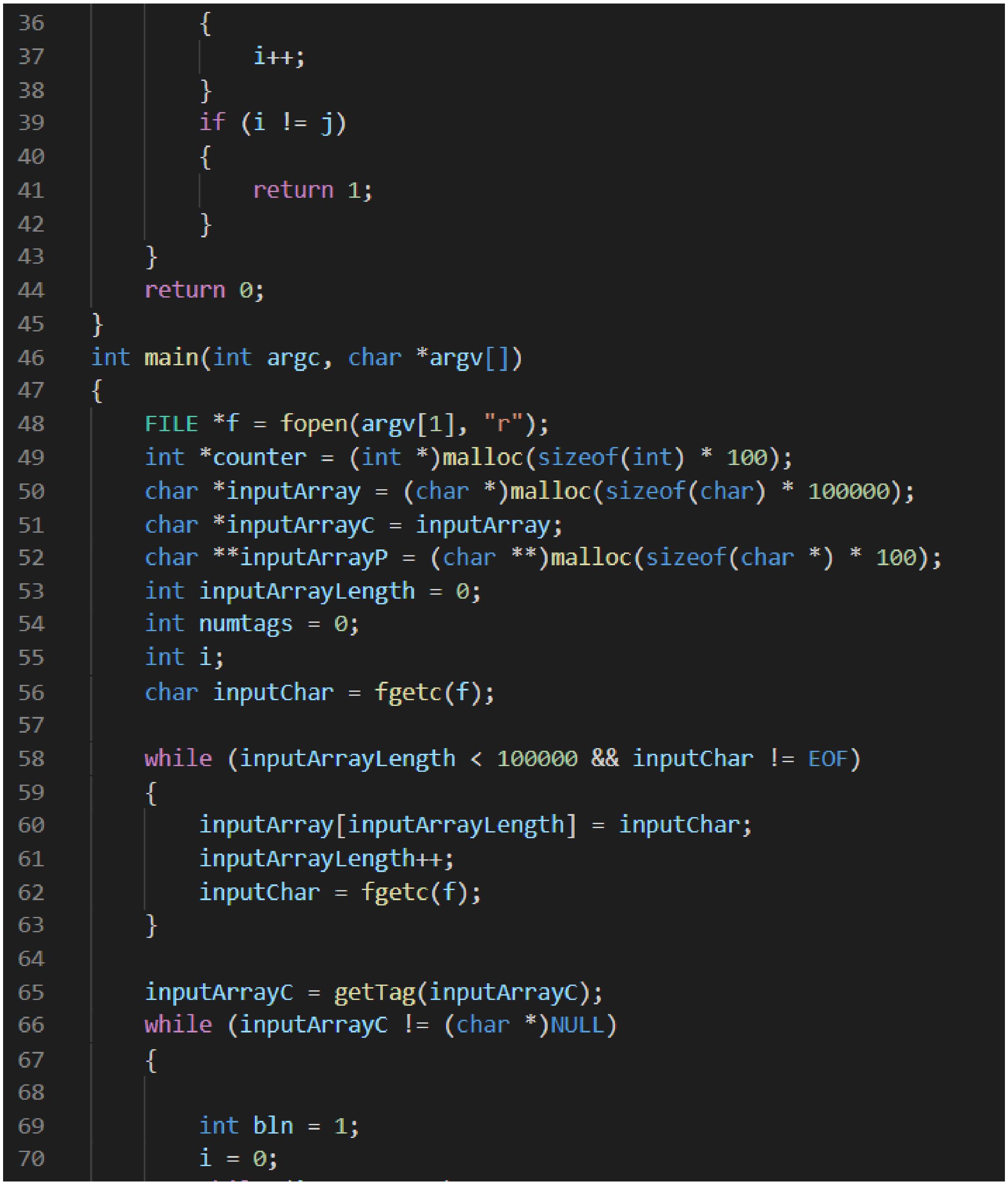
Summary

display.c is responsible for printing the tags and the number of times they occur. While htags.c is responsible for everything else from opening the file to identifying tags and distinguishing which ones are acceptable and which ones are not, determining whether a tag is unique, and identifying the tag length.

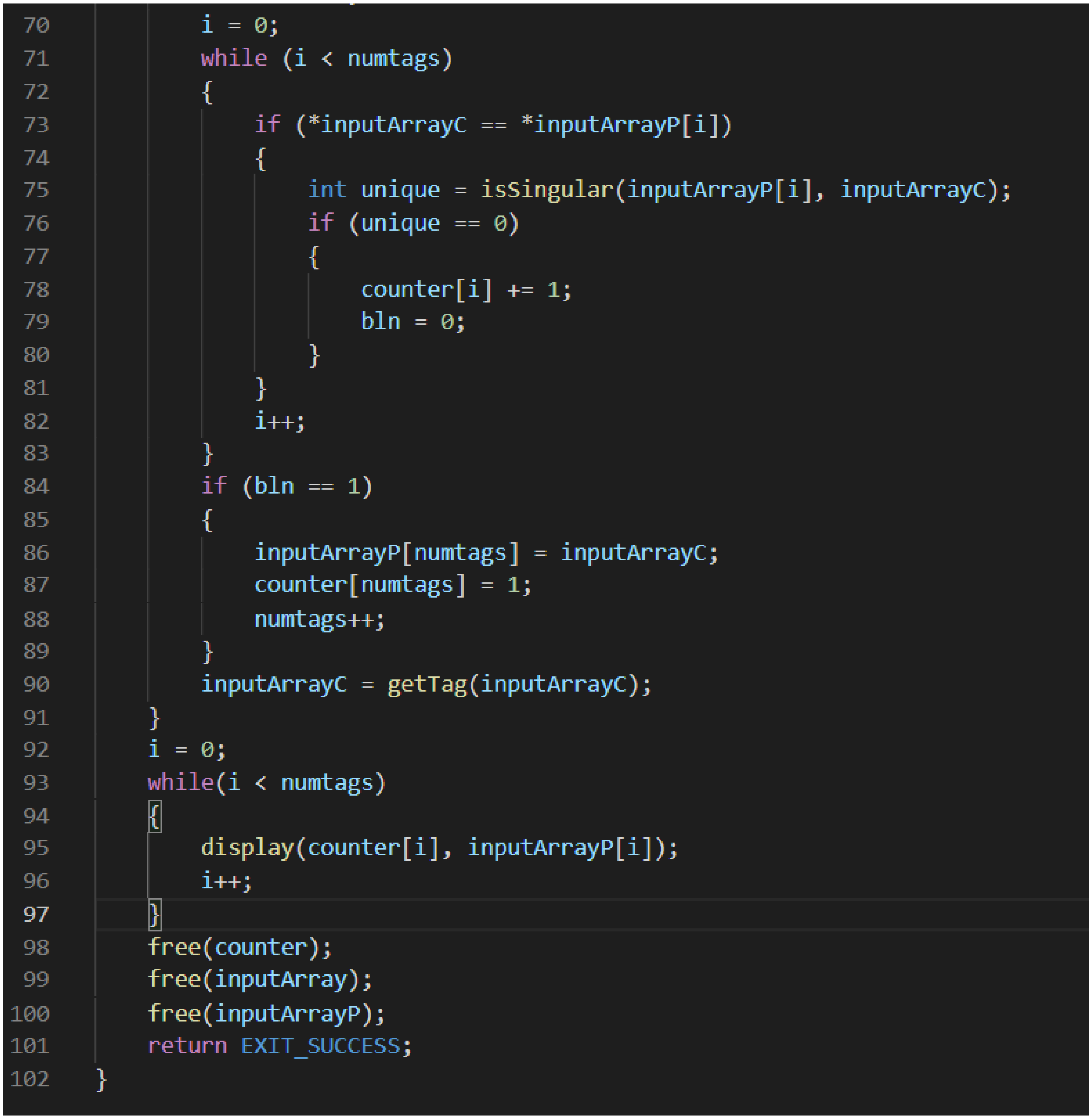
htags.c source code



```c
#include <stdlib.h>
#include <stdio.h>
int tagL(char *str)
{
    int i = 0;
    while (str[i] != '>' && str[i] != ' ')
    {
        i++;
    }
    return i;
}
void* getTag(char *s)
{
    int i = 0;
    while (s[i] != NULL)
    {
        if (s[i] == '<')
        {
            if (s[i + 1] != '!' && s[i + 1] != '/')
            {
                return &s[i + 1];
            }
        }
        i++;
    }
}
int isSingular(char *s, char *s1)
{
    int i = 0;
    int j = tagL(s);
    int k = tagL(s1);

    if (k == j)
    {
        while ((s[i] == s1[i]) && (i < j))
        {
```

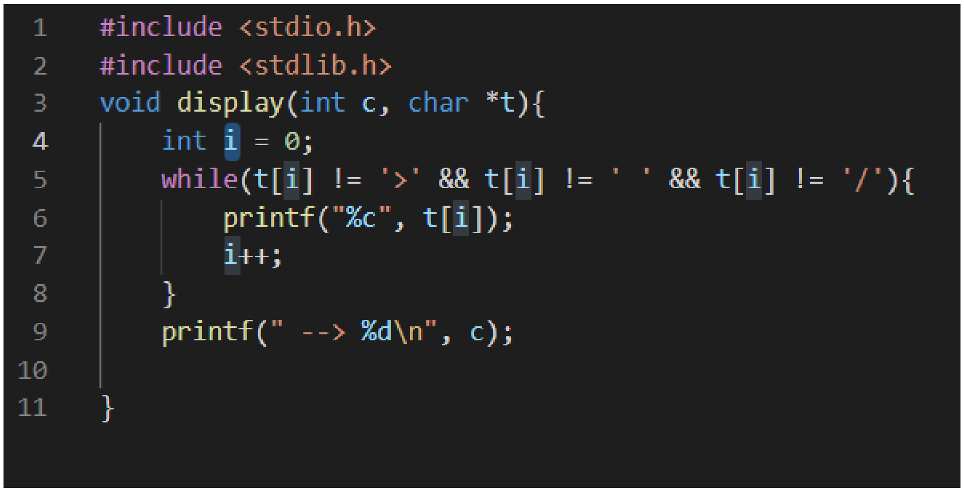


```
        {
            i++;
        }
        if (i != j)
        {
            return 1;
        }
    }
    return 0;
}
int main(int argc, char *argv[])
{
    FILE *f = fopen(argv[1], "r");
    int *counter = (int *)malloc(sizeof(int) * 100);
    char *inputArray = (char *)malloc(sizeof(char) * 100000);
    char *inputArrayC = inputArray;
    char **inputArrayP = (char **)malloc(sizeof(char *) * 100);
    int inputArrayLength = 0;
    int numtags = 0;
    int i;
    char inputChar = fgetc(f);

    while (inputArrayLength < 100000 && inputChar != EOF)
    {
        inputArray[inputArrayLength] = inputChar;
        inputArrayLength++;
        inputChar = fgetc(f);
    }

    inputArrayC = getTag(inputArrayC);
    while (inputArrayC != (char *)NULL)
    {

        int bln = 1;
        i = 0;
```



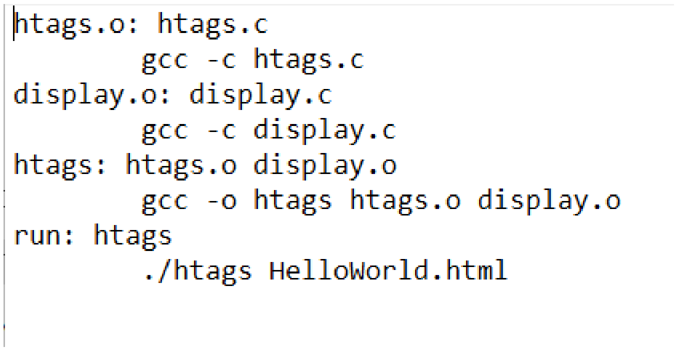
```c
        i = 0;
        while (i < numtags)
        {
            if (*inputArrayC == *inputArrayP[i])
            {
                int unique = isSingular(inputArrayP[i], inputArrayC);
                if (unique == 0)
                {
                    counter[i] += 1;
                    bln = 0;
                }
            }
            i++;
        }
        if (bln == 1)
        {
            inputArrayP[numtags] = inputArrayC;
            counter[numtags] = 1;
            numtags++;
        }
        inputArrayC = getTag(inputArrayC);
    }
    i = 0;
    while(i < numtags)
    {
        display(counter[i], inputArrayP[i]);
        i++;
    }
    free(counter);
    free(inputArray);
    free(inputArrayP);
    return EXIT_SUCCESS;
}
```

display.c source code



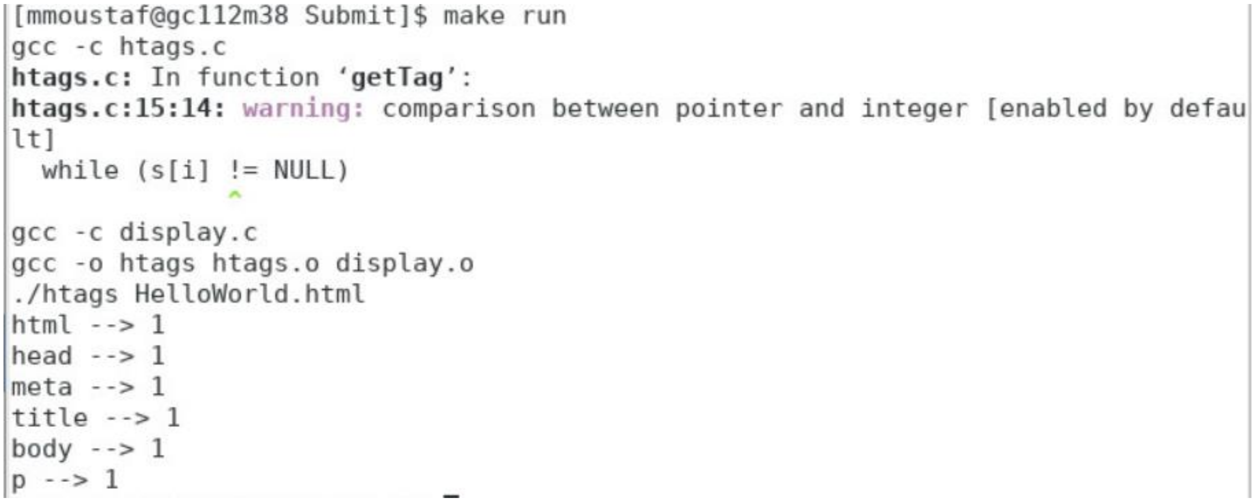
```c
#include <stdio.h>
#include <stdlib.h>
void display(int c, char *t){
    int i = 0;
    while(t[i] != '>' && t[i] != ' ' && t[i] != '/'){
        printf("%c", t[i]);
        i++;
    }
    printf(" --> %d\n", c);

}
```

Makefile



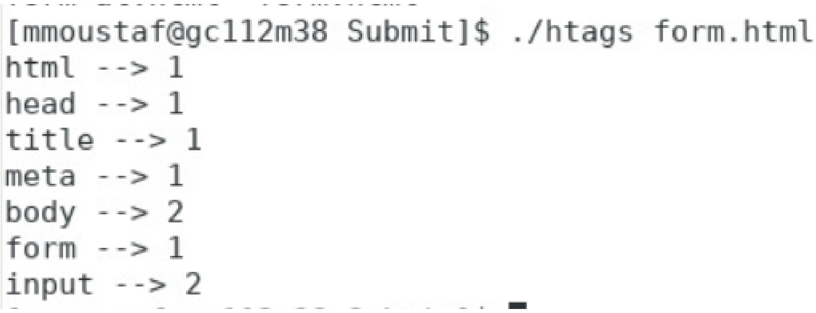
```make
htags.o: htags.c
        gcc -c htags.c
display.o: display.c
        gcc -c display.c
htags: htags.o display.o
        gcc -o htags htags.o display.o
run: htags
        ./htags HelloWorld.html
```

Testing with Makefile HelloWorld.html



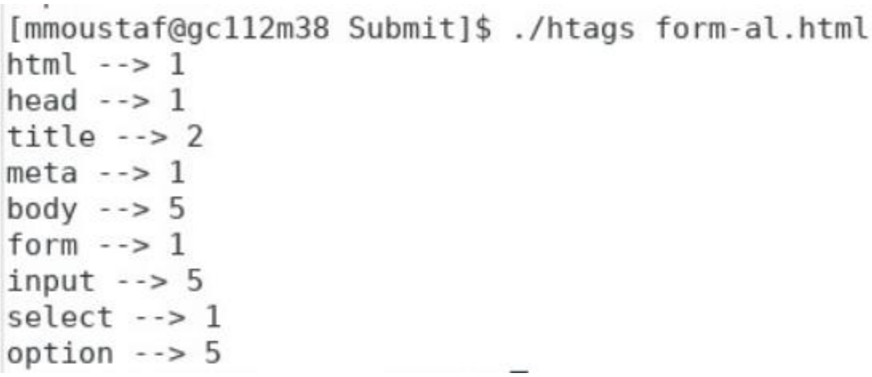
```
[mmoustaf@gc112m38 Submit]$ make run
gcc -c htags.c
htags.c: In function ‘getTag’:
htags.c:15:14: warning: comparison between pointer and integer [enabled by defau
lt]
  while (s[i] != NULL)
              ^

gcc -c display.c
gcc -o htags htags.o display.o
./htags HelloWorld.html
html --> 1
head --> 1
meta --> 1
title --> 1
body --> 1
p --> 1
```

htags.c tested with form.html



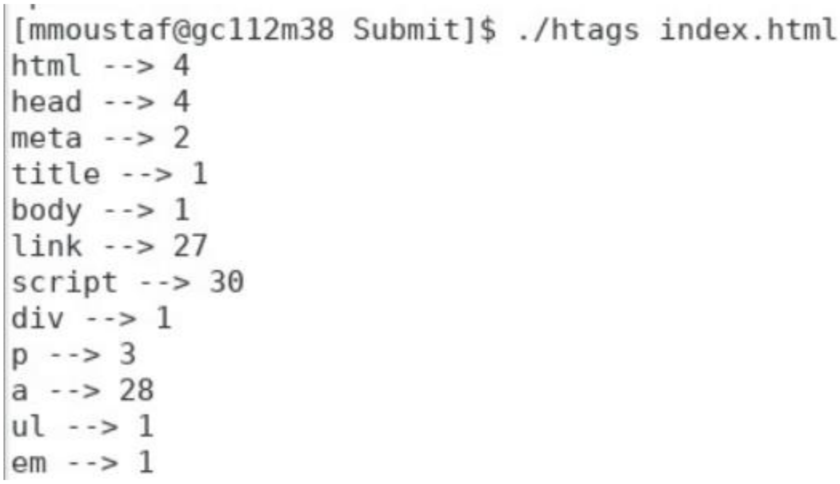
```
[mmoustaf@gc112m38 Submit]$ ./htags form.html
html --> 1
head --> 1
title --> 1
meta --> 1
body --> 2
form --> 1
input --> 2
```

Output of form-al.html



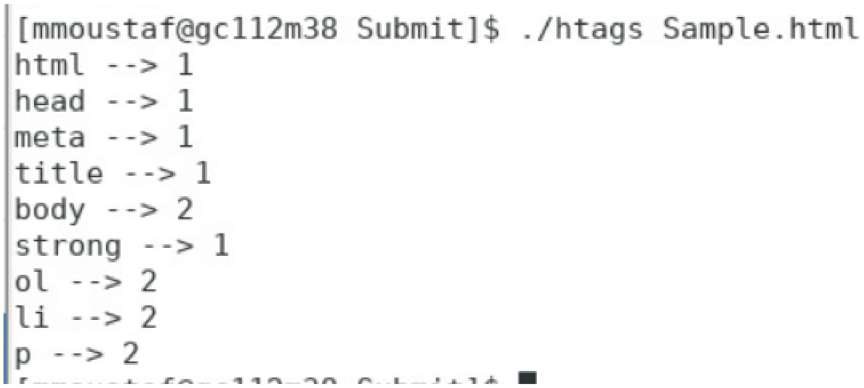
```
[mmoustaf@gc112m38 Submit]$ ./htags form-al.html
html --> 1
head --> 1
title --> 2
meta --> 1
body --> 5
form --> 1
input --> 5
select --> 1
option --> 5
```

Output of index.html



```
[mmoustaf@gc112m38 Submit]$ ./htags index.html
html --> 4
head --> 4
meta --> 2
title --> 1
body --> 1
link --> 27
script --> 30
div --> 1
p --> 3
a --> 28
ul --> 1
em --> 1
```

Output of Sample.html



```
[mmoustaf@gc112m38 Submit]$ ./htags Sample.html
html --> 1
head --> 1
meta --> 1
title --> 1
body --> 2
strong --> 1
ol --> 2
li --> 2
p --> 2
```