



# Parser Project

HTML tags for Ordered & Unordered List  
(nesting).

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## Syntax:

- `<ol></ol>` (Ordered List)
- `<ul></ul>` (Unordered List)
- `<li></li>` (list)

## Nested Lists

- `<ol><ul></ul></ol>`
- `<ul><ol></ol></ul>`
- `<ol><ul></ul><ul></ul></ol>`
- `<ol><ul><li></li></ul></ol>`

## Context Free Grammar:

Grammar

```
0 $accept: statement $end

1 statement: statement S NEWLINE
2           | /* empty */

3 S: UL_S S1 UL_E
4   | OL_S S1 OL_E
5   | LI_S oneitem LI_E
6   | S S1 S

7 S1: UL_S S1 UL_E
8     | OL_S S1 OL_E
9     | LI_S oneitem LI_E
10    | S1 S1
11    | /* empty */

12 oneitem: /* empty */
13         | LI_S oneitem LI_E
```

## Assumptions:

- Assumed that there will be not text/content present in between the list tags for both Ordered and Unordered List.
- The output for any input will be Valid Statement or Invalid Statement based on the input given.

## Test Cases:

1. `<ol></ol>`
2. `<ul></ul>`
3. `<ol><ul></ul></ol>`
4. `<ul><ol></ol></ul>`
5. `<ul><ol><ul></ul></ol></ul>`
6. `<ol><ul></ul><ul></ul></ol>`
7. `<ul></ul><ul></ul><ul></ul>`
8. `<ul><ol><li></li></ol></ul>`
9. `<li></li>`

```
C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ol></ol>

Valid Statement!
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ul></ul>

Valid Statement!
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ol><ul></ul><ul></ul></ol>

Valid Statement!
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ul><ol><li></li></ol></ul>

Valid Statement!
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<li></li>

Valid Statement!
Press any key to continue . . .
```

## Invalid Test Cases:

1. `<ol></ul>`
2. `<ul></ol>`
3. `<ol><ul></ol>`
4. `<ol><ul></ul><ol></ol>`

```
Command Prompt - a.exe

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ol></ul>
Invalid String
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ul></ol>
Invalid String
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ol><ul></ol>
Invalid String
Press any key to continue . . .

C:\Users\HEMANT\Desktop\ProjectCompiler\project>a.exe
Enter the HTML:
<ol><ul></ul><ol></ol>
Invalid String
Press any key to continue . . .
```

## Grammar Limitations.

The above implemented parser has the following limitations i.e., it cannot allow the below mentioned features.

- The parser implemented above only works for ordered and unordered list tags, it cannot parse other html tags.
- The content must be in between the ordered or unordered list tags, outside it will return invalid statement.
- Attribute must not be present in the tags.

## Grammar Capabilities.

The above implemented parser has the following capabilities i.e., it can allow the below mentioned features.

- The parser implemented above is working for ordered list and unordered list.
- The parser is working with the content in between the tags.
- The parser is working with the nested unordered and ordered list tags.
- The parser is working with sequential ordered and unordered list tags.
- The parser is working with the list tags in between the ordered and unordered list tags.

```
<ol><li></li></ol>
```

## References:

<https://www.geeksforgeeks.org/lex-code-extract-html-tags-file/>

<https://github.com/whogeek/biflex-html-parser>

<https://ksi.cpsc.ucalgary.ca/archives/HTML-WG/html-wg-95q1.messages/0087.html>

<http://cobweb.cs.uga.edu/~maria/classes/4500-Spring-2012/project1.html>