

Project: Mission Imparsible!

For this project, you will use a stack to create a simple HTML parser. Do not use any built-in java classes (Such as Stack etc.) you must write your own class and methods.

Other than your **Main** file, you should create 2 classes called **Stack** and **Node**. Do not use other names.

What are the requirements for the project?

The following are **required** to earn points for the project:

Stack and Node (20%)

Create a class called Stack. It should have a **push** method that adds to the stack as well as a **pop** method that removes from the stack. Also create a method called **isEmpty** which returns true or false if the stack is empty.

```
public void push(String text)
public String pop()
public boolean isEmpty()
```

Parser (75%)

Create a method called **parse**. This method should take an HTML String as a parameter and return true if it is valid and false if it is not valid.

```
public static boolean parse(String html)
```

This would be valid:

```
<html>
This is my awesome webpage!
</html>
```

This would not be valid (notice the tags are in the wrong order at the end)

```
<html><body><b>CS241</b> is awesome!</html></body>
```

Any sort of dangling/not-closed tags is not valid. Notice the code ended before we closed </p>:

```
<p><b>Here is some text!</b>
```

This would also be invalid. The stack should be empty when the parsing is done.

```
<test>Forgot to close tag
```

This would also be invalid. The stack would be empty with nothing to compare this tag to.

```
Never opened tag</test>
```

It is perfectly OK for everything to be on one line:

```
<p><b><i>Italics and bold!</i>just bold</b></p>
```

Anything between <> is considered a tag and mixed upper/lower case should match!

```
<TAG_I_MADE_UP>Professor Carmine!</tag_i_made_up>
```

Report (5%)

In the comments at the top of your code (see Main.java below), write a few sentences answering the following: Given N tags. What is the runtime of your implementation of parse? Why?

How do I submit my work?

Your project must compile! Non-compiling projects will get a 0. When you are done, you must upload your code to the **Assignments** area. This must be code files. Do not take pictures of code or email code.

Projects received 1 minute late are considered late. Start uploading your project at least an hour before the deadline to avoid a point deduction. If there are any issues with uploading your project, you must **email me before the due date**. Email cguida@pace.edu from your @pace.edu email address.

While I check email regularly, **do not expect a response over the weekend or close to deadlines**. Late projects will have **10 points deducted per day**. Late projects will **not be accepted after 2 days**.

Plagiarism, cheating and other ways you will get a 0 on this project:

Your code must be your own code. Do not use Chegg, CourseHero or any other websites like these. If you watch a YouTube video or other online resource and put in their code, that's not your code. **That is someone else's code**. You will get a 0. Do not share your code or collaborate. **Both** of you will get a 0.

Help, I'm stuck!

Start the projects early, if you are stuck, **reach out to me** cguida@pace.edu, stop by office hours and make use of the **Seidenberg** tutors for help.

(Starter code on next page...)

Starter Code: Main.java

```
/*
Your Name:  [YOUR FULL NAME]
Pace Email: [YOUR PACE EMAIL ADDRESS]

Given N tags. What is the runtime of parse? Why?

*/

class Main {
    public static void main(String[] args) {
        // These are here as a reference, I will use different test cases.
        String[] goodCases = {
            "<html>\nThis is my awesome webpage!\n</html>\n",
            "<p><b><i>Italics and bold!</i>just bold</b></p>",
            "<p><b>Bold</b> and then <i>italics </i></p>",
            "<TAG_I_MADE_UP>Professor Carmine!</tag_I_made_up>",
            "No tags at all is ok."
        };

        for (String test : goodCases) {
            System.out.println(parse(test));
        }

        String[] badCases = {
            "<b>Started with bold then ended with italic</i>",
            "<html>\n<body>\n<b>CS241</b> is awesome!\n</html>\n</body>\n",
            "<p><b>Here is some text!</b>",
            "<div>Forgot to close tag",
            "Never opened tag</div>"
        };

        for (String test : badCases) {
            System.out.println(parse(test));
        }

        public static boolean parse(String html) {

            // You need to put your code here

            return false;
        }
    }
}
```