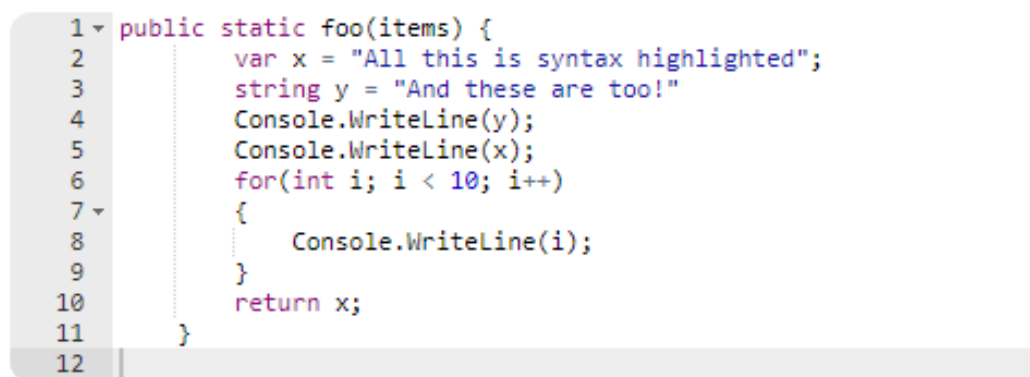


# Ace Code Editor Research

## Research Findings

Upon further research into the different embeddable code editors available online, Ace Code Editor (<https://ace.c9.io>) was found to be the easiest and most compatible with our app. The most important feature of the Ace Code Editor is that it does allow for syntax highlighting (Fig. 1) for a variety of different languages. It supports up to 120+ different programming languages including the most popular ones taught here at K-State, specifically: C#, Java, C, C++, JavaScript, Python, and SQL. The editor also comes with 44 different color themes, from light mode to dark mode to everything in between. One of the main useful features include the ability to automatically indent and outdent whenever you put curly brackets into the code. This editor has all the basic functionality we are looking for in an editor and should be perfect for our project.

Fig. 1: Example of Ace Code Editor:

A screenshot of the Ace Code Editor interface. The editor has a light gray background with a vertical line of numbers on the left side, ranging from 1 to 12. The code is written in C# and is syntax-highlighted. The code is as follows:

```
1 public static foo(items) {  
2     var x = "All this is syntax highlighted";  
3     string y = "And these are too!"  
4     Console.WriteLine(y);  
5     Console.WriteLine(x);  
6     for(int i; i < 10; i++)  
7     {  
8         Console.WriteLine(i);  
9     }  
10    return x;  
11 }  
12
```

## Embedding instructions

The library itself can be found on GitHub (<https://github.com/ajaxorg/ace>) And can be downloaded into the repository for the project. As seen in Fig. 2, all that needs done in the html file is to run the JavaScript script in the code. There are several prebuilt versions on GitHub depending on how much space you want the library to take up. All the builds have the same basic functionality, but the files with “-min” takes up less space as all the code has been minified.

Fig. 2: HTML and JavaScript code to embed Ace Code Editor

```
</style>
</head>
<body>
<h2 id="label">1. Write some code:</h2>
<div id="editor">public static foo(items) {
    var x = "All this is syntax highlighted";
    string y = "And these are too!"
    Console.WriteLine(y);
    Console.WriteLine(x);
    return x;
}
</div>

<script src="src-noconflict/ace.js" type="text/javascript"
charset="utf-8"></script>
<script>
    var editor = ace.edit("editor");
    editor.setTheme("ace/theme/terminal"); // this is how you change the
theme: dark, light, etc.
    editor.session.setMode("ace/mode/csharp"); //this is how you change
the language: C#, Java, javascript, etc.
</script>
</body>
```

## Further Research

The only functionality this editor doesn't have is a built-in compiler, which is fine for the student side, because only the teacher should be able to compile the code. For future development we should research an embeddable code compiler for the teacher and teaching assistant view when they are grading the exam.