

Animating SVG



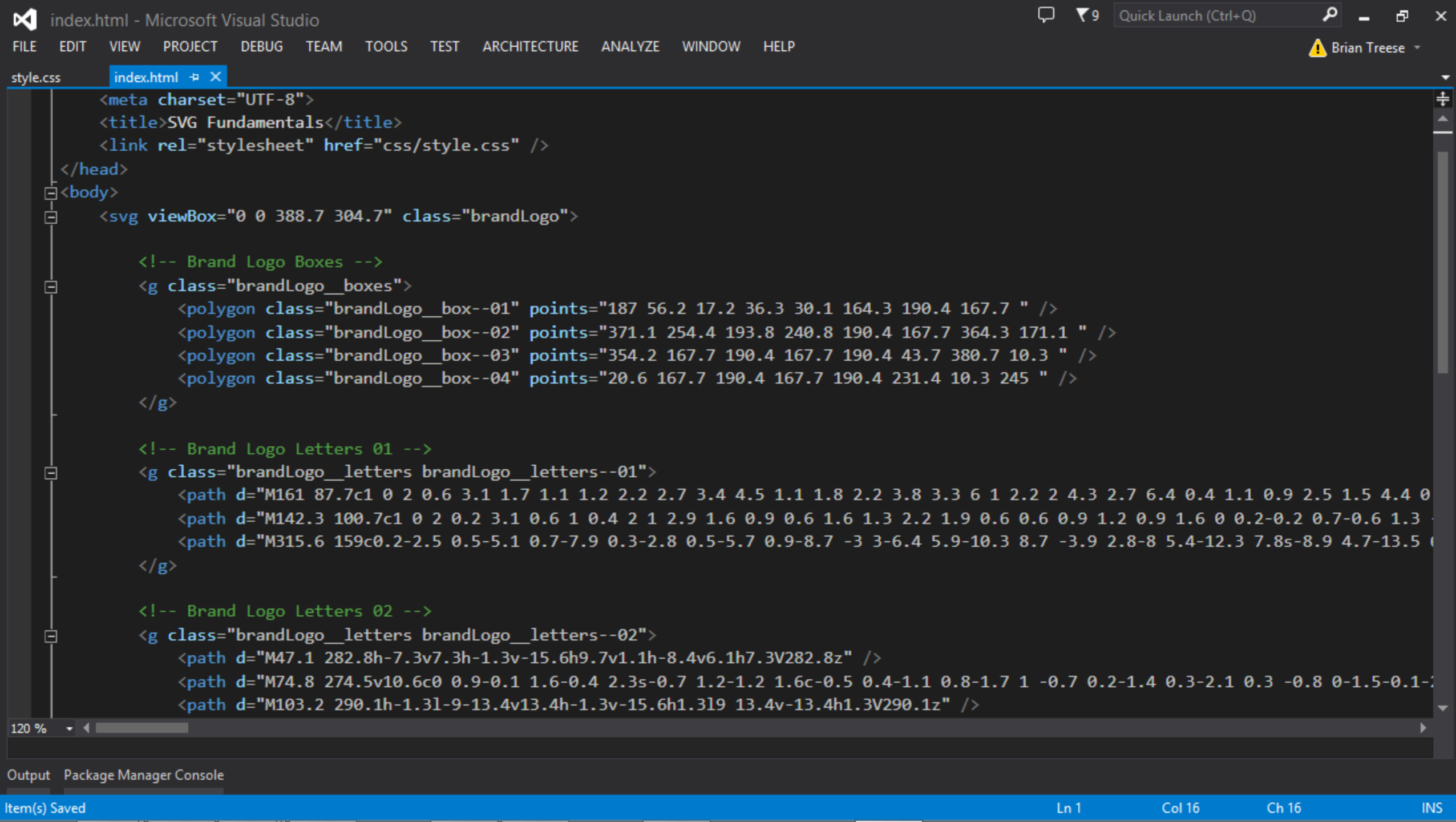
Brian Treee

@brianmtreee | www.briantree.se

Animating SVG

























- Three main methods for SVG animation
 - CSS
 - SMIL
 - JavaScript
- Pros and cons of each method

Animating SVG with CSS



index.html ❏ ✕

10

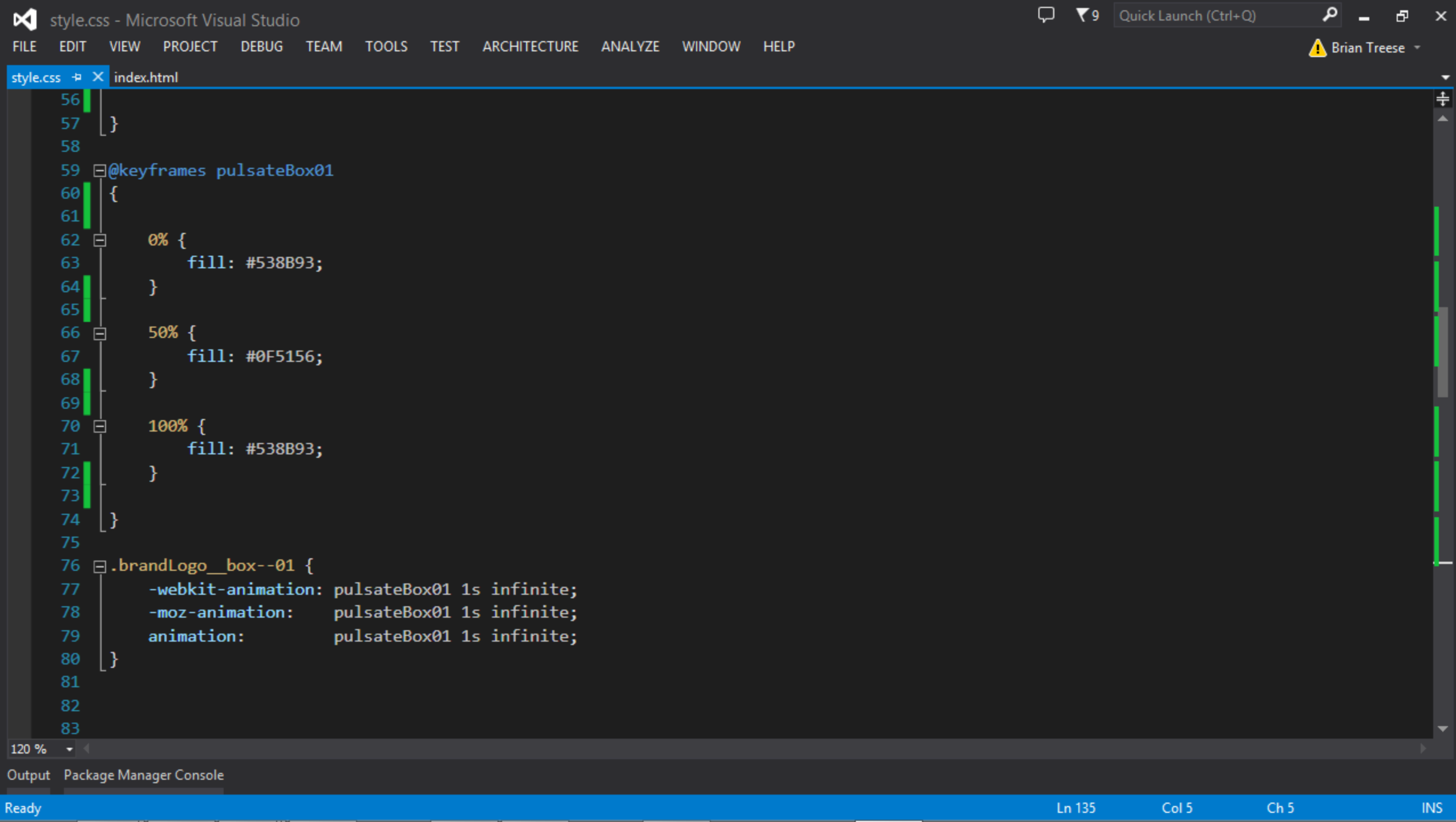

























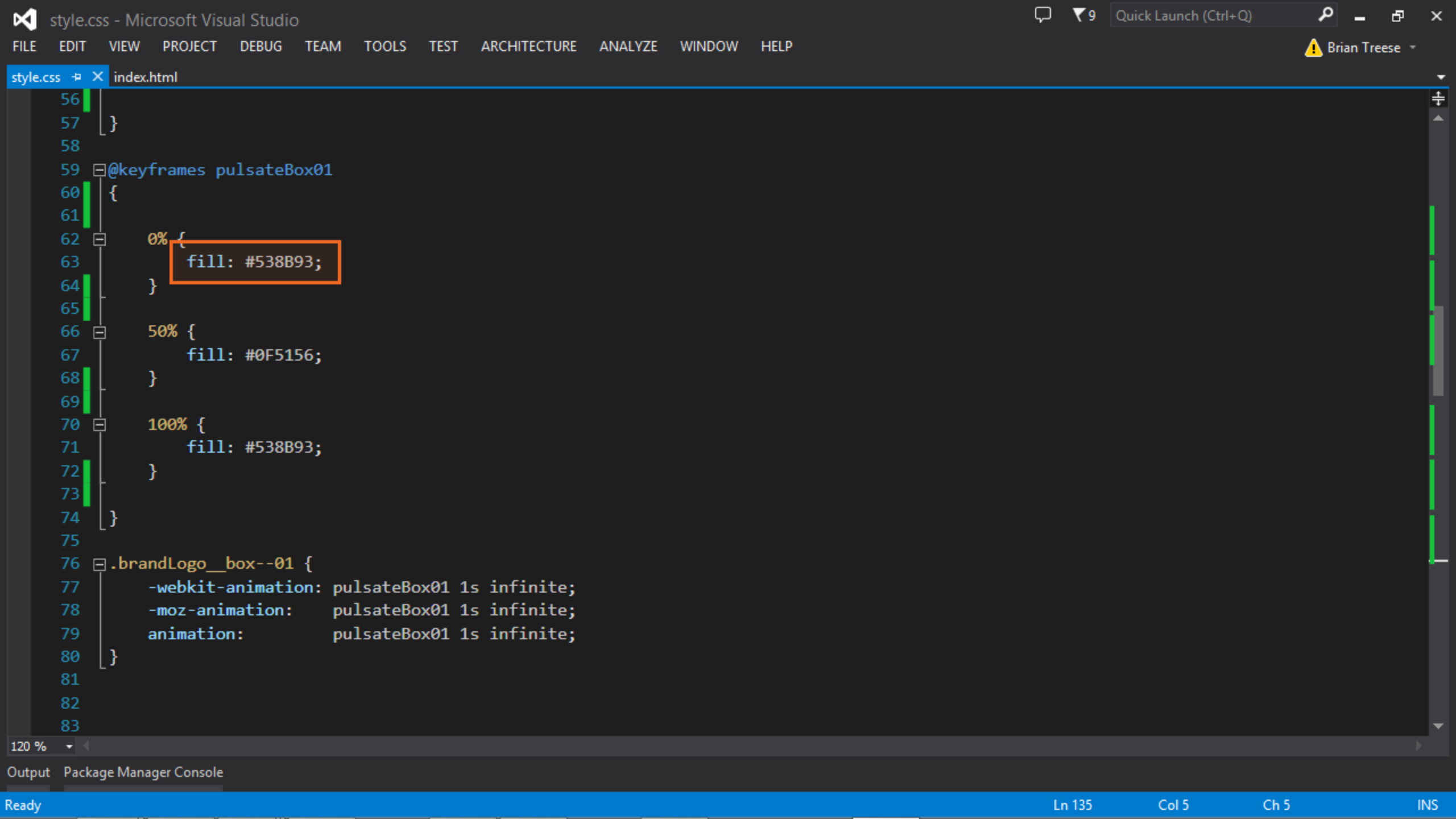
Item(s) Saved

INS

index.html 📄 ✕

11





style.css index.html

```
56  
57 }  
58  
59 @keyframes pulsateBox01  
60 {  
61  
62 0% {  
63     fill: #538B93;  
64 }  
65  
66 50% {  
67     fill: #0F5156;  
68 }  
69  
70 100% {  
71     fill: #538B93;  
72 }  
73 }  
74 }  
75  
76 .brandLogo__box--01 {  
77     -webkit-animation: pulsateBox01 1s infinite;  
78     -moz-animation:    pulsateBox01 1s infinite;  
79     animation:        pulsateBox01 1s infinite;  
80 }  
81  
82  
83
```

120 %

Output Package Manager Console

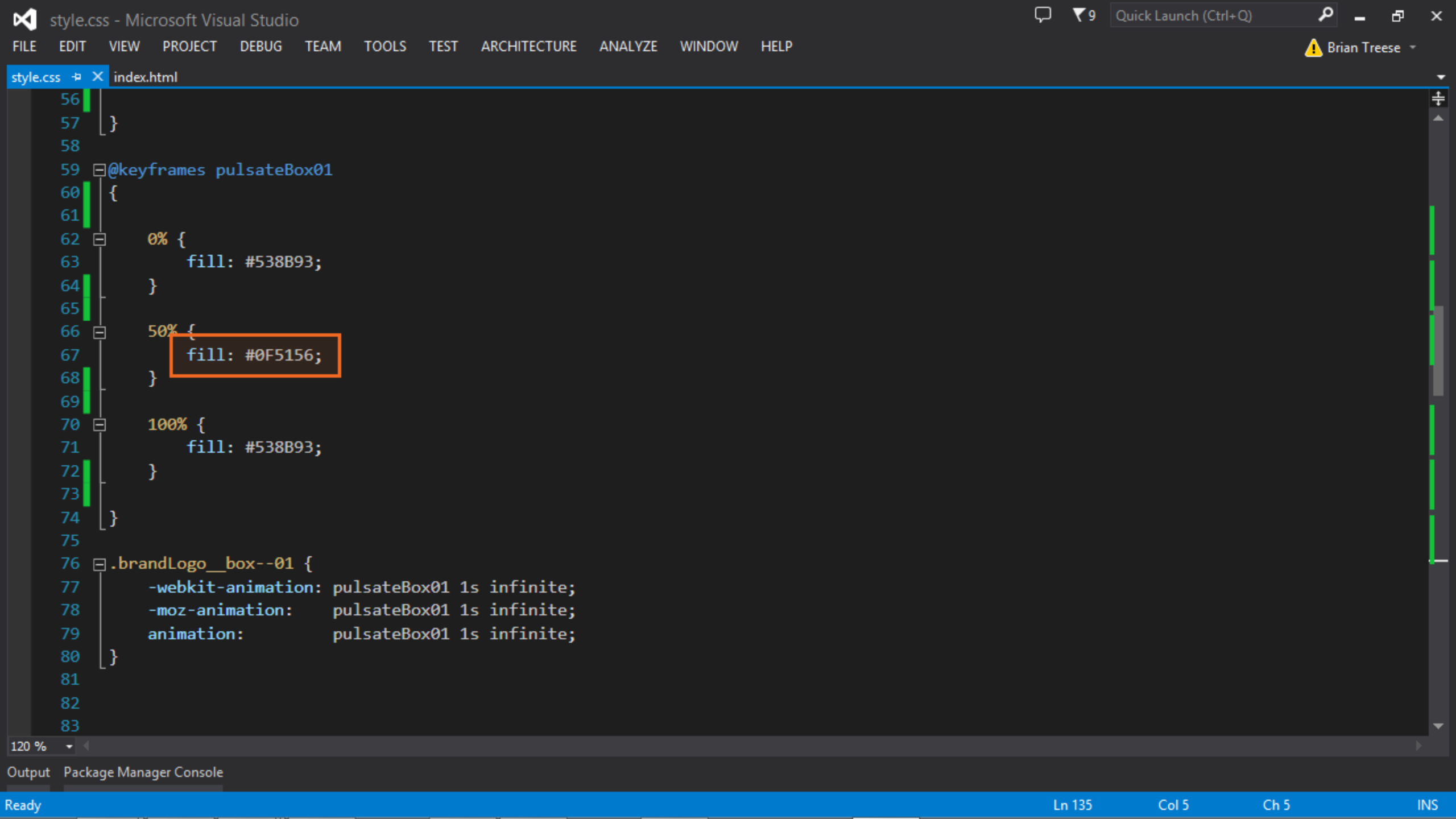
Ready

Ln 135

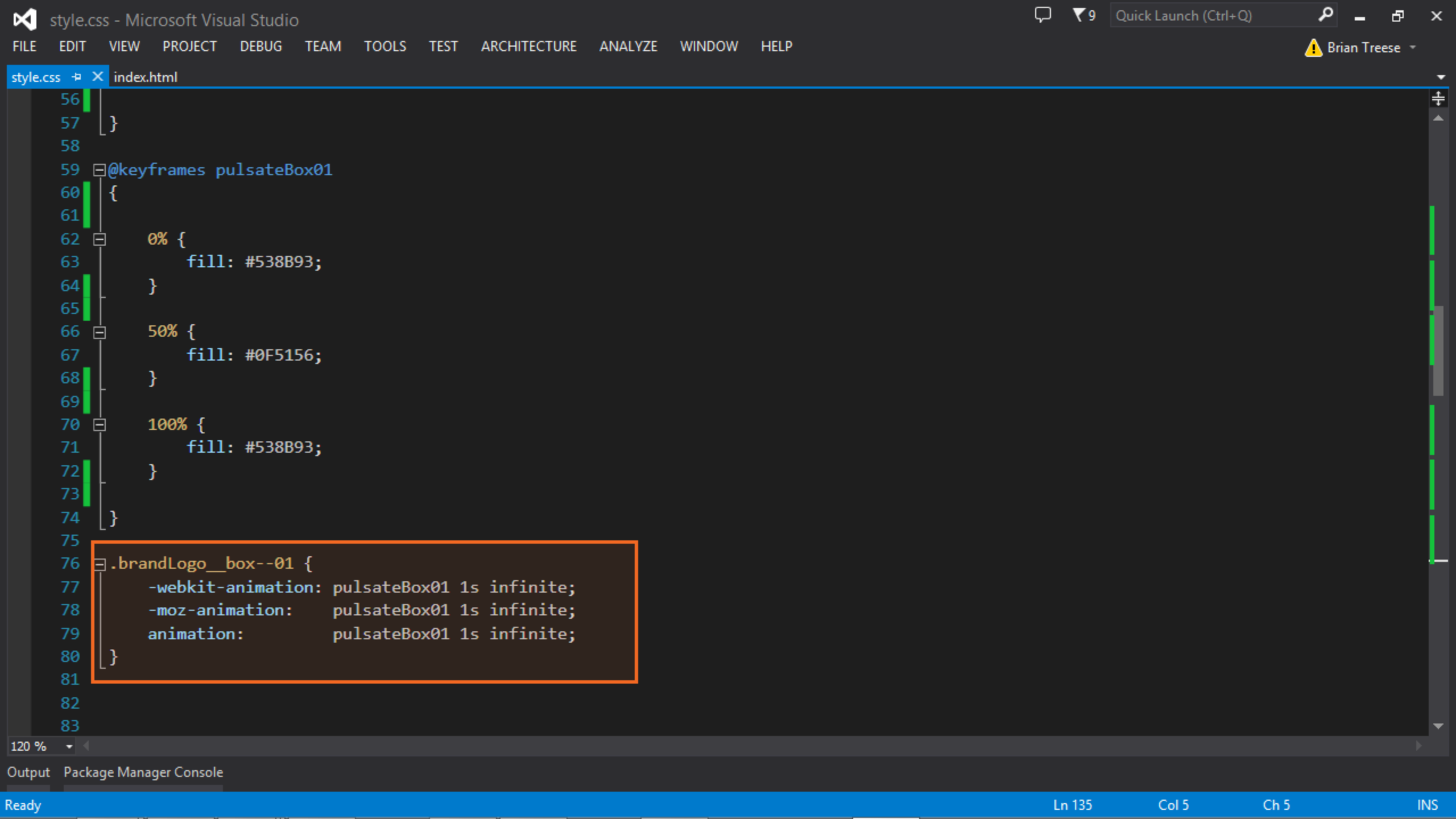
Col 5

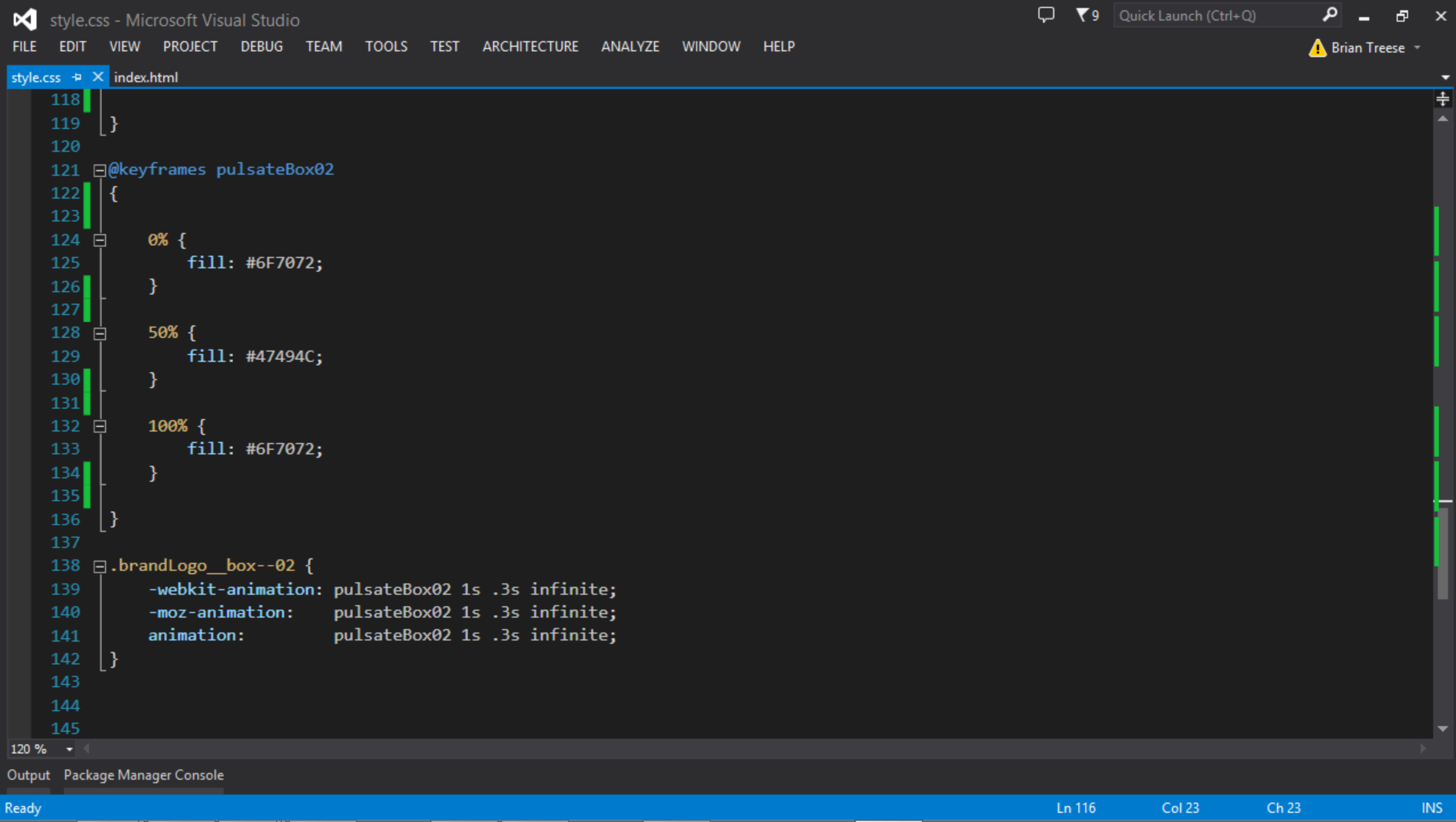
Ch 5

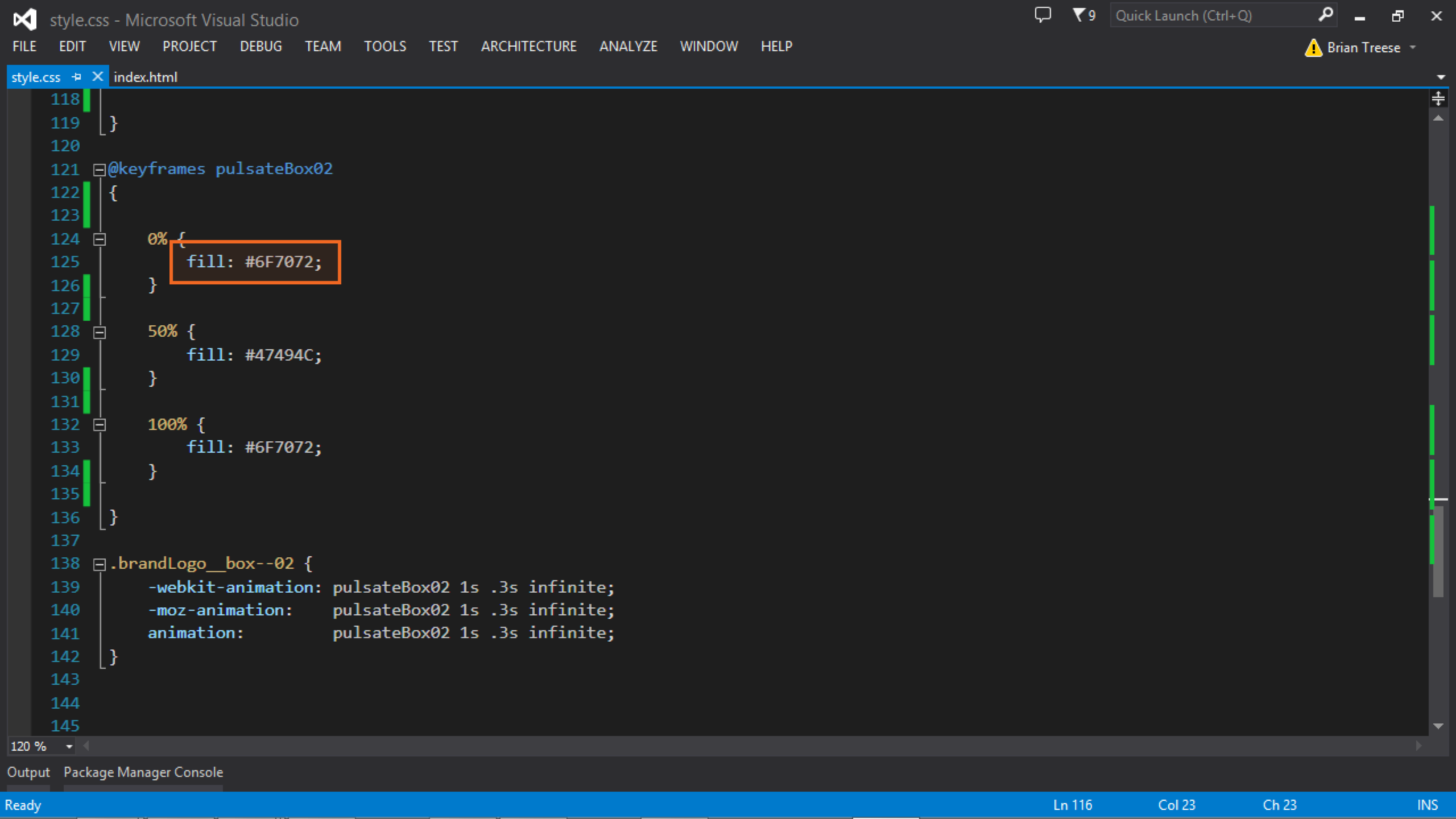
INS



```
style.css - Microsoft Visual Studio
FILE EDIT VIEW PROJECT DEBUG TEAM TOOLS TEST ARCHITECTURE ANALYZE WINDOW HELP
style.css index.html
56
57 }
58
59 @keyframes pulsateBox01
60 {
61
62     0% {
63         fill: #538B93;
64     }
65
66     50% {
67         fill: #0F5156;
68     }
69
70     100% {
71         fill: #538B93;
72     }
73
74 }
75
76 .brandLogo__box--01 {
77     -webkit-animation: pulsateBox01 1s infinite;
78     -moz-animation:    pulsateBox01 1s infinite;
79     animation:        pulsateBox01 1s infinite;
80 }
81
82
83
120 %
Output Package Manager Console
Ready Ln 135 Col 5 Ch 5 INS
```







style.css index.html

```
118 }
119 }
120
121 @keyframes pulsateBox02
122 {
123
124   0% {
125     fill: #6F7072;
126   }
127
128   50% {
129     fill: #47494C;
130   }
131
132   100% {
133     fill: #6F7072;
134   }
135 }
136
137
138 .brandLogo__box--02 {
139   -webkit-animation: pulsateBox02 1s .3s infinite;
140   -moz-animation:    pulsateBox02 1s .3s infinite;
141   animation:        pulsateBox02 1s .3s infinite;
142 }
143
144
145
```

120 %

Output Package Manager Console

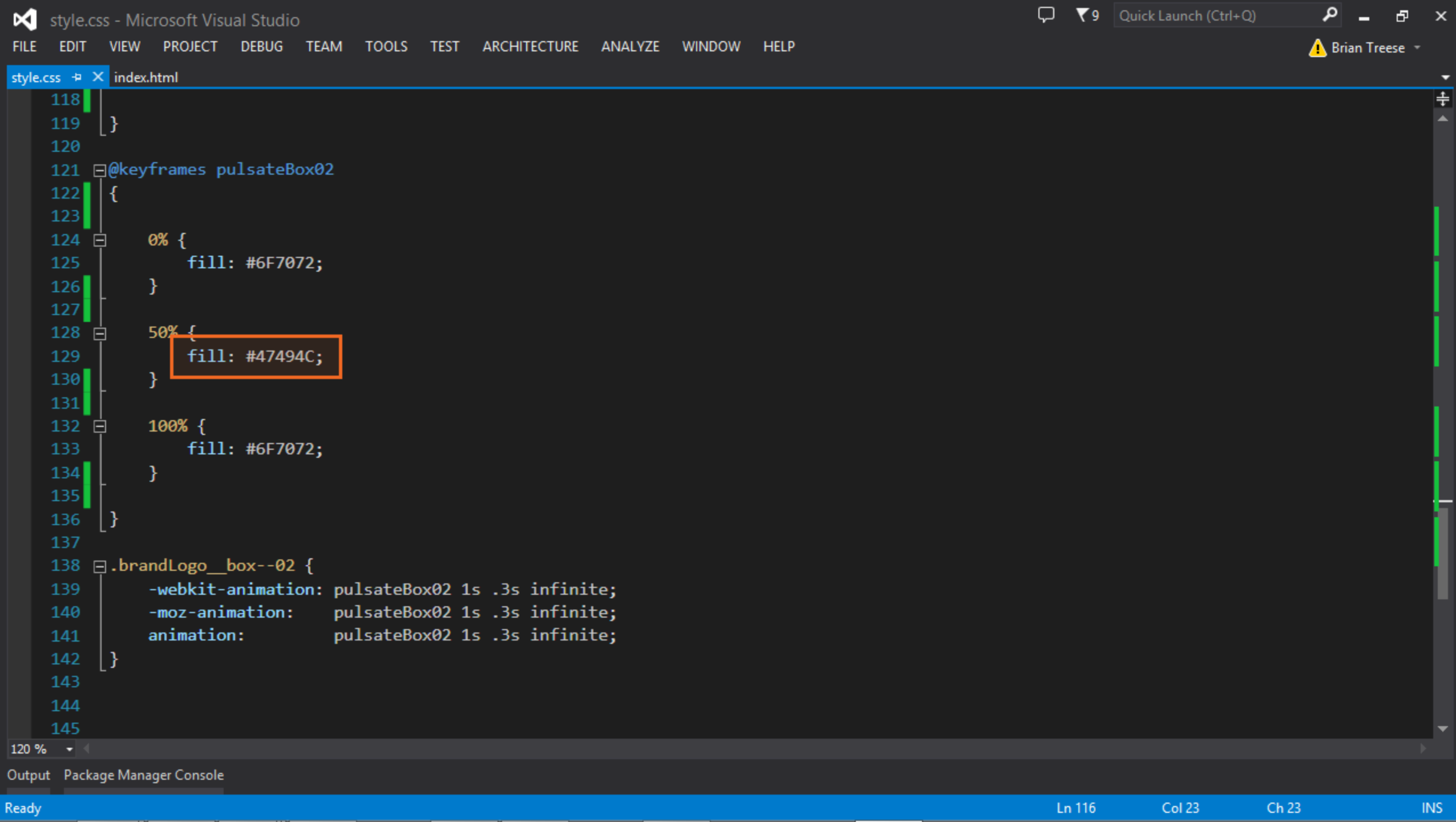
Ready

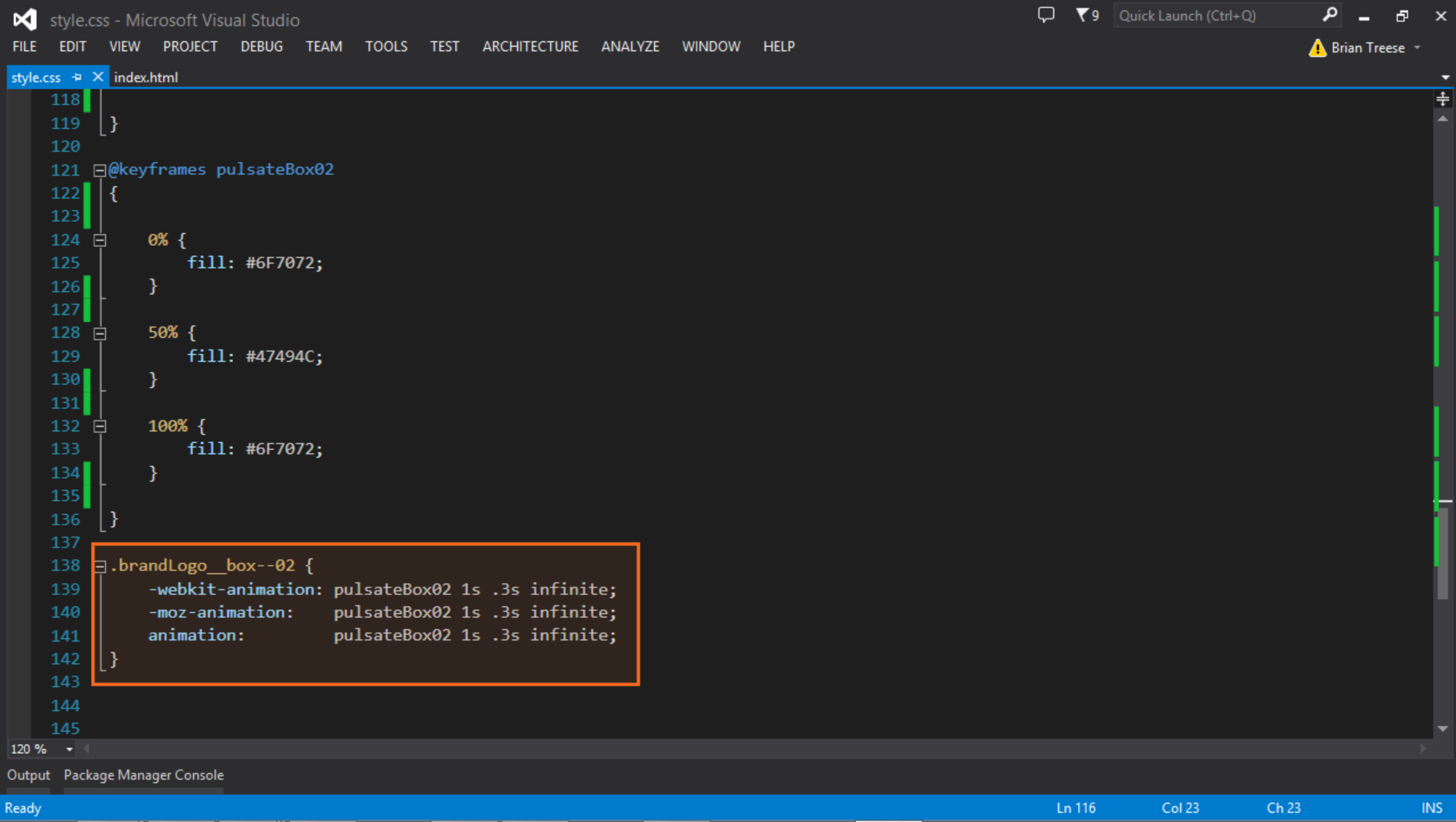
Ln 116

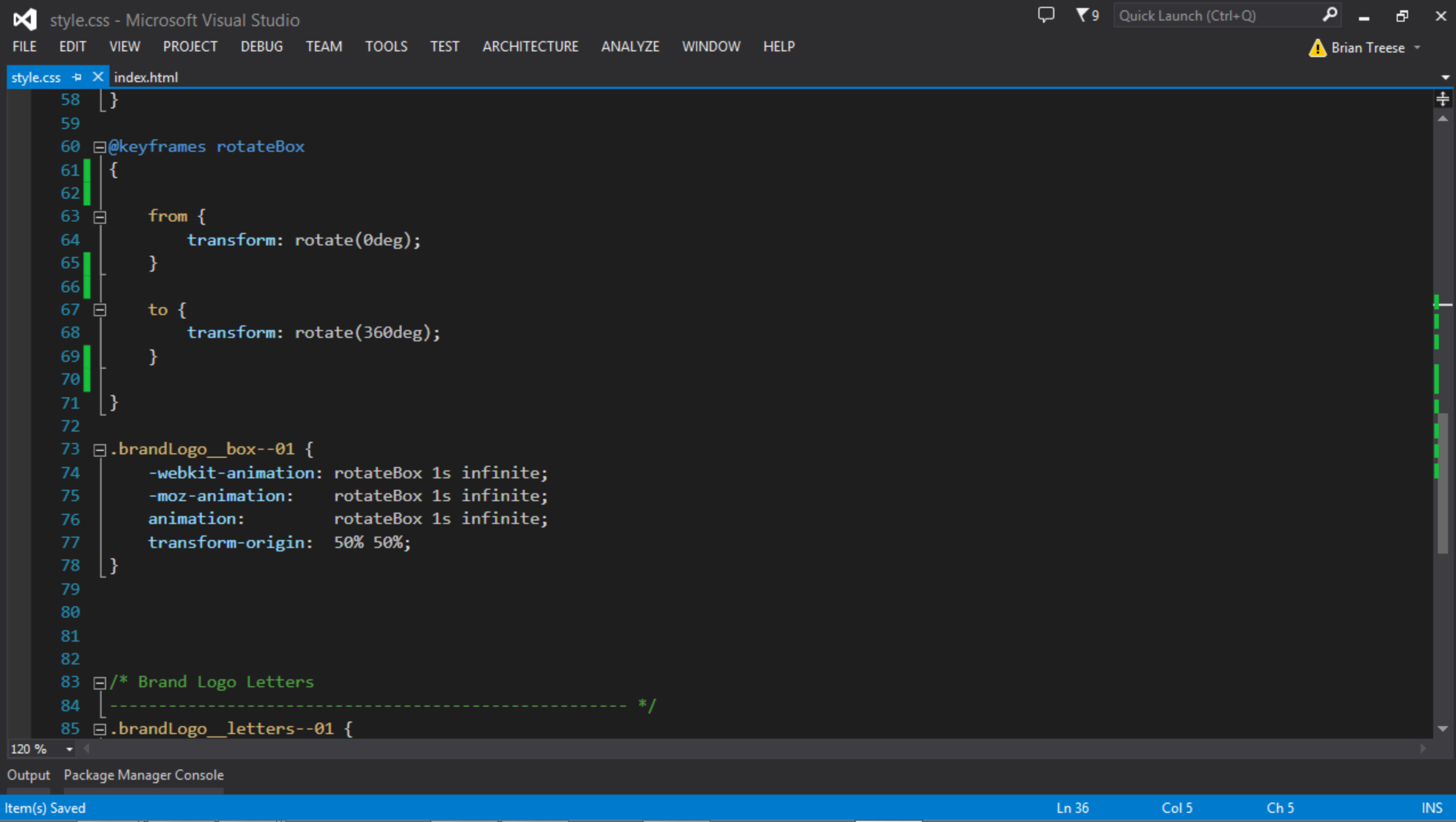
Col 23

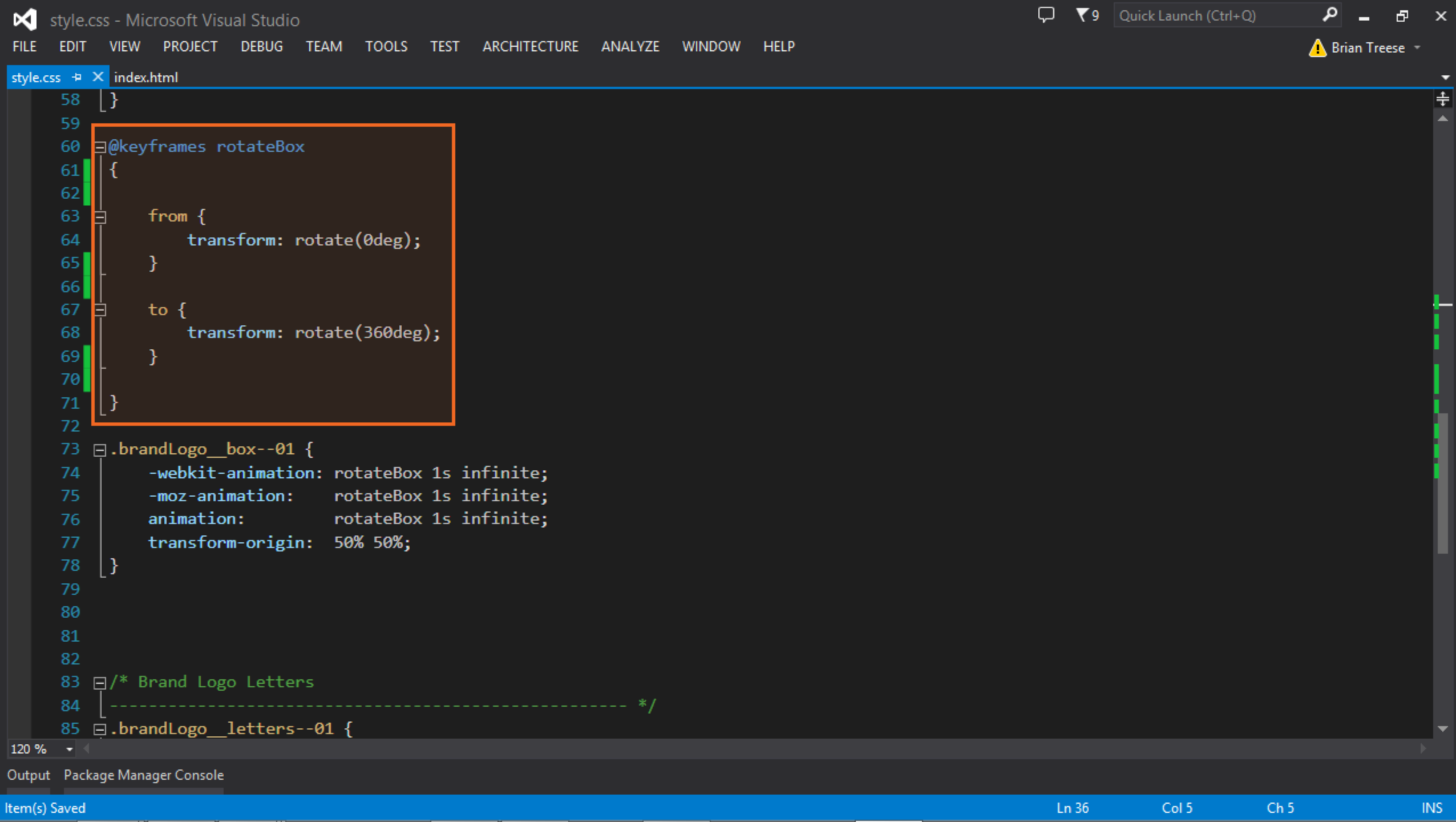
Ch 23

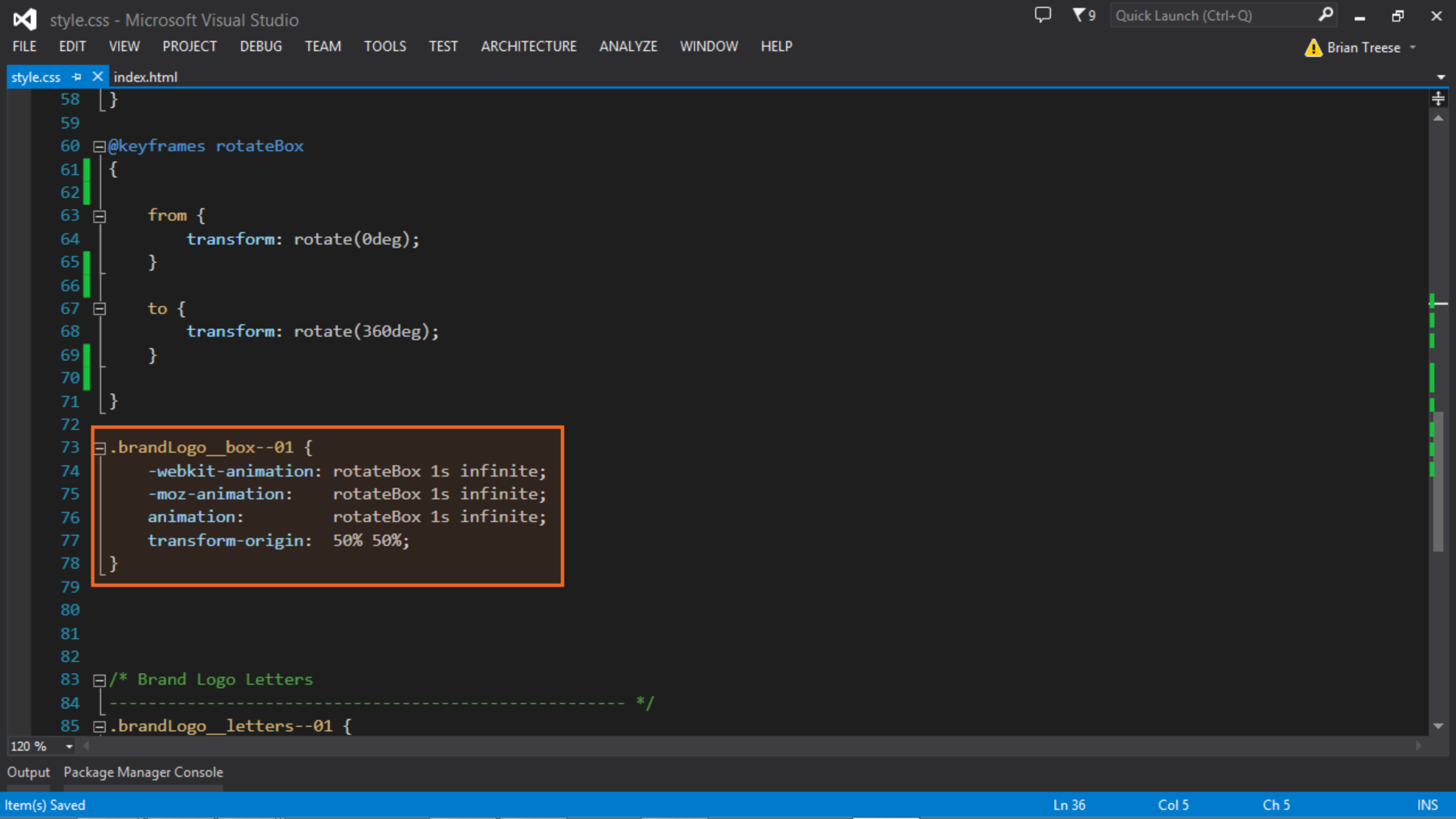
INS











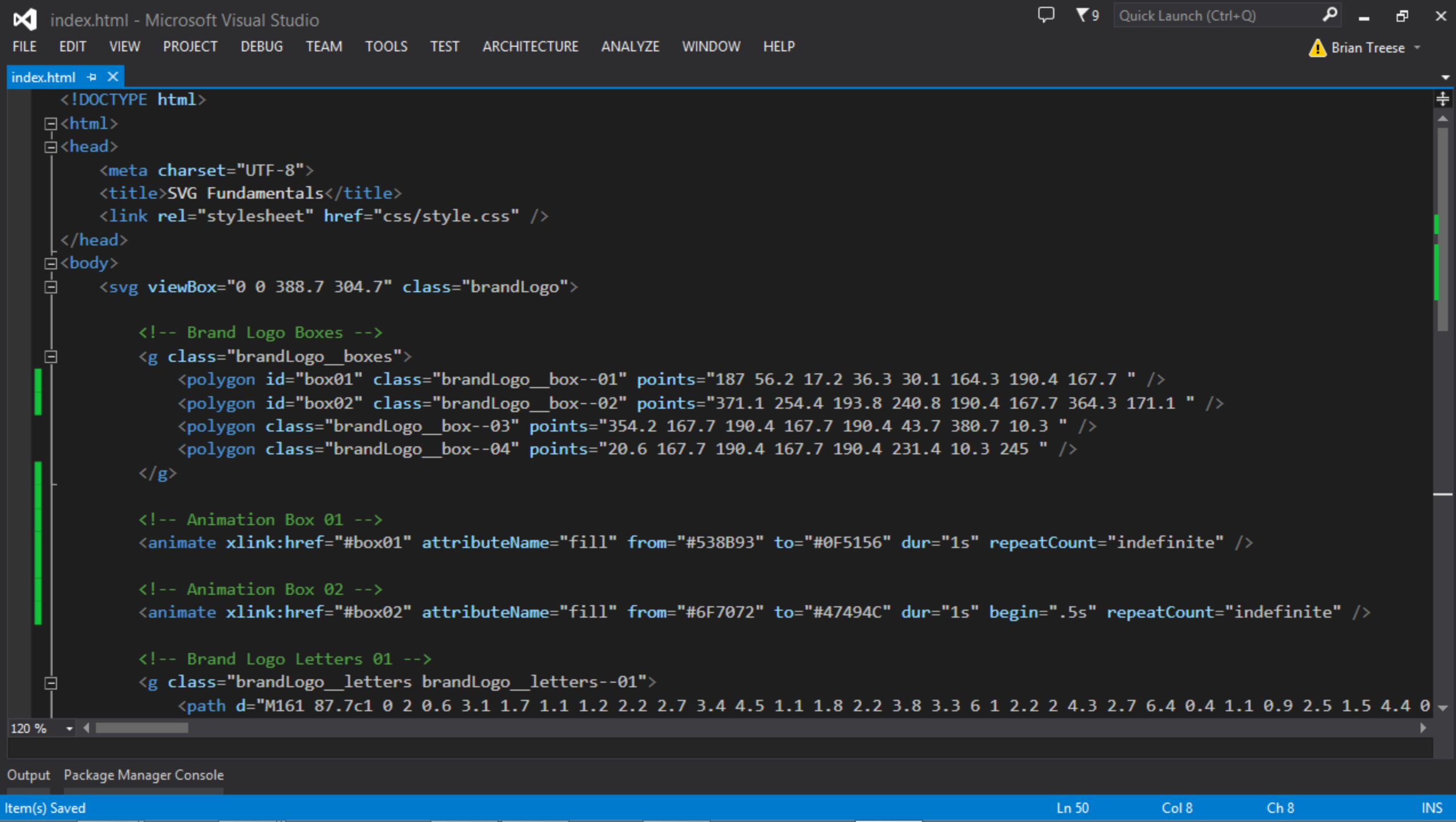
Meanwhile over in FireFox...

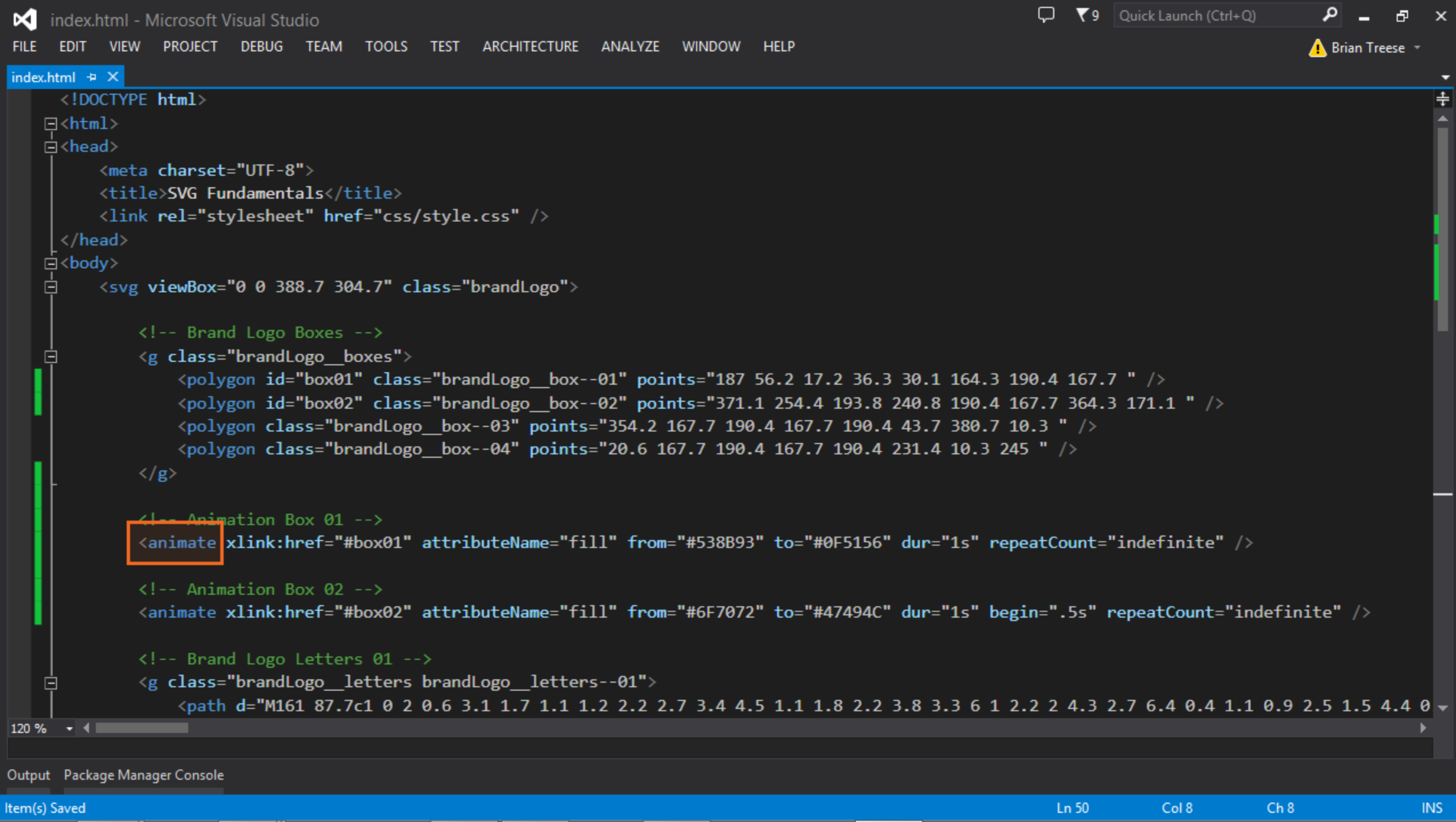
And in IE...

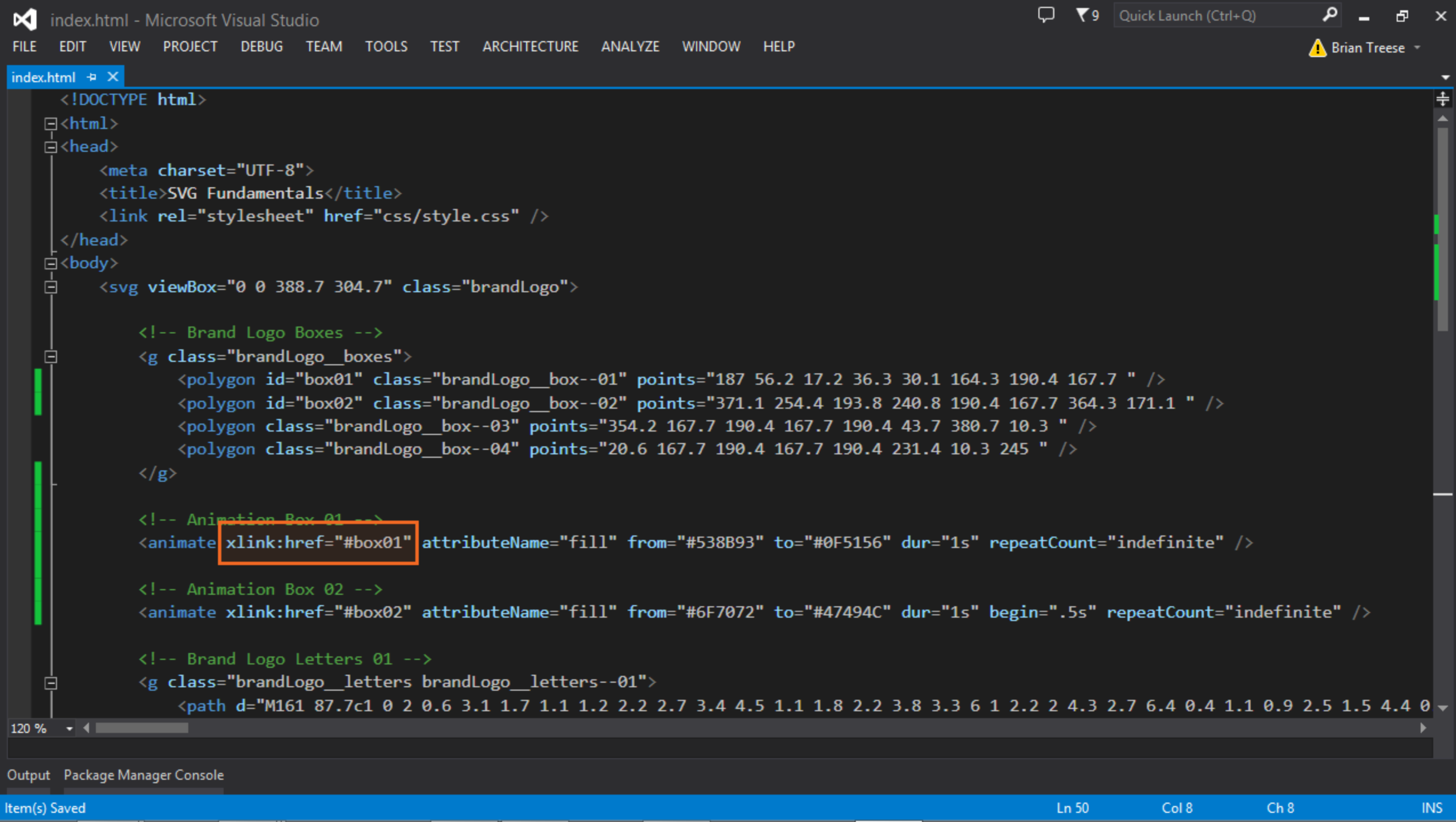
Animating SVG with SMIL

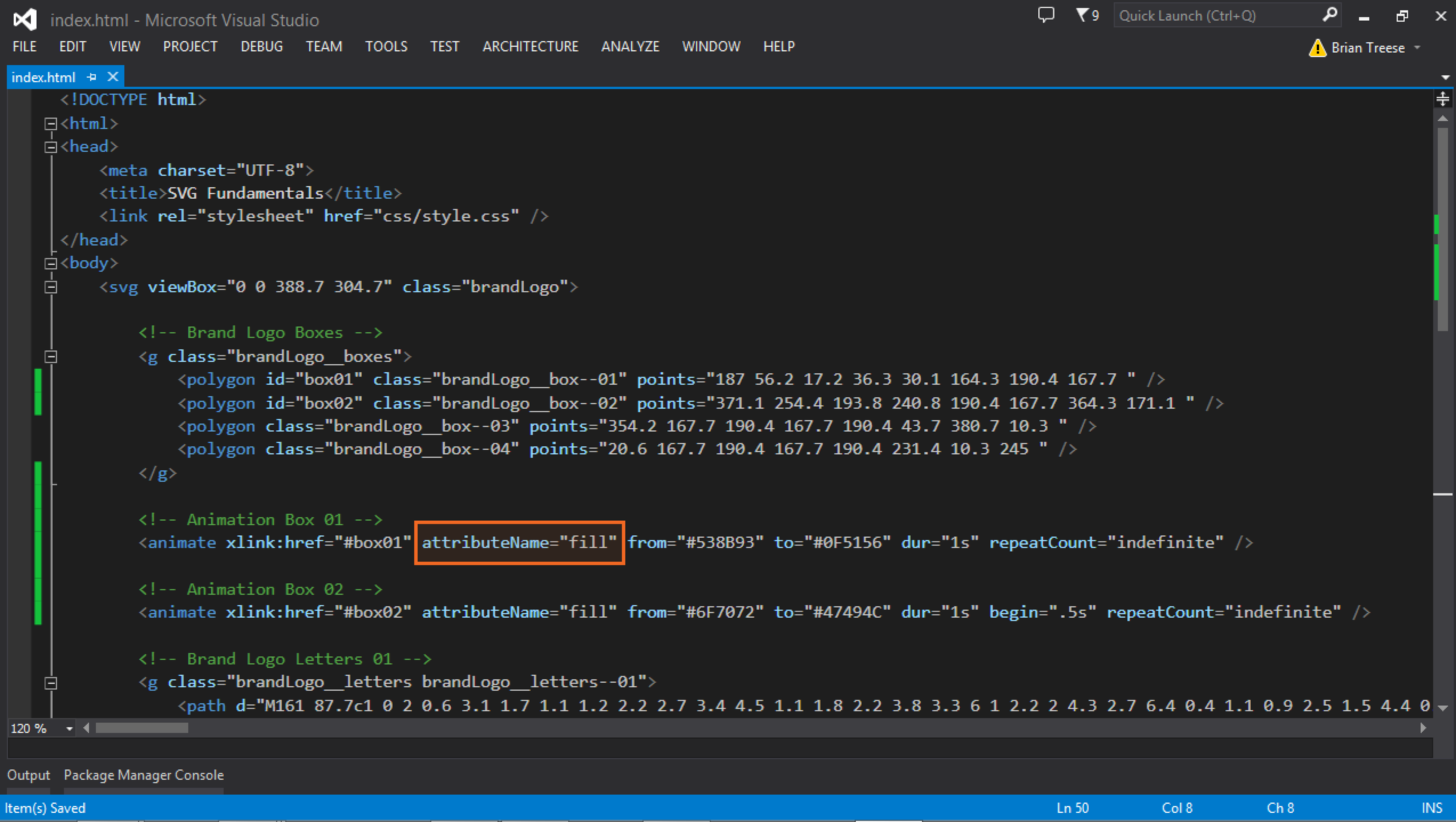
Animating SVG with SMIL

- `<animate>`
- `<animateMotion>`
- `<animateTransform>`
- `<set>`









<!DOCTYPE html>

<html>

<head>

<meta charset="UTF-8">

<title>SVG Fundamentals</title>

<link rel="stylesheet" href="css/style.css" />

</head>

<body>

<svg viewBox="0 0 388.7 304.7" class="brandLogo">

<!-- Brand Logo Boxes -->

<g class="brandLogo_boxes">

<polygon id="box01" class="brandLogo_box--01" points="187 56.2 17.2 36.3 30.1 164.3 190.4 167.7 " />

<polygon id="box02" class="brandLogo_box--02" points="371.1 254.4 193.8 240.8 190.4 167.7 364.3 171.1 " />

<polygon class="brandLogo_box--03" points="354.2 167.7 190.4 167.7 190.4 43.7 380.7 10.3 " />

<polygon class="brandLogo_box--04" points="20.6 167.7 190.4 167.7 190.4 231.4 10.3 245 " />

</g>

<!-- Animation Box 01 -->

<animate xlink:href="#box01" attributeName="fill" from="#538B93" to="#0F5156" dur="1s" repeatCount="indefinite" />

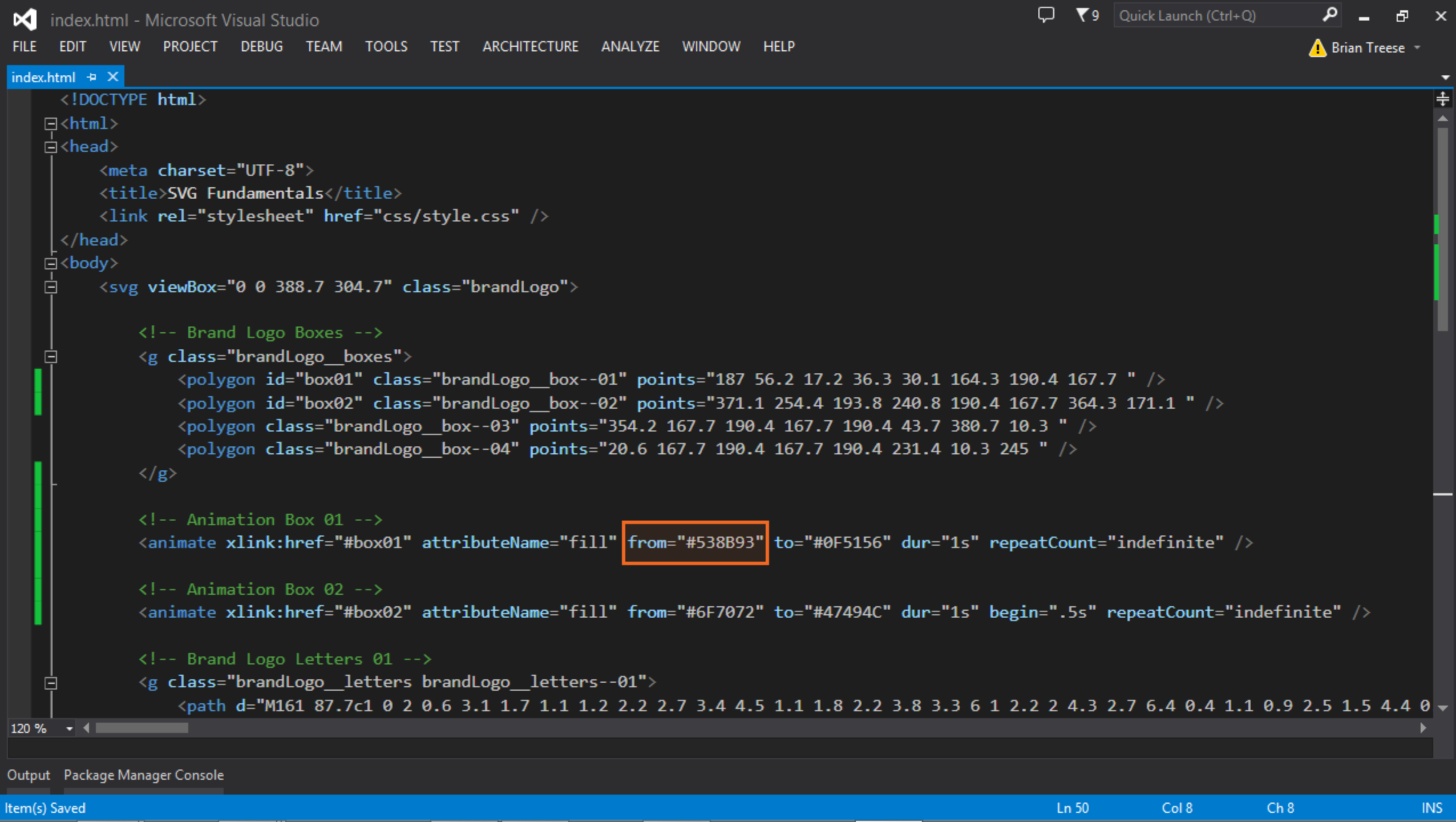
<!-- Animation Box 02 -->

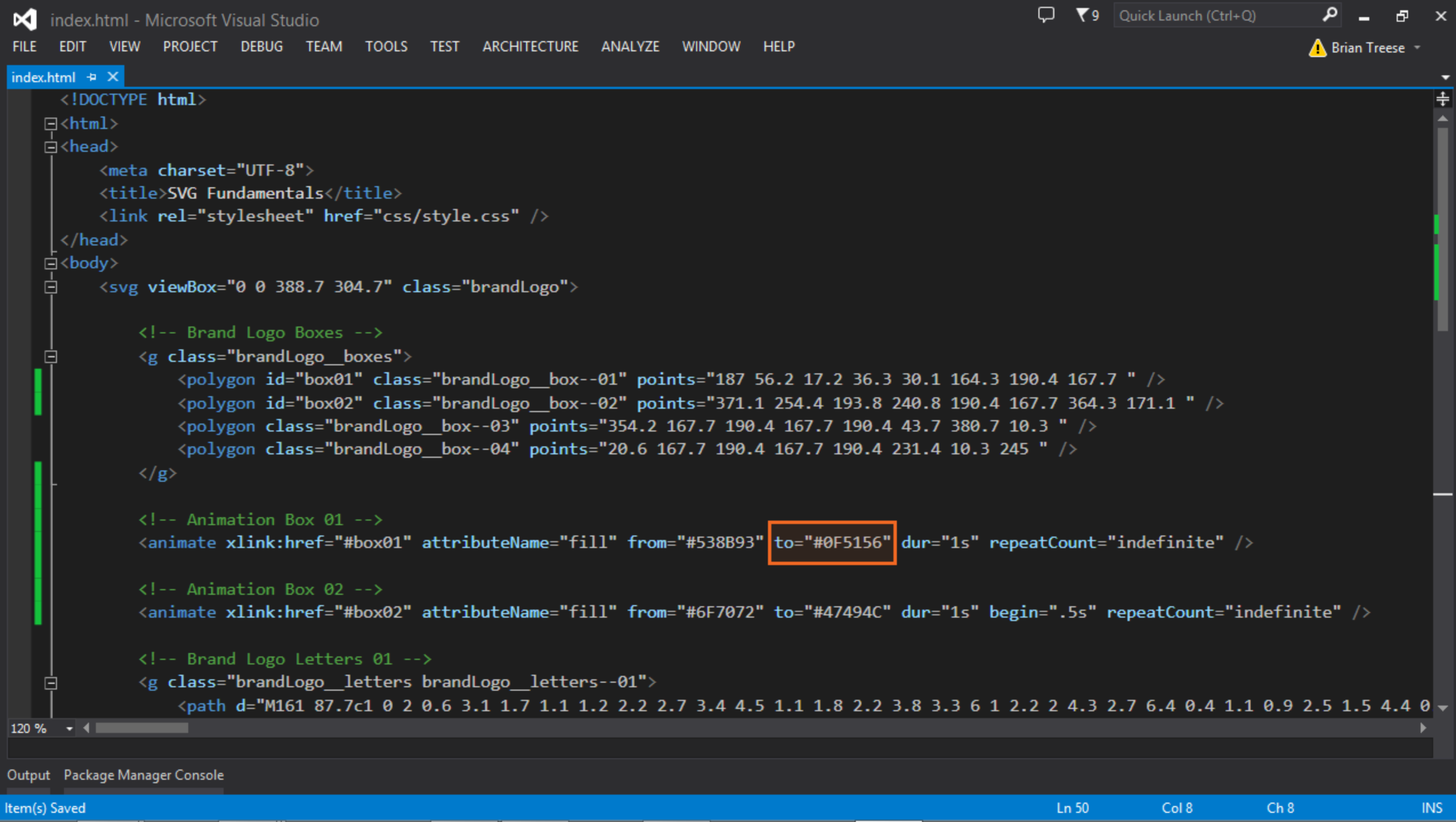
<animate xlink:href="#box02" attributeName="fill" from="#6F7072" to="#47494C" dur="1s" begin=".5s" repeatCount="indefinite" />

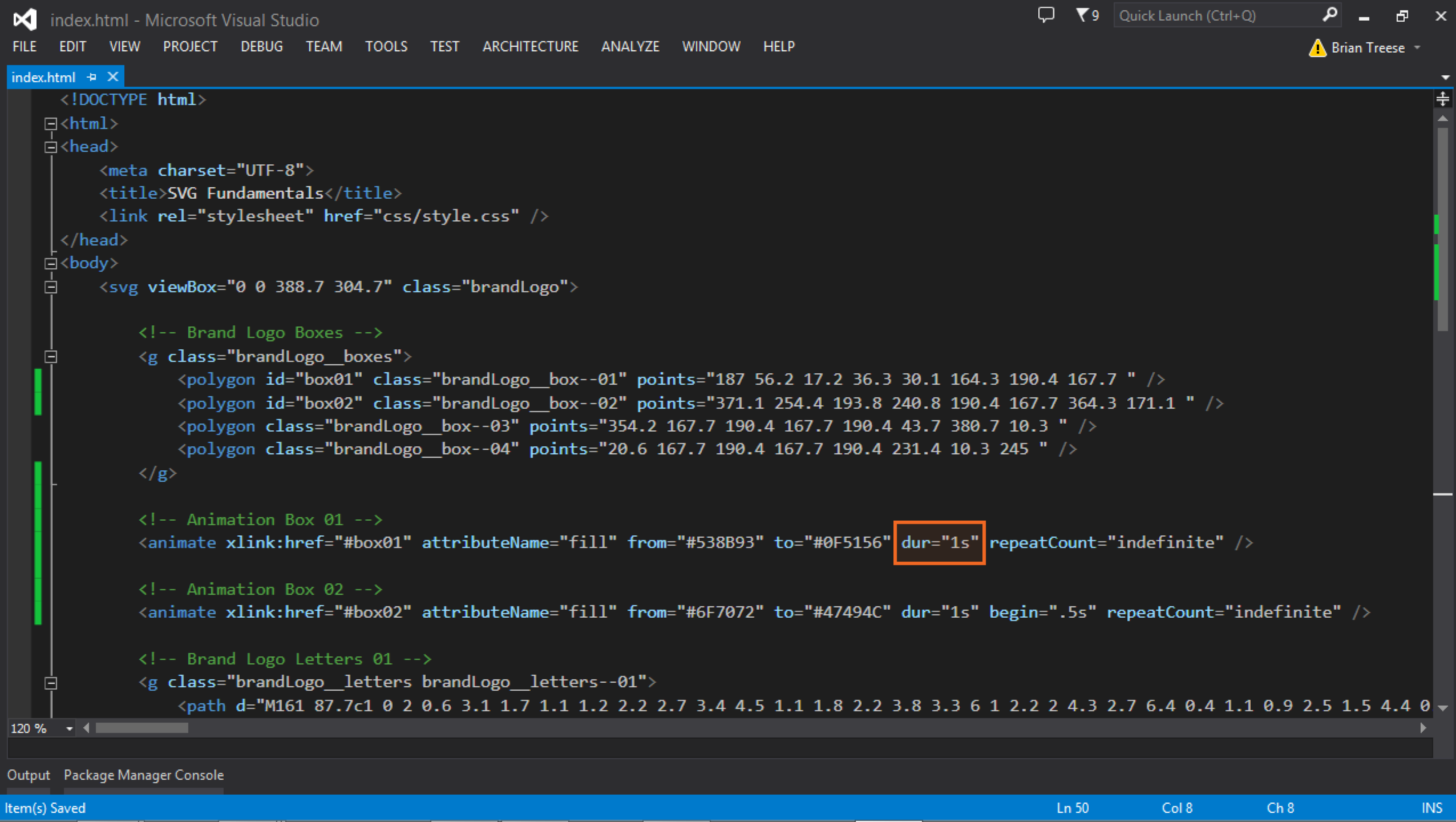
<!-- Brand Logo Letters 01 -->

<g class="brandLogo_letters brandLogo_letters--01">

<path d="M161 87.7c1 0 2 0.6 3.1 1.7 1.1 1.2 2.2 2.7 3.4 4.5 1.1 1.8 2.2 3.8 3.3 6 1 2.2 2 4.3 2.7 6.4 0.4 1.1 0.9 2.5 1.5 4.4 0







In Chrome...

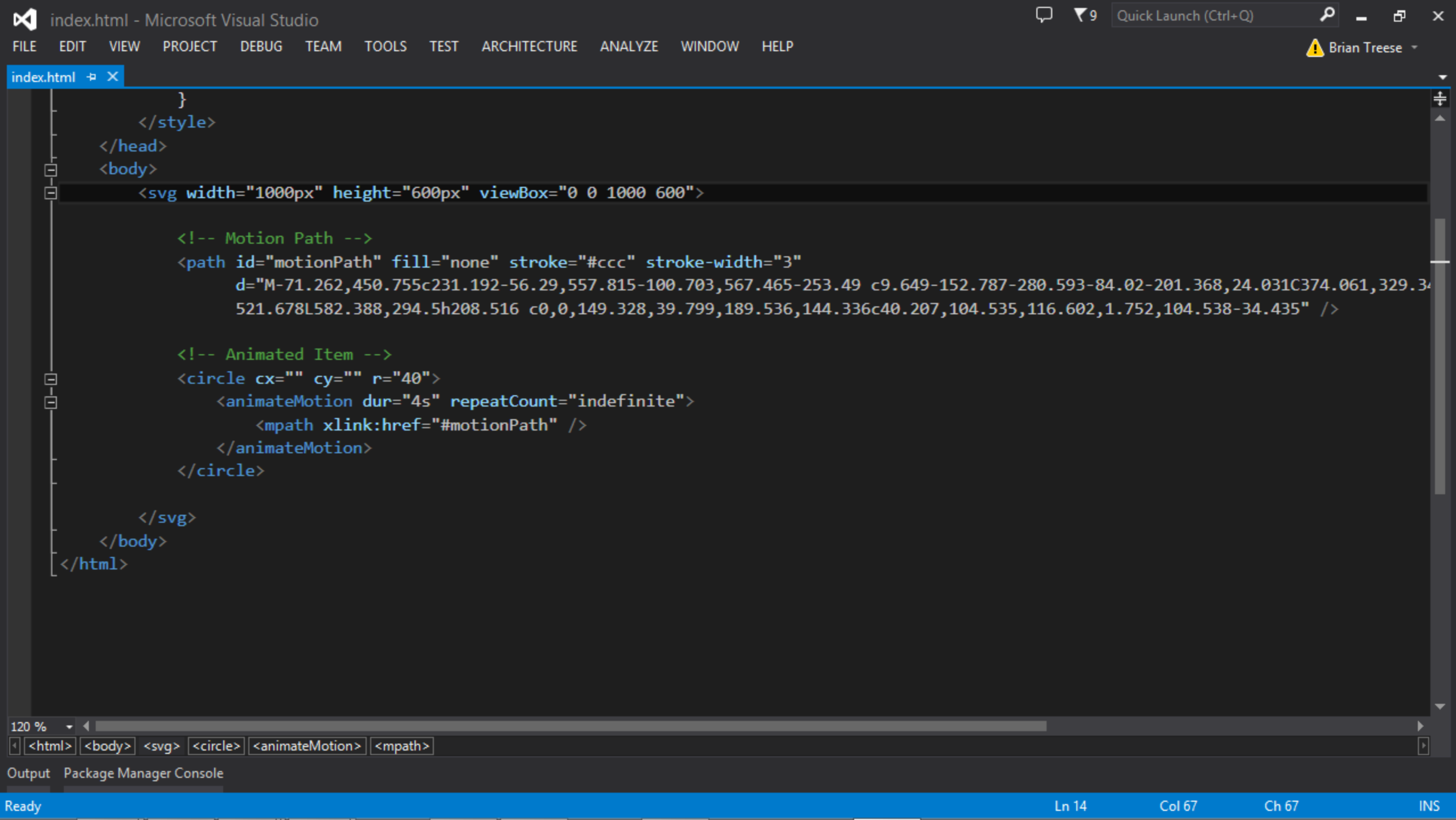
In FireFox...

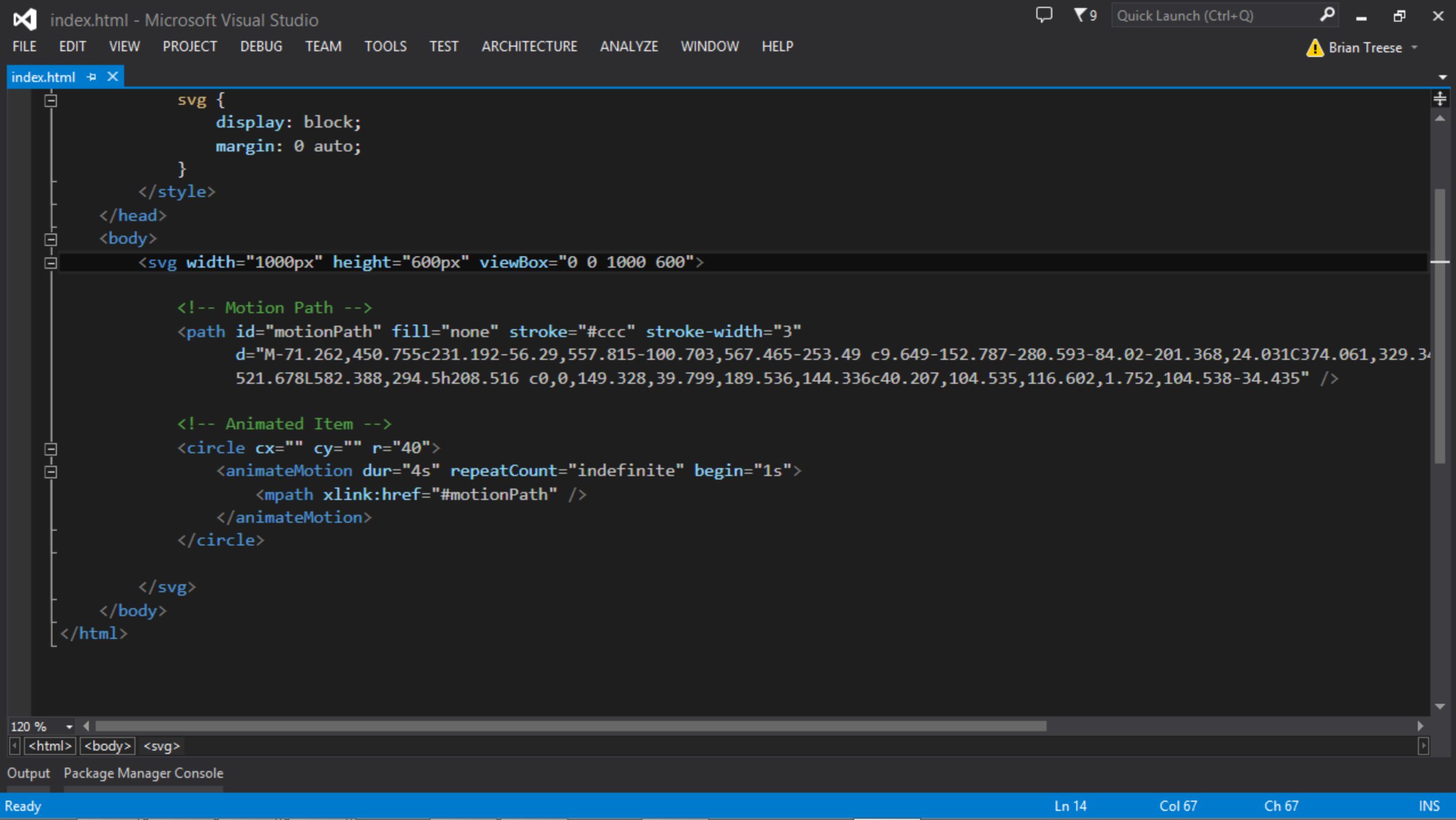
In IE...

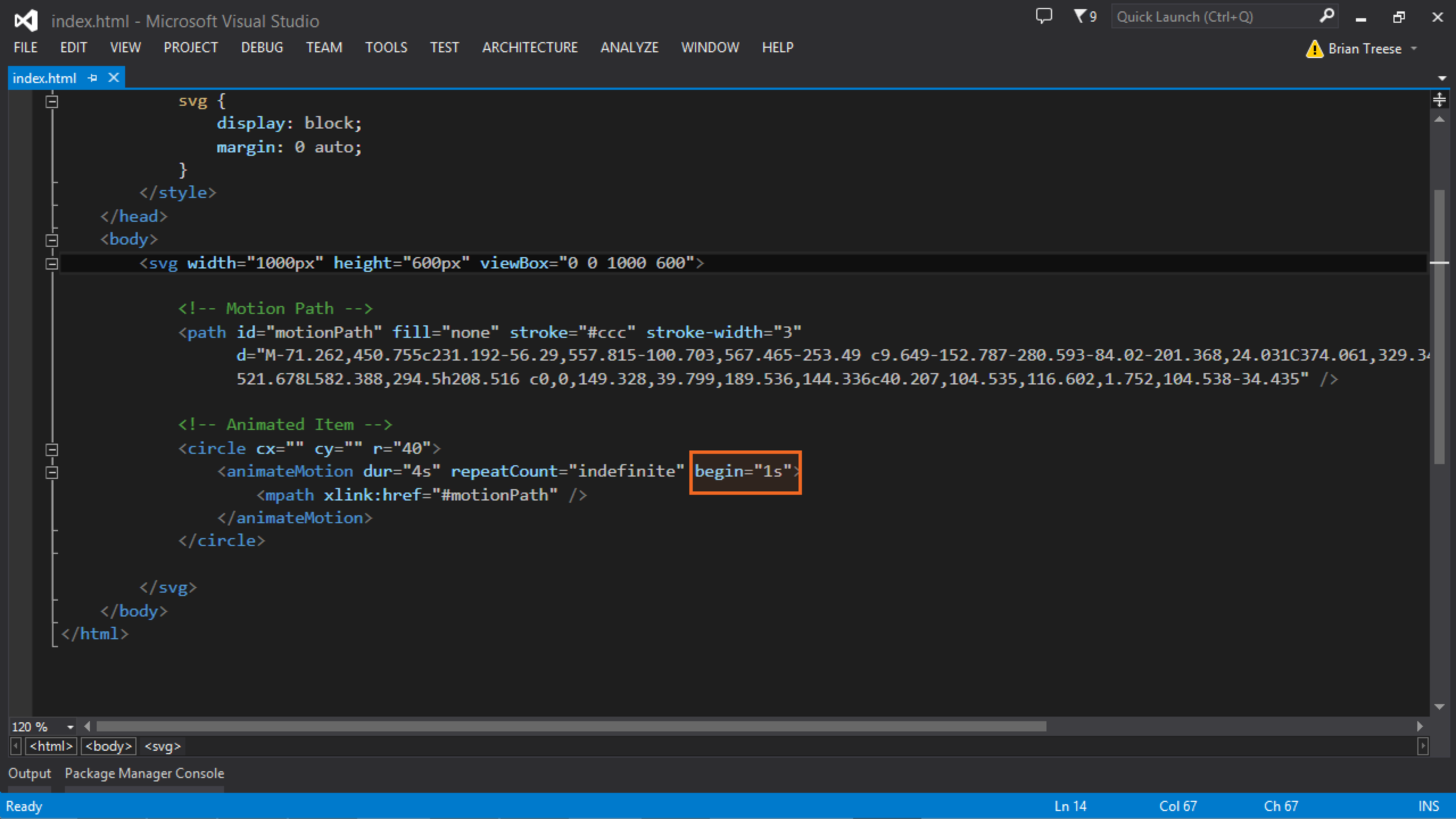


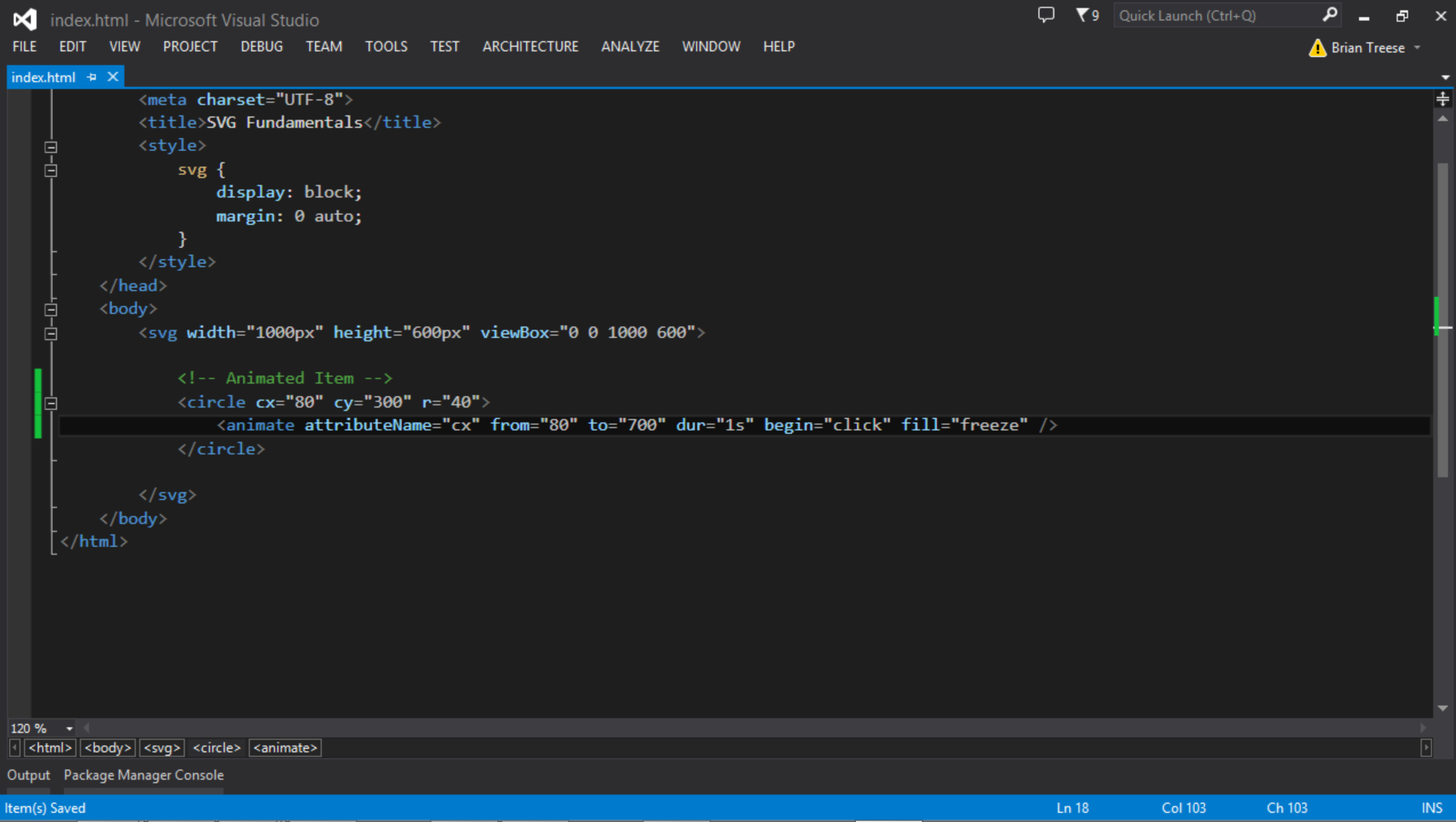
Powerful
Simple
Declarative
Complex Animations

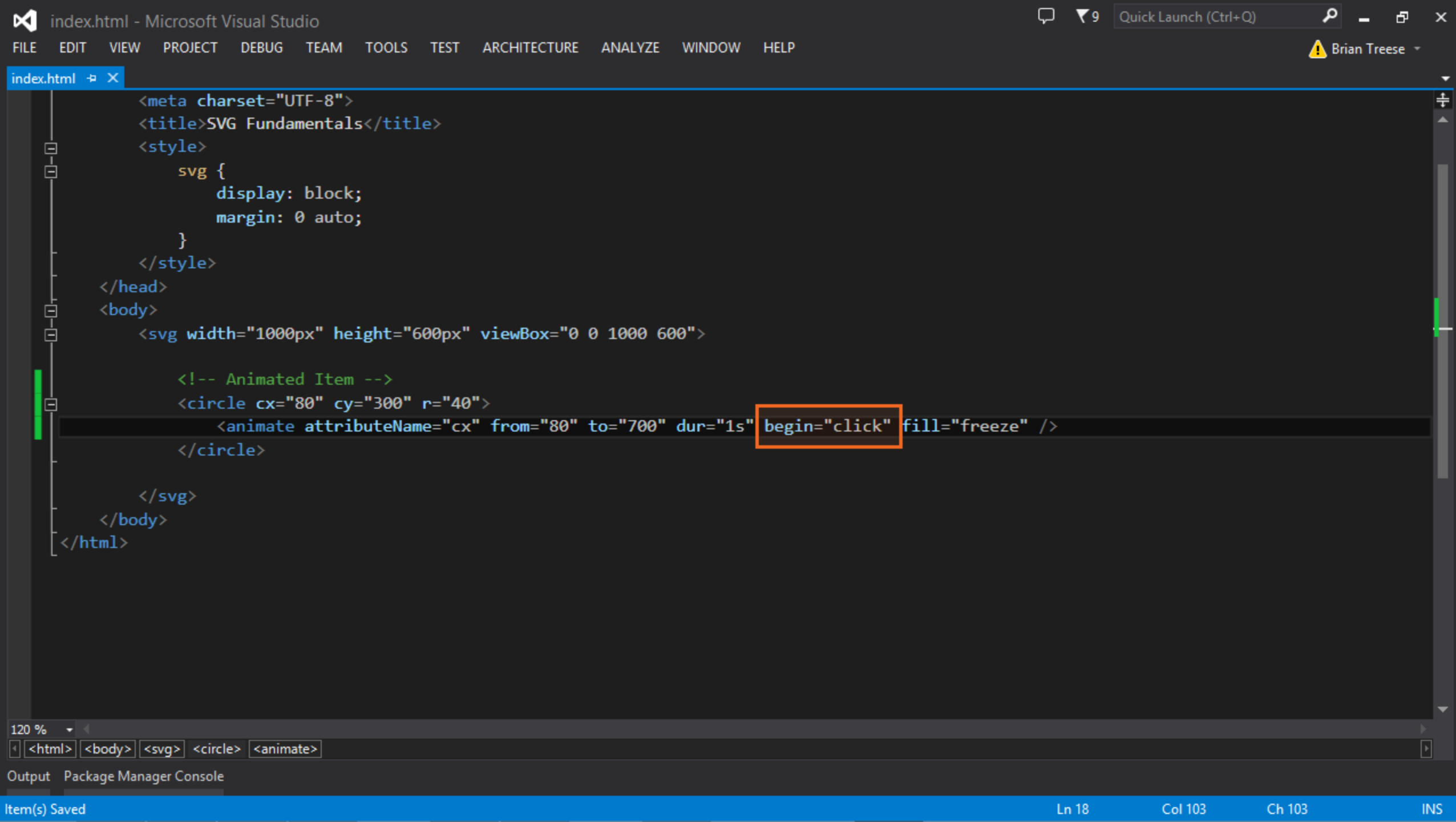


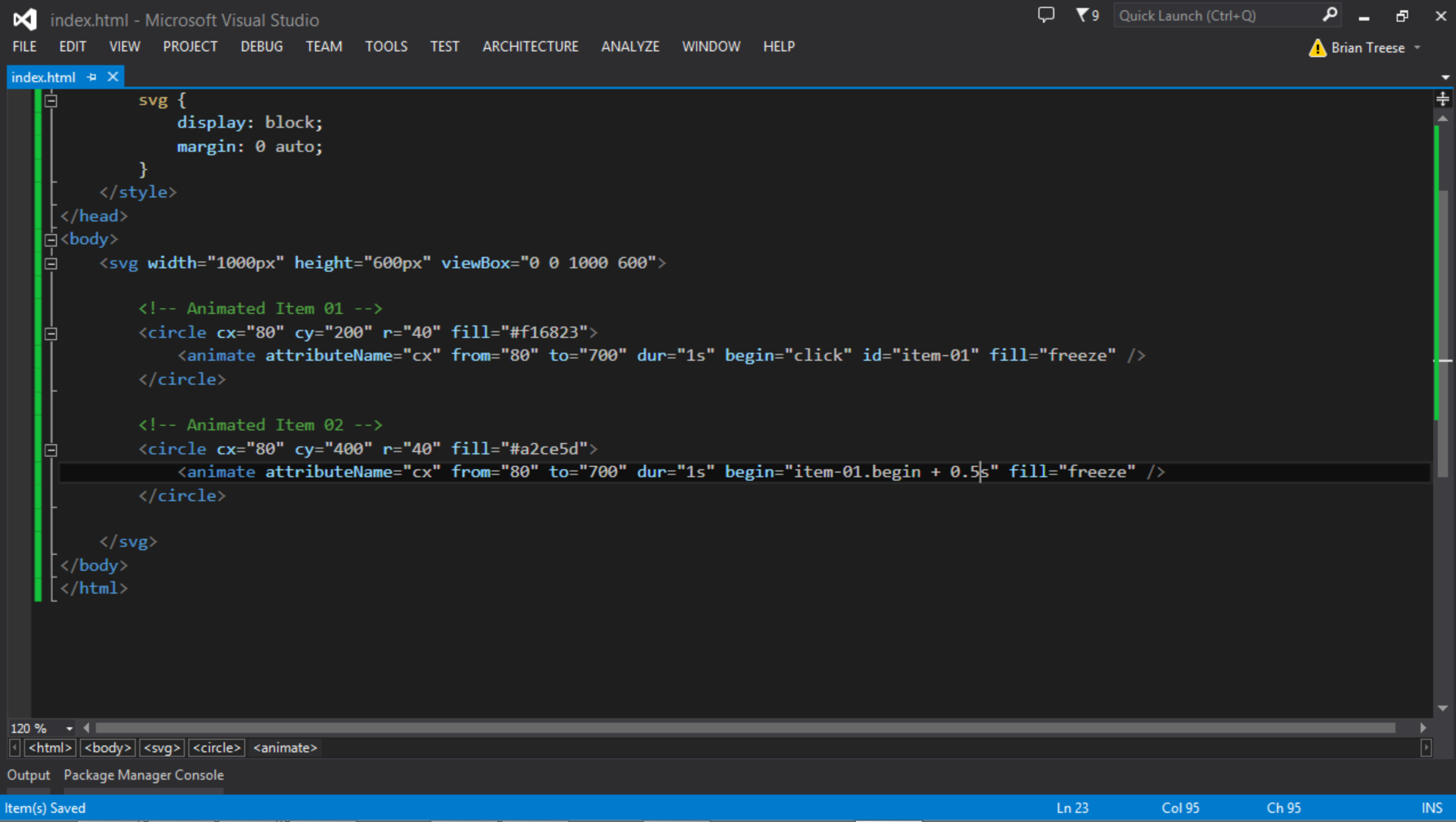










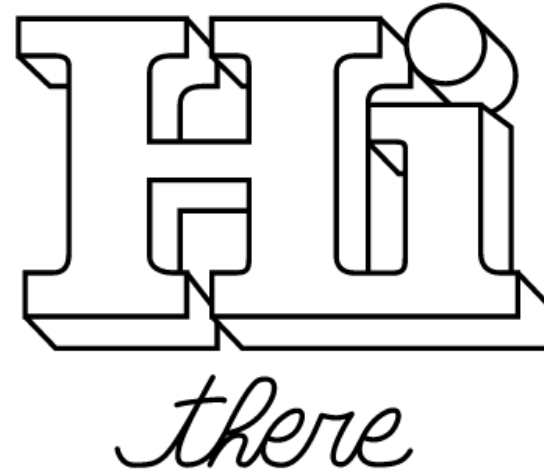




SVG Animation with JavaScript Manipulation & Animation Libraries



Snap.svg



Data-Driven Documents

Snap.svg

<http://snapsvg.io/>



logo.svg index.html

<!DOCTYPE html>

<html>

<head>

<meta charset="UTF-8">

<title>SVG Fundamentals</title>

<link rel="stylesheet" href="css/style.css" />

<!-- Include the Snap.svg library -->

<script src="scripts/snap.svg-min.js"></script>

</head>

<body>

<script>

// Create the SVG drawing area

var s = Snap(800, 800);

// Load the external SVG graphic

Snap.load("images/logo.svg", onSVGLoaded);

function onSVGLoaded(svg) {

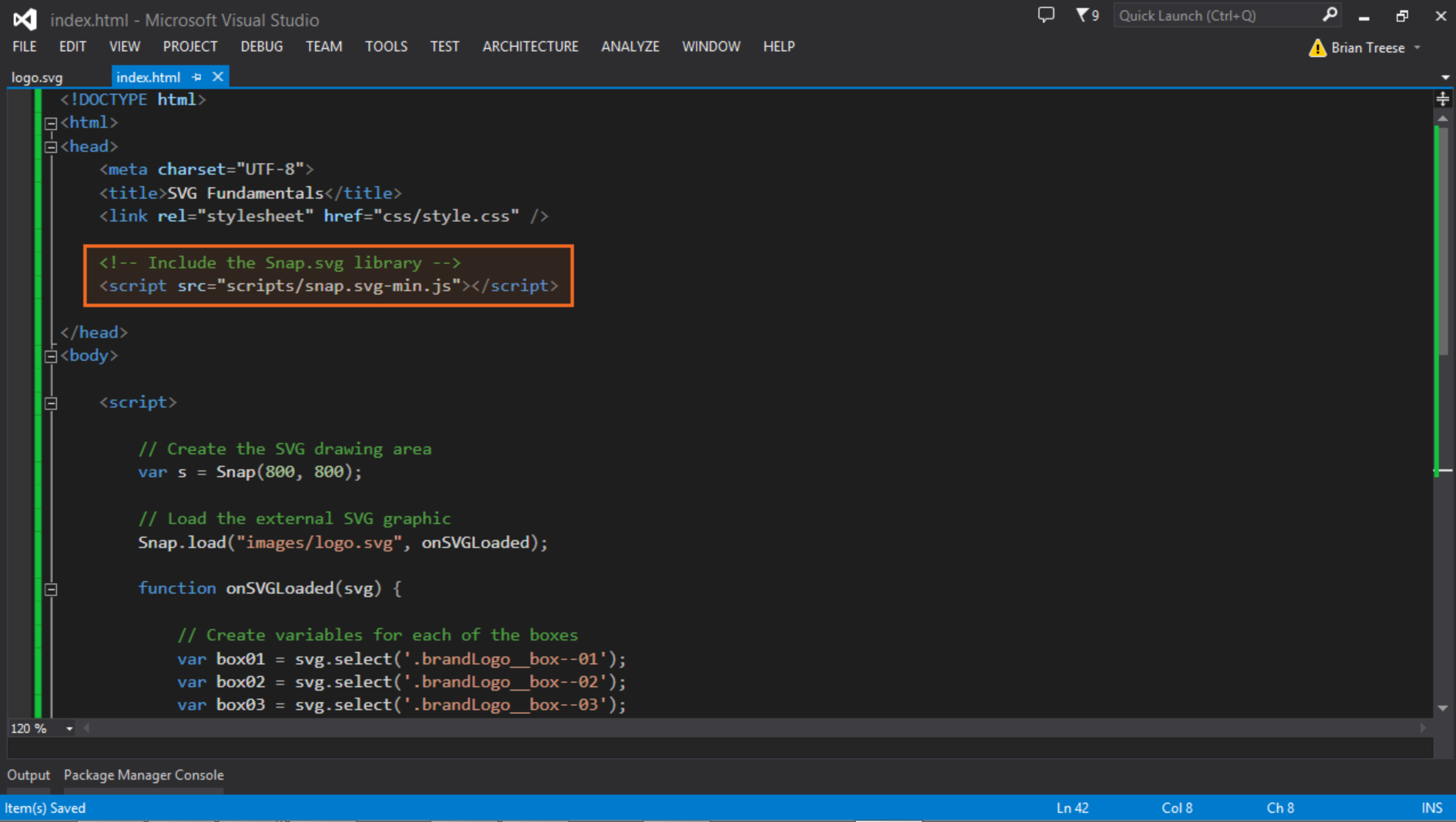
// Create variables for each of the boxes

var box01 = svg.select('.brandLogo__box--01');

var box02 = svg.select('.brandLogo__box--02');

var box03 = svg.select('.brandLogo__box--03');

120 %



```
<svg viewBox="0 0 388.7 304.7" class="brandLogo">  
  
    <!-- Brand Logo Boxes -->  
    <g class="brandLogo_boxes">  
        <polygon class="brandLogo_box--01" points="187 56.2 17.2 36.3 30.1 164.3 190.4 167.7 " />  
        <polygon class="brandLogo_box--02" points="371.1 254.4 193.8 240.8 190.4 167.7 364.3 171.1 " />  
        <polygon class="brandLogo_box--03" points="354.2 167.7 190.4 167.7 190.4 43.7 380.7 10.3 " />  
        <polygon class="brandLogo_box--04" points="20.6 167.7 190.4 167.7 190.4 231.4 10.3 245 " />  
    </g>  
  
    <!-- Brand Logo Letters 01 -->  
    <g class="brandLogo_letters brandLogo_letters--01">  
        <path d="M161 87.7c1 0 2 0.6 3.1 1.7 1.1 1.2 2.2 2.7 3.4 4.5 1.1 1.8 2.2 3.8 3.3 6 1 2.2 2 4.3 2.7 6.4 0.4 1.1 0.9 2.5 1.5 4.4 0.6  
        <path d="M142.3 100.7c1 0 2 0.2 3.1 0.6 1 0.4 2 1 2.9 1.6 0.9 0.6 1.6 1.3 2.2 1.9 0.6 0.6 0.9 1.2 0.9 1.6 0 0.2-0.2 0.7-0.6 1.3 -0  
        <path d="M315.6 159c0.2-2.5 0.5-5.1 0.7-7.9 0.3-2.8 0.5-5.7 0.9-8.7 -3 3-6.4 5.9-10.3 8.7 -3.9 2.8-8 5.4-12.3 7.8s-8.9 4.7-13.5 6.  
    </g>  
  
    <!-- Brand Logo Letters 02 -->  
    <g class="brandLogo_letters brandLogo_letters--02">  
        <path d="M47.1 282.8h-7.3v7.3h-1.3v-15.6h9.7v1.1h-8.4v6.1h7.3V282.8z" />  
        <path d="M74.8 274.5v10.6c0 0.9-0.1 1.6-0.4 2.3s-0.7 1.2-1.2 1.6c-0.5 0.4-1.1 0.8-1.7 1 -0.7 0.2-1.4 0.3-2.1 0.3 -0.8 0-1.5-0.1-2..  
        <path d="M103.2 290.1h-1.3l-9-13.4v13.4h-1.3v-15.6h1.3l9 13.4v-13.4h1.3V290.1z" />  
        <path d="M120.4 290.1v-15.6h4.4c1 0 1.9 0.2 2.7 0.5 0.8 0.3 1.5 0.8 2.1 1.4 0.6 0.6 1 1.4 1.4 2.2 0.3 0.9 0.5 1.8 0.5 2.9v1.4c0 1..  
        <path d="M156.2 285.7h-7.1l-1.6 4.4h-1.4l5.9-15.6h1.3l5.9 15.6h-1.4L156.2 285.7zM149.5 284.6h6.3l-3.1-8.5L149.5 284.6z" />  
        <path d="M176.4 274.5l5.8 13.8 5.8-13.8h1.8v15.6h-1.3v-6.8l0.1-7 -5.8 13.8h-1l-5.8-13.7 0.1 6.9v6.8h-1.3v-15.6H176.4z" />  
        <path d="M215.4 282.6h-7.3v6.4h8.4v1.1h-9.7v-15.6h9.7v1.1h-8.3v5.9h7.3V282.6z" />  
        <path d="M244.1 290.1h-1.3l-9-13.4v13.4h-1.3v-15.6h1.3l9 13.4v-13.4h1.3V290.1z" />  
        <path d="M271.5 275.6h-5.4v14.5h-1.3v-14.5h-5.3v-1.1h12V275.6z" />
```

```
<svg viewBox="0 0 388.7 304.7" class="brandLogo">  
  
  <!-- Brand Logo Boxes -->  
  <g class="brandLogo_boxes">  
    <polygon class="brandLogo_box--01" points="187 56.2 17.2 36.3 30.1 164.3 190.4 167.7 " />  
    <polygon class="brandLogo_box--02" points="371.1 254.4 193.8 240.8 190.4 167.7 364.3 171.1 " />  
    <polygon class="brandLogo_box--03" points="354.2 167.7 190.4 167.7 190.4 43.7 380.7 10.3 " />  
    <polygon class="brandLogo_box--04" points="20.6 167.7 190.4 167.7 190.4 231.4 10.3 245 " />  
  </g>  
  
  <!-- Brand Logo Letters 01 -->  
  <g class="brandLogo_letters brandLogo_letters--01">  
    <path d="M161 87.7c1 0 2 0.6 3.1 1.7 1.1 1.2 2.2 2.7 3.4 4.5 1.1 1.8 2.2 3.8 3.3 6 1 2.2 2 4.3 2.7 6.4 0.4 1.1 0.9 2.5 1.5 4.4 0.6  
    <path d="M142.3 100.7c1 0 2 0.2 3.1 0.6 1 0.4 2 1 2.9 1.6 0.9 0.6 1.6 1.3 2.2 1.9 0.6 0.6 0.9 1.2 0.9 1.6 0 0.2-0.2 0.7-0.6 1.3 -0  
    <path d="M315.6 159c0.2-2.5 0.5-5.1 0.7-7.9 0.3-2.8 0.5-5.7 0.9-8.7 -3 3-6.4 5.9-10.3 8.7 -3.9 2.8-8 5.4-12.3 7.8s-8.9 4.7-13.5 6.  
  </g>  
  
  <!-- Brand Logo Letters 02 -->  
  <g class="brandLogo_letters brandLogo_letters--02">  
    <path d="M47.1 282.8h-7.3v7.3h-1.3v-15.6h9.7v1.1h-8.4v6.1h7.3V282.8z" />  
    <path d="M74.8 274.5v10.6c0 0.9-0.1 1.6-0.4 2.3s-0.7 1.2-1.2 1.6c-0.5 0.4-1.1 0.8-1.7 1 -0.7 0.2-1.4 0.3-2.1 0.3 -0.8 0-1.5-0.1-2..  
    <path d="M103.2 290.1h-1.3l-9-13.4v13.4h-1.3v-15.6h1.3l9 13.4v-13.4h1.3V290.1z" />  
    <path d="M120.4 290.1v-15.6h4.4c1 0 1.9 0.2 2.7 0.5 0.8 0.3 1.5 0.8 2.1 1.4 0.6 0.6 1 1.4 1.4 2.2 0.3 0.9 0.5 1.8 0.5 2.9v1.4c0 1..  
    <path d="M156.2 285.7h-7.1l-1.6 4.4h-1.4l5.9-15.6h1.3l5.9 15.6h-1.4L156.2 285.7zM149.5 284.6h6.3l-3.1-8.5L149.5 284.6z" />  
    <path d="M176.4 274.5l5.8 13.8 5.8-13.8h1.8v15.6h-1.3v-6.8l0.1-7 -5.8 13.8h-1l-5.8-13.7 0.1 6.9v6.8h-1.3v-15.6H176.4z" />  
    <path d="M215.4 282.6h-7.3v6.4h8.4v1.1h-9.7v-15.6h9.7v1.1h-8.3v5.9h7.3V282.6z" />  
    <path d="M244.1 290.1h-1.3l-9-13.4v13.4h-1.3v-15.6h1.3l9 13.4v-13.4h1.3V290.1z" />  
    <path d="M271.5 275.6h-5.4v14.5h-1.3v-14.5h-5.3v-1.1h12V275.6z" />
```




logo.svg

index.html



<script>

// Create the SVG drawing area

var s = Snap(800, 800);

// Load the external SVG graphic

Snap.load("images/logo.svg", onSVGLoaded);

function onSVGLoaded(svg) {

// Create variables for each of the boxes

var box01 = svg.select('.brandLogo__box--01');

var box02 = svg.select('.brandLogo__box--02');

var box03 = svg.select('.brandLogo__box--03');

var box04 = svg.select('.brandLogo__box--04');

// Create animations to run on each individual box

box01.animate({ 'transform': 'rotate(360)' }, 1000, mina.elastic);

box02.animate({ 'transform': 'rotate(-360)' }, 1500, mina.elastic);

box03.animate({ 'transform': 'rotate(360)' }, 1200, mina.elastic);

box04.animate({ 'transform': 'rotate(-360)' }, 800, mina.elastic);

s.append(svg);

}

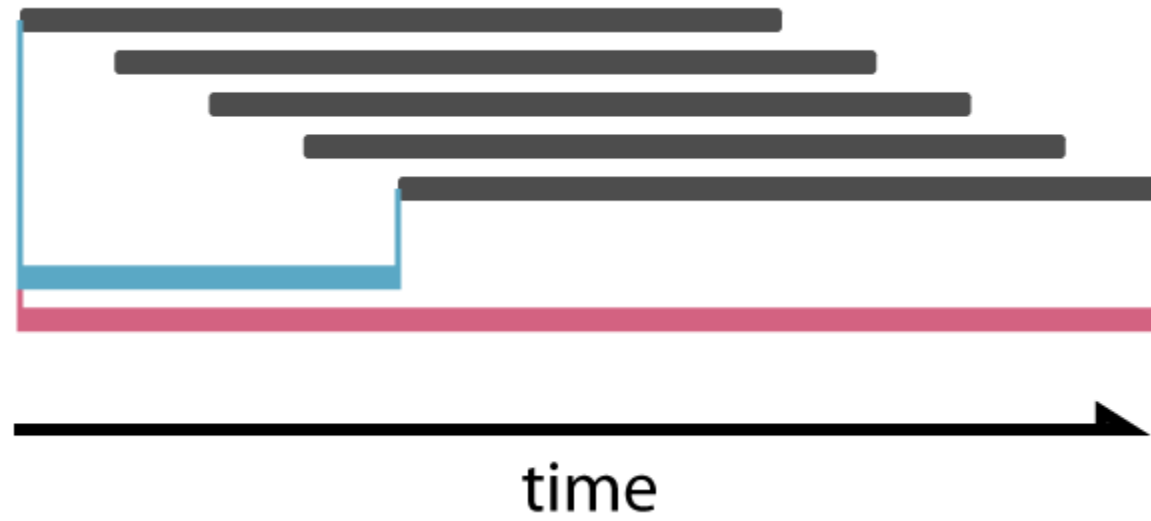
</script>

120 %

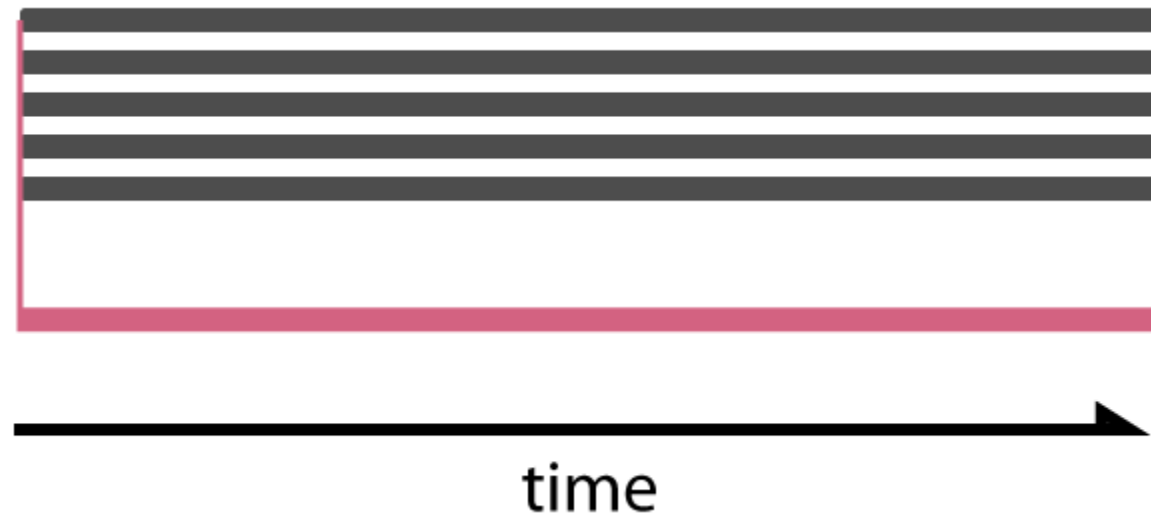
Vivus.js

<https://maxwellito.github.io/vivus/>

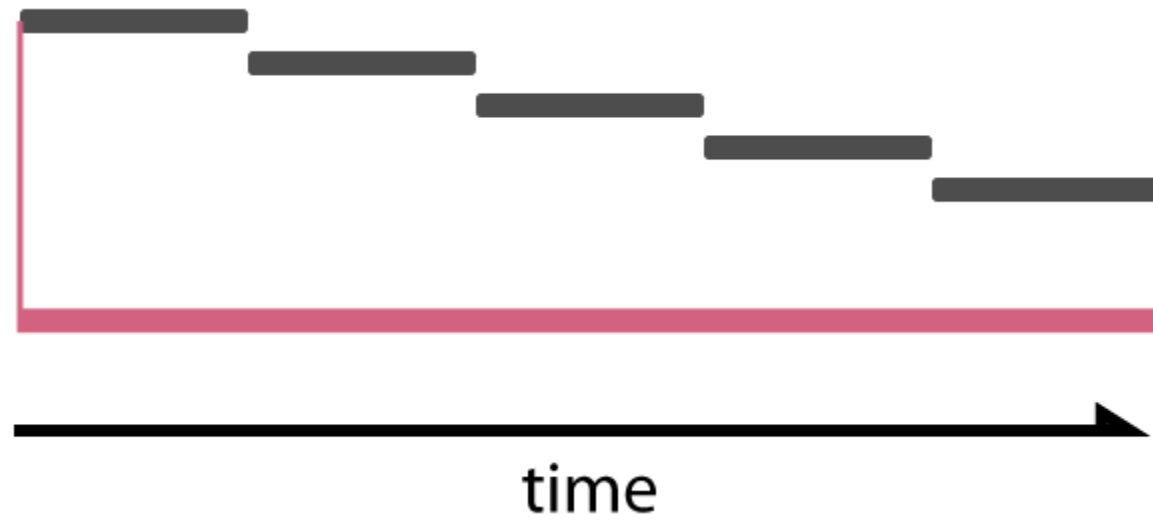
Delayed



Async

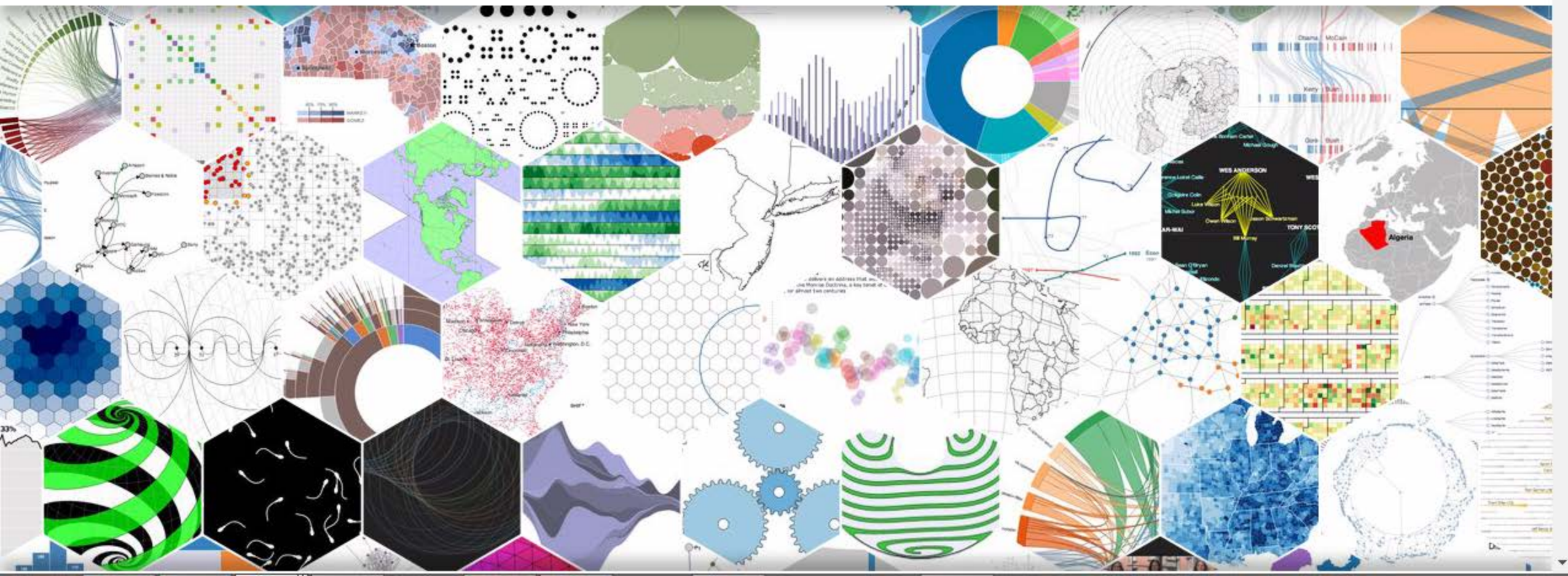


One by One



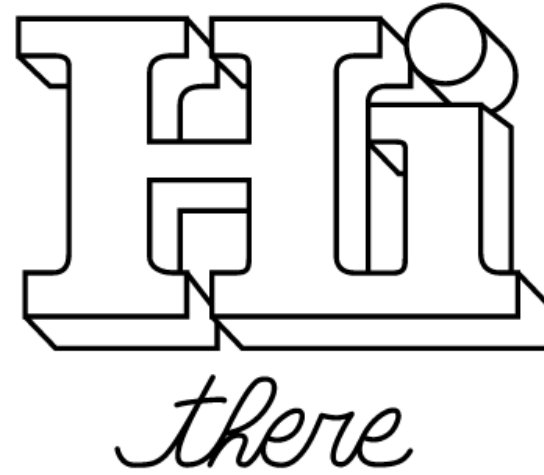
D3

<http://d3js.org/>





Snap.svg



Data-Driven Documents

We can create our own!!!

Summary



The possibilities are endless!

3 methods to add interactivity and animation to SVGs

CSS

SMIL

JavaScript

CSS and SMIL are inconsistent

JavaScript is best at the moment