

Visual Studio Code

Course Introduction



John Papa

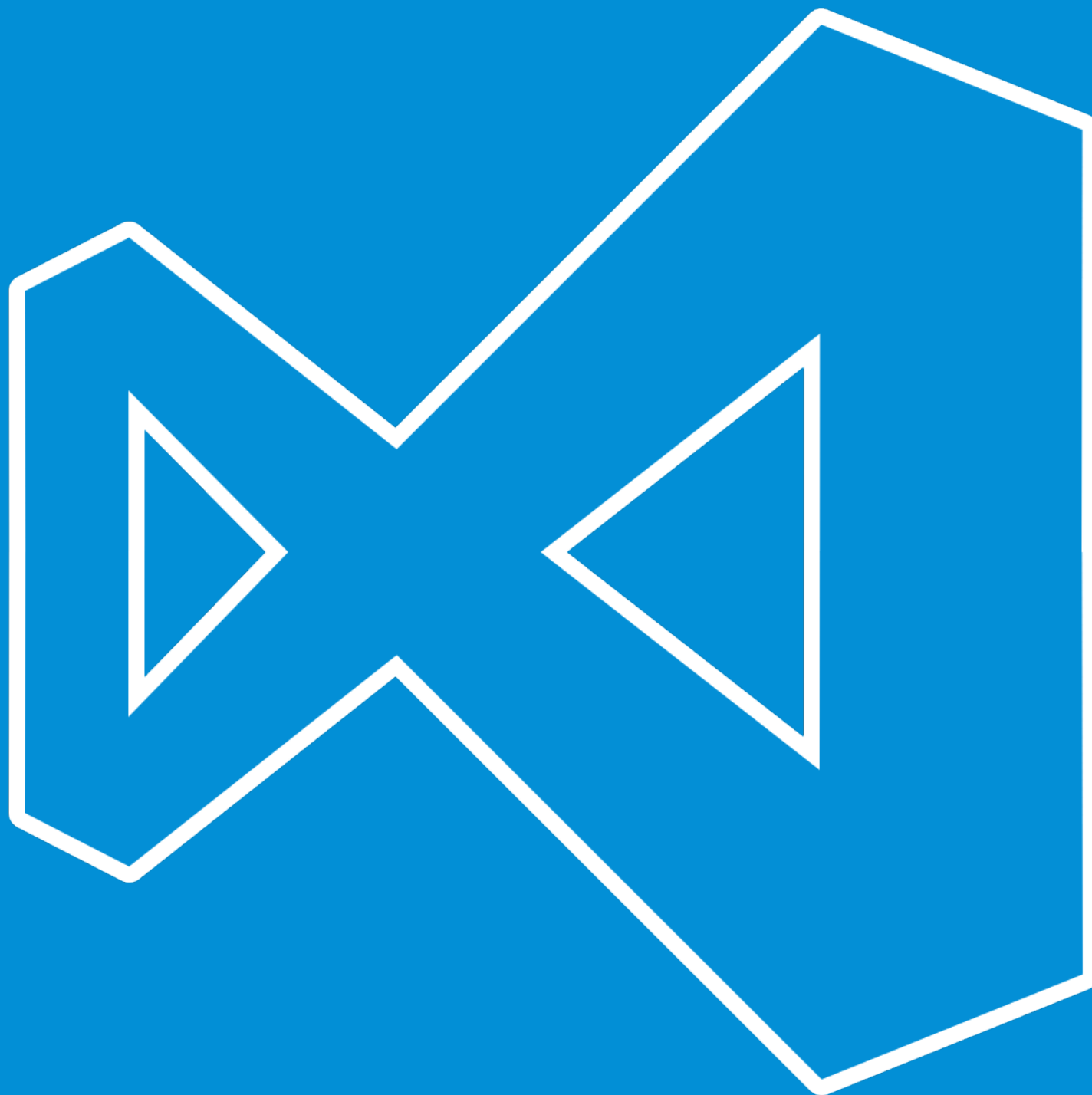
@john_papa | www.johnpapa.net

The Problem

**Difficult to find a fast and powerful tool
that we can use on both Mac and Windows**

Visual Studio Code

Fast, Lightweight, Cross Platform Editor



Top 5 Reasons I Like Code

1

Code is Fast

1b

I'm Faster with Code

2

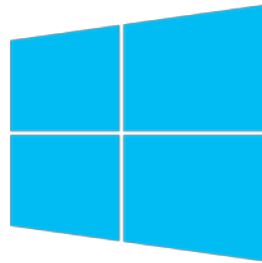
Code is Cross-Platform

Cross Platform

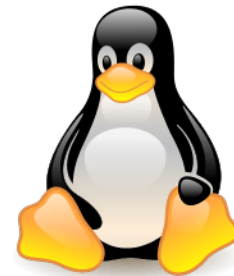
OSX



Windows



Linux



3

Code has Debugging

4

Code has Rich Intellisense

5

Code has Rich Refactorings

Many Choices, and Growing



ASP.NET 5



C#



**Code sits perfectly
in the sweet spot between editor and IDE
for 95% of my development workflow**



ATOM



Popular Editors and IDEs



Visual Studio



EXPLORE

WORKING FILES

styles.less src\client\styles

HOTTOWEL-ANGULAR-TYPESCRIPT

.settings

src

client

app

admin

blocks

core

dashboard

layout

widgets

app.module.js

app.module.ts

app.module.js.map

images

styles

styles.less

test-helpers

config.js

index.html

specs.html

tsconfig.json

tsd.d.ts

server

typings

bowerrc

dashboard.controller.ts

```
1 namespace app.dashboard {
2   'use strict';
3
4   interface IDashboardVm {
5     news: { title: string, description: string };
6     messageCount: number;
7     people: Array<any>;
8     title: string;
9     getMessageCount: () => ng.IPromise<number>;
10    getPeople: () => ng.IPromise<Array<any>>;
11  }
12
13  export class DashboardController implements IDashboardVm {
14    static $inject: Array<string> = ['$q', 'dataservice', 'logger'];
15    constructor(private $q: ng.IQService,
16                private dataservice: app.core.IDataService,
17                private logger: blocks.logger.Logger) {
18      var promises = [this.getMessageCount(), this.getPeople()];
19      this.$q.all(promises).then(function () {
20        logger.info('Activated Dashboard View');
21      });
22    }
23
24    news = {
25      title: 'helloworld',
26      description: 'Hot Towel Angular is a SPA template for AngularJS',
27    };
28    messageCount: number = 0;
29    people: Array<any> = [];
30    title: string = 'Dashboard';
31
32    getMessageCount() {
33      return this.dataservice.getMessageCount().then((data) => {
34        this.messageCount = data;
35        return this.messageCount;
36      });
37    }
38  }
```

styles.less src\client\styles

```
1 @color_lightblue: #52b9e9;
2 @color_blue: #1171a3;
3 @color_success: #43c83c;
4 @color_warning: #f88529;
5 @color_important: #fa3031;
6 @color_violet: #932ab6;
7
8 * {
9   font-family: "Segoe UI", Arial, Helvetica, sans-serif;
10   -webkit-font-smoothing: antialiased;
11 }
12
13 .btn, .badge, .modal, .modal-dialog, .modal-content,
14 input, select {
15   -ms-border-radius: 0 !important;
16   border-radius: 0 !important;
17 }
18
19 input, select {
20   padding: 4px !important;
21   display: inline-block !important;
22 }
23
24 .navbar * {
25   background-image: none !important;
26   -webkit-text-shadow: none !important;
27   -ms-text-shadow: none !important;
28   text-shadow: none !important;
29 }
30
31 form * {
32   font-family: "Segoe UI", Arial, Helvetica, sans-serif;
33 }
34
35 input, textarea {
```




EXPLORÉ

WORKING FILES

dataservice.js src/client/app/core

```
settings.json  Users/john/Library/Applic...
```

CODEPLAY

► .tmp

- ▷ bower_components

- ▶ node_modules

src

client

▲ add

► admin

▷ blocks

► core

▲ dashboard

dashboard.html

dashboard.controller.js

dashboard.controller.spec.js

dashboard.module.js

dashboard.route.is

dashboard.route.spec.js

▷ layout

- ▷ widgets

app.module.js

► images

► styles

► test-helpers

index.html

[specs.html](#)

► server

▷ typings

powerpc

editorconfia

dashboard.controller.js src/client/app/dashboard

```

1  (function () {
2      'use strict';
3
4      angular
5          .module('app.dashboard')
6          .controller('DashboardController', DashboardController);
7
8      DashboardController.$inject = ['$q', 'dataservice', 'logger'];
9      /* @ngInject */
10     function DashboardController($q, dataservice, logger) {
11         var vm = this;
12         vm.news = {
13             title: 'codeplay',
14             description: 'Hot Towel Angular is a SPA template for Angular developers.'
15         };
16         vm.messageCount = 0;
17         vm.people = [];
18         vm.title = 'Dashboard';
19
20         activate();
21
22         function activate() {
23             var promises = [getMessageCount(), getPeople()];
24             return $q.all(promises).then(function() {
25                 logger.info('Activated Dashboard View');
26             });
27         }
28
29         function getMessageCount() {
30             return dataservice.getMessageCount().then(function (data) {
31                 vm.messageCount = data;
32                 return vm.messageCount;
33             });
34         }
35
36         function getPeople() {
37             return dataservice.getPeople().then(function (data) {
38                 vm.people = data;
39                 return vm.people;
40             });

```

dashboard.html

```

1 <section id="dashboard-view" class="mainbar">
2   <section class="matter">
3
4     <div class="container">
5       <div class="row">
6         <div class="col-md-12">
7           <ul class="today-datas">
8             <li class="blightblue">
9               <div class="pull-left"><i class="fa
10                fa-plane"></i></div>
11               <div class="datas-text pull-right">
12                 <span class="bold">May 18 - 19,
13                 2015</span> Castle Resort, Neverland
14               </div>
15               <div class="clearfix"></div>
16             </li>
17
18             <li class="borange">
19               <div class="pull-left"><i class="fa
20                fa-envelope"></i></div>
21               <div class="datas-text pull-right">
22                 <span class="bold">{{vm.messageCount}}
23                 </span> Messages
24               </div>
25               <div class="clearfix"></div>
26             </li>
27           </ul>
28         </div>
29       </div>
30     </div>
31   <div class="row">
32     <div class="col-md-6">
33       <div class="widget wviolet">
34         <div ht-widget-header title="People"
35          allow-collapse="true"></div>
36         <div class="widget-content text-center
37          text-info">
38           <table class="table table-condensed
39            table-striped">
40             <thead>
41               <tr>
42                 <th>First Name</th>

```

editor ← → IDE

editor ←————→ IDE

lightweight/fast
file/folders
many languages
many workflows
keyboard centered

editor ← → IDE

lightweight/fast
file/folders
many languages
many workflows
keyboard centered

project systems
code understanding
debug
integrated build
File>New, wizards
designers
ALM integration
platform tools
...

editor

lightweight/fast
file/folders
many languages
many workflows
keyboard centered

IDE



project systems
code understanding
debug
integrated build
File>New, wizards
designers
ALM integration
platform tools
...

editor

IDE

lightweight/fast
file/folders
many languages
many workflows
keyboard centered

project systems
code understanding
debug
integrated build
File>New, wizards
designers
ALM integration
platform tools
...

editor

IDE



lightweight/fast
file/folders
many languages
many workflows
keyboard centered



lightweight/fast
file/folders **with project context**
many languages
keyboard centered
code understanding (some languages)
debug
task running

project systems
code understanding
debug
integrated build
File>New, wizards
designers
ALM integration
platform tools
...



IntelliSense

Find All References

Parameter Hints

Goto Any Symbol

Errors/Warnings

Rename Symbol

Gutter Hints

Goto Symbol in File

Code Actions / Quick Fix

Goto Definition

Preview

Peek Definition

Customize Keyboard

Git Integration

Tasks

Debugging

Visual Studio Code a new choice of tool that combines the simplicity of a code editor with what developers need for their code-edit-debug cycle.

-- Erich Gamma

Code's 3 Main Parts



UI Framework - Electron

Editor - Monaco

Brains – TypeScript & OmniSharp/Roslyn

Cross Platform UI Framework / Shell



ELECTRON

Build cross platform desktop apps with web technologies

Formerly known as Atom Shell. Made with ♥ by [GitHub](#).

- + **Squirrel** for application updates
- + **FirstMate** for TextMate syntax bundle support

Battle Tested Editor

Experience

Erich Gamma

Distinguished Engineer

Gang of Four / Design Patterns

Monaco @ Microsoft

Eclipse @ IBM

Chris Dias

Principal Program Manager

Visual Studio Tooling

Monaco @ Microsoft

- EXPLORE
- css
 - d.ts
 - img
 - js
 - libs
 - jquery-1.7.1.js
 - jquery-1.7.1.min.js
 - modernizr-2.5.3.min.js
 - plugins.js
 - script.js
 - .gitattributes
 - .gitignore
 - .htaccess
 - 404.html
 - _references.js
 - apple-touch-icon-114x114-precomposed.png
 - apple-touch-icon-57x57-precomposed.png
 - apple-touch-icon-72x72-precomposed.png
 - apple-touch-icon-precomposed.png
 - apple-touch-icon.png
 - crossdomain.xml
 - favicon.ico
 - humans.txt
 - index.html
 - readme.md
 - robots.txt
 - template-html-boiler.ico

jquery-1.7.1.js /js/libs

```
1  /*!
2  * jQuery JavaScript Library v1.7.1
3  * http://jquery.com/
4  *
5  * Copyright 2011, John Resig
6  * Dual licensed under the MIT or GPL Version 2 licenses.
7  * http://jquery.org/license
8  *
9  * Includes Sizzle.js
10 * http://sizzlejs.com/
11 * Copyright 2011, The Dojo Foundation
12 * Released under the MIT, BSD, and GPL Licenses.
13 *
14 * Date: Mon Nov 21 21:11:03 2011 -0500
15 */
16 (function( window, undefined ) {
17
18 // Use the correct document accordingly with window argument (sandbox)
19 var document = window.document,
20     navigator = window.navigator,
21     location = window.location;
22 var jQuery = (function() {
23
24 // Define a local copy of jQuery
25 var jQuery = function( selector, context ) {
26     // The jQuery object is actually just the init constructor 'enhanced'
27     return new jQuery.fn.init( selector, context, rootjQuery );
28 },
29
30 // Map over jQuery in case of overwrite
31 _jQuery = window.jQuery,
32
33 // Map over the $ in case of overwrite
34 _$ = window.$,
35
36 // A central reference to the root jQuery(document)
37 rootjQuery,
38
39 // A simple way to check for HTML strings or ID strings
40 // Prioritize #id over <tag> to avoid XSS via location.hash (#9521)
41 quickExpr = /^(?:[#<]*(<[\w\W]+>)[^>]*$|#([\w\W-]*)$)/,
42
43 // Check if a string has a non-whitespace character in it
44 rnotwhite = /\S/,
45
46 // Used for trimming whitespace
47 trimLeft = /^s+/,
48 trimRight = /s+$/,
49
50 // Match a standalone tag
51 rsingleTag = /^<(\w+)\s*/>(?:<\/\1>)?$/,
52
53 // JSON RegExp
```



Visual Studio Online "Monaco"

Internet Explorer 11

Internet Explorer 11 browser window displaying the Bing homepage. The address bar shows `http://www.bing.com/`. The page features a large image of a sunset over water with reeds, the Bing logo, and a search bar. The footer includes copyright information: © 2014 Microsoft | Privacy and Cookies | New Legal | Advertise | About our ads | Impressum | Europäischer Datenschutz | Help | Feedback.

The browser's Developer Tools (F12) are open, showing the HTML document structure. The code is as follows:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"><html lang="en" xml:lang="en" xmlns="http://www.w3.org/1999/xhtml"><head><meta content="text/html; charset=utf-8" http-equiv="content-type" /><script type="text/javascript"><![CDATA[
2 si_ST=new Date
3 //]]></script><script type="text/javascript"><![CDATA[
4 sb_gh=function(){return location.hash;sb_sh=function(n){location.hash=n;function _ge(n){return _d.getElementById(n)}_w=window,_d=document,sb_de=_d.documentElement,sb_ie=!_w.ActiveXObject,sb_ie6=sb_ie&&
!_w.XMLHttpRequest,sb_st=_w.setTimeout,sb_ct=_w.clearTimeout,sb_gt=function(){return new Date();sj_evt=new function(){function i(n){return t[n]||t[n]=[]}var t={},n=this;n.fire=function(n){for(var r=i(n),
u=r,e=arguments,t=0;t<r.length;t++){r[t].d?sb_st(sj_wf(r[t],u),r[t].d):r[t](u),n.bind=function(n,t,r,u){var f=i(n);t.d=u,f.push(t),r&&f.e&&t(f.e),n.unbind=function(n,i){for(var u=0,r=t[n];r&&u<r.length;u++)
if(r[u]==i){r.splice(u,1);break}}};_G={ST:si_ST,ST:new Date,Mkt:"de-CH",RTL:false,Ver:"9_00_0_3344435",IG:"2f7241eec25415d80f8d75ca45f8abf",EventID:"a94bd61d5f7446d69bf9fb61be841de9",V:"homepage",
P:"SERP",DA:"AM1v2",SUIH:"E7hBzyH_Ny6NheAQLgriVA",gpUr1:"\\fd\\ls\\GlinkPing.aspx?";_G.lsUr1="/fd/ls/1?IG="+_G.IG;curUr1="http://www.bing.com/";function si_T(a){if(document.images){_G.GPImg=new Image;
_G.GPImg.src=_G.gpUr1+IG="+_G.IG+"&"+a;}}return true;function si_PP(n,t){var u,r,i;if(!_G.PPS){for(u="",r=["PC","FC","BC","BS","H","FE","LE","C1","C2","BP","KP"],i=0;i<r.length;i++)u+="",'+[i]+'+'+_G.GPImg.src;}}_G.PPS=1,sb_st(function(){sj_evt.fire("onPP"),1)}_w.onbeforeunload=function(){si_PP(new Date,"A")};
5 //]]></script><script type="text/javascript"><![CDATA[
6 function sj_wf(n){var t=arguments;return function(){n.apply(null,[],.slice.apply(t).slice(1))};function sj_be(n,t,i,r){if((n==_w||n==_d.body)&&t=="load"&&"undefined"!=typeof _d.readyState&&
"complete"==_d.readyState){i();return}n.addEventListener?n.addEventListener(t,i,r):n.attachEvent?n.attachEvent("on"+t,i):n["on"+t]=i}function sj_we(n,t,i,r){n.removeEventListener?n.removeEventListener(t,
i,r):n.detachEvent?n.detachEvent("on"+t,i):n["on"+t]=null;function si_ct(n,t){var u="getAttribute",r,i,e;try{for(n!==_d.body;n=n.parentNode){if(r=n.tagName=="A"&&n[u]("H")||n[u]("a_ct"),r){i=n[u]("a_ct"),
i&&_w[i]||i=="si_T",_w[i]&&_w[i]("&"+r);break}if(t)break}}catch(f){return}0}(function(){sj_be(_d,"mousedown",function(n){si_ct(sb_ie?event.srcElement:n.target),0})});function sf_fbPce(n){sj_evt.fire
("xd:fb:proxyCheck",n);function sb_ib?new ActiveXObject("MSXML2.XMLHTTP"):new XMLHttpRequest;function sj_pd(n){sb_ie?event.returnValue=1:n.preventDefault();function sj_go(n,t,i){for
(var r=0,n.offsetParent&&n!=i){sj_b);r+=n["offset"+t],n=n.offsetParent;return r};function sj_ce(n,t,i){var r=_d.createElement(n);return t&&(r.id=t),i&&(r.className=i),r};function sj_we(n,t,i){while(n&&
n!=i){sj_b)}(if(n==t)return 0;n.parentNode)return 1;function sj_so(n,t){n.style.filter+=t+";";n.alpha(opacity=t+";";n.style.opacity=t/100;_w.sched=_w.sched||function(){function f(n){i.push(n)
n=(i[sj_b])&&(if(n==t)return 0;n.parentNode)return 1;function sj_so(n,t){n.style.filter+=t+";";n.alpha(opacity=t+";";n.style.opacity=t/100;_w.sched=_w.sched||function(){function f(n){i.push(n)
```


greeter Alex's OneDrive > greeter.ts

Save



```
1 class Greeter {  
2   greeting: string;  
3   constructor(message: string) {  
4     this.greeting = message;  
5   }  
6   greet() {  
7     return "Hello, " + this.greeting;  
8   }  
9 }  
10  
11 var greeter = new Greeter("world");  
12  
13 var button = document.createElement('button');  
14 button.textContent = "Say Hello";  
15 button.onclick = function() {  
16   alert(greeter.greet());  
17 }  
18  
19 document.body.appendChild(button);  
20
```



Add a description

▼ Sharing

[Share](#)
Only me

▼ Information

Type	Text Document
Modified	A moment ago Alex Dima
Added	A moment ago Alex Dima
Path	Alex's OneDrive > greeter.ts
Size	410 bytes



HOME CODE WORK BUILD TEST

Explorer **Commits** Branches Pull Requests

Commit 0e4a69



- suggest.ts
- editor/core
 - codeEditorWidget.js
 - codeEditorWidget.ts
- editor/core/controller
 - oneCursor.js
 - oneCursor.ts
- editor/core/model
 - consoleModel.js
 - consoleModel.ts
 - mirrorModel.js
 - mirrorModel.ts
 - modelLine.js
 - modelLine.ts
 - textModelWithDecorations.js
 - textModelWithDecorations.ts
 - textModelWithMarkers.js
 - textModelWithMarkers.ts
 - textModelWithTokens.js
 - textModelWithTokens.ts**
 - textModelWithTokensHelpers.js
 - textModelWithTokensHelpers.ts
 - textModelWithTrackedRanges.js
 - textModelWithTrackedRanges.ts
 - tokenIterator.js
 - tokenIterator.ts
 - tokensBinaryEncoding.js [+]
 - tokensBinaryEncoding.ts [+]
- editor/core/view
 - viewContext.ts
- editor/core/view/lines
 - viewLineParts.ts

commit 0e4a69 / textModelWithTokens.ts [edit]

Contents History **Compare**

commit f7b200 ↔ commit 0e4a69

```
296     this._stopLineTokenizationAfter = stopLineTokenizationAfter;
297   }
298 }
299
300 public getLineTokens(lineNumber:number, inaccurateTokensAcceptable:boolean = false): Editor.ILineTokens {
301   if (this._isDisposed) {
302     throw new Error('TextModelWithTokens.getLineTokens: Model is disposed');
303   }
304   if (lineNumber < 1 || lineNumber > this.getLineCount()) {
305     throw new Error('Illegal value ' + lineNumber + ' for `lineNumber`');
306   }
307
308   if (!inaccurateTokensAcceptable) {
309     this._updateTokensUntillLine(lineNumber, true);
310   }
311   return this._lines[lineNumber - 1].lineTokens;
312 }
313
314 public getRawLineTokens(lineNumber:number): Modes.ILineTokens {
315   if (this._isDisposed) {
316     throw new Error('TextModelWithTokens.getRawLineTokens: Model is disposed');
317   }
318   if (lineNumber < 1 || lineNumber > this.getLineCount()) {
319     throw new Error('Illegal value ' + lineNumber + ' for `lineNumber`');
320   }
321
322   this._updateTokensUntillLine(lineNumber, true);
323   // Copy arrays
324   return {
325     tokens: this._lines[lineNumber - 1].lineTokens.getTokens().slice(0),
326     modeTransitions: this._lines[lineNumber - 1].modeTransitions.slice(0),
327     endState: (lineNumber < this._lines.length ? this._lines[lineNumber - 1].state : this._lines[0].state),
328     // Garbage here
329     actualStopOffset: 0,
330     retokenize: null
331   };
332 }
333
334 _getInternalTokens(lineNumber:number): Modes.IToken[] {
335   this._updateTokensUntillLine(lineNumber, true);
336   // Copy tokens
337   return this._lines[lineNumber - 1].lineTokens.getTokens().slice(0);
338 }
339
340 public setValue(value:string, newMode?:Modes.IMode): void;
341 public setValue(value:string, newModePromise?:WinJS.TPromise<Modes.IMode>): void;
342 public setValue(value:string, newModeOrPromise:any=null): void {
343   if (this._isDisposed) {
344     throw new Error('TextModelWithTokens.setValue: Model is disposed');
345   }
346 }
```



Visual Studio Online



DD | ↑ | ↓ | ◀ | ▶

```
361     this._stopLineTokenizationAfter = stopLineTokenizationAfter;
362   }
363 }
364
365 public getLineTokens(lineNumber:number, inaccurateTokensAcceptable:boolean = false): Editor.ILineTokens {
366   if (this._isDisposed) {
367     throw new Error('TextModelWithTokens.getLineTokens: Model is disposed');
368   }
369   if (lineNumber < 1 || lineNumber > this.getLineCount()) {
370     throw new Error('Illegal value ' + lineNumber + ' for `lineNumber`');
371   }
372
373   if (!inaccurateTokensAcceptable) {
374     this._updateTokensUntillLine(lineNumber, true);
375   }
376   return this._lines[lineNumber - 1].lineTokens;
377 }
378
379 public getLineContext(lineNumber:number): Modes.ILineContext {
380   if (this._isDisposed) {
381     throw new Error('TextModelWithTokens.getLineContext: Model is disposed');
382   }
383   if (lineNumber < 1 || lineNumber > this.getLineCount()) {
384     throw new Error('Illegal value ' + lineNumber + ' for `lineNumber`');
385   }
386
387   this._updateTokensUntillLine(lineNumber, true);
388
389   return new LineContext(this._lines[lineNumber - 1]);
390 }
391
392 _getInternalTokens(lineNumber:number): Editor.ILineTokens {
393   this._updateTokensUntillLine(lineNumber, true);
394   return this._lines[lineNumber - 1].lineTokens;
395 }
396
397 public setValue(value:string, newMode?:Modes.IMode): void;
398 public setValue(value:string, newModePromise?:WinJS.TPromise<Modes.IMode>): void;
399 public setValue(value:string, newModeOrPromise:any=null): void {
400   if (this._isDisposed) {
401     throw new Error('TextModelWithTokens.setValue: Model is disposed');
402   }
403 }
```

Brains: Tooling, Intellisense and Debugging

TypeScript

TypeScript
Server



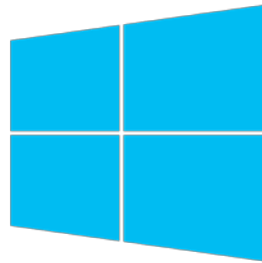
OmniSharp
Roslyn

Download for the Right OS

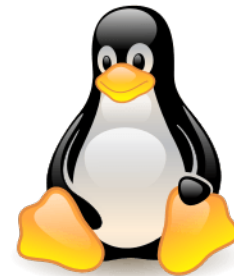
OSX



Windows



Linux



Key Symbols Used in This Course

↑	Shift
⌘	Command
^	Control
⌥	Option / Alt

Command Palette

Most Important Keybinding to Learn

↑ ⌘ P

OSX

↑ ^ P

Windows

↑ ^ P

Linux

This course comes with some sample applications

<https://github.com/johnpapa/pluralsight-vscode-samples>
or
<http://jpapa.me/vscodeps>

Other Related Pluralsight Courses

TypeScript Fundamentals

Angular Patterns: Clean Code

JavaScript Build Automation with Gulp.js

Get Involved

<http://code.visualstudio.com>

Twitter: [@code](#)

Connect at <https://code.visualstudio.com/Home/Connect>

Join the Insiders group

Send suggestions

Send bugs

Resources

- Course Samples
 - <http://jpapa.me/vscodeps>
- OmniSharp
 - <http://www.omnisharp.net>
- TypeScript
 - <http://www.typescriptlang.org>
- JavaScript Yo generator
 - <http://jpapa.me/yohottowel>