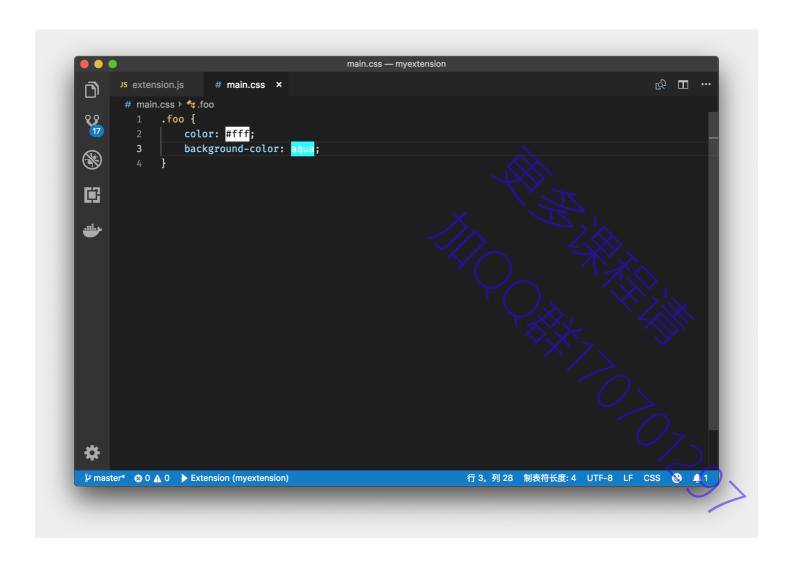
## 35讲插件开发(四): Decorations装饰器



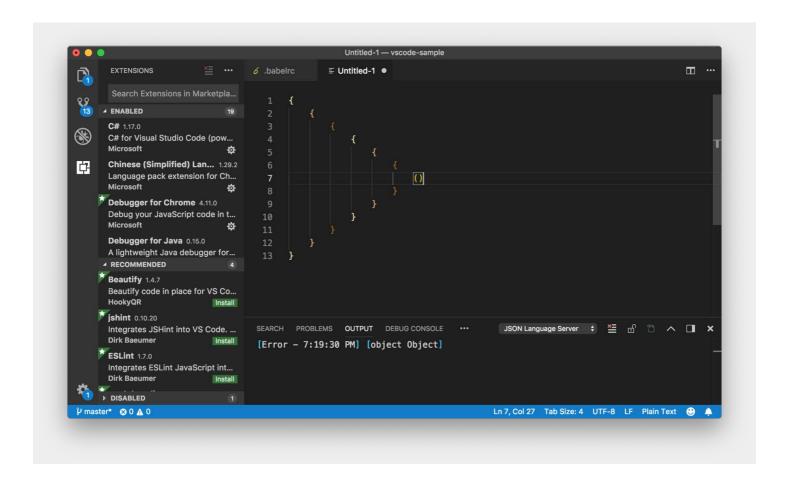
今天,我们一起来聊一聊 Decorations 装饰器。

在<u>专栏第29讲《不错的插件推荐》</u>里,我介绍过<u>Pigment</u> 这个插件,有了这个插件,你在代码中书写的颜色,将会以背景色的形式,直接被渲染在代码下面。



Pigment 插件效果

这个功能,就是通过 Decorations API 来实现的。同样的,我之前介绍的 <u>Rainbow Brackets</u> 和 <u>Indent Rainbow</u>,都是使用的这套 API。



Rainbow Brackets 插件效果

Indent Rainbow 插件效果

# 那今天我们就来看看如何使用 Decorations API 来实现类似的效果,以及在这个过程中有哪些注意点。

## 样例

首先,我们依然使用专栏插件部分第一讲里使用的 JavaScript 插件模板。这个模板的 extension.js 文

#### 件,现在被修改成如下内容:

```
const vscode = require('vscode');

function activate(context) {
    vscode.commands.registerCommand('extension.sayHello', () => {
        let decorationType = vscode.window.createTextEditorDecorationType({
            backgroundColor: '#fff'
        });
        let editor = vscode.window.activeTextEditor;
        editor.setDecorations(decorationType, [new vscode.Range(0, 0, 0, 1)]);
    });
}
exports.activate = activate;

function deactivate() {
}
exports.deactivate = deactivate;
```

这段代码依然是注册了一个名为 extension.sayHello 的命令,只不过命令执行的内容变了。这段代码做的第一件事情,就是创建了一个 DecorationType :

```
let decorationType = vscode.window.createTextEditorDecorationType({
   backgroundColor: '#fff'
})
```

从中可以看到我们使用了 vscode.window.createTextEditorDecorationType API ,同时传入了一个参数对象,对象里添加了属性 backgroundColor,顾名思义,这个参数是用于定义背景色的。

接着我们就获取了当前的编辑器对象 editor。然后使用了 editor 上的方法 setDecorations,并且传入两个参数,第一个就是我们上面创建的 DecorationType,第二个则是代码范围 Range。通过这个API,我们在这个代码片段 Range 上使用 decorationType 所代表的装饰器,也就是将背景色调整成#fff,即白色。

下面, 我们就运行这个插件看看:

```
extension.js — myextension
                        ‡ 🌣 🖸
                                                                                                  @ Ⅲ ···
                                    JS extension.js ×
          Extension
                                    JS extension.js ...
                                          const vscode = require('vscode');
                                          function activate(context) {
                                              vscode.commands.registerCommand('extension.sayHello', () ⇒ {
                                                  let decorationType = vscode.window.createTextEditorDecoration
                                                      backgroundColor: '#fff
     ⊿ 监视
                                                  let editor = vscode.window.activeTextEditor;
                                                  editor.setDecorations(decorationType, [new vscode.Range(0,
                                              });
                                          exports.activate = activate;
                                     13
    ◢ 调用堆栈
                                          function deactivate() {
                                          exports.deactivate = deactivate;
     ▲ 断点
      All Exceptions
      Uncaught Exceptions
      Promise Rejects
行13,列29
                                                                            空格: 4 UTF-8 LF JavaScript
```

运行 Decoration 插件

无论是Pigment、Rainbow Brackets,还是GitLens,它们修改编辑器内代码颜色和背景色的逻辑,跟上面的这一小段代码基本一致。只不过 VS Code 的 Decoration API,有非常多不同的属性可以设置,这也让 Decoration 效果千差万别。

下面我们就来看看都有哪些不同的设置。

## DecorationRenderOptions

如果我们在 createTextEditorDecorationType 运行 F12, 我们就能够跳转到 createTextEditorDecorationType 函数的定义处,接着我们就能看到这个函数的参数类型是 DecorationRenderOptions。

```
vscode.d.ts - myextension
                  Js extension.js
                                                                 TS vscode.d.ts ×
                                                                                                                                                                                                                                                                                                                  <u>©</u> □ ···
                  node_modules ▷ vscode ▷ TS vscode.d.ts ▷ {} 'vscode' ▷ {} window ▷ ♡ createTextEditorDecorationType
                                             * @return A promise that resolves to an [editor](#TextEditor).
                    6005
                                          export function showTextDocument(uri: Uri, options?: TextDocumentShowOptions): Thenable<TextEdited
                   6006
                   6008
* aparam options Rendering options for the decoration type.
                                             * @return A new decoration type instance.
                    6014
                                          export function createTextEditorDecorationType(options: DecorationRenderOptions): TextEditorDecor
                                            * clickable buttons.
                                            * aparam message The message to show.
                                            * aparam items A set of items that will be rendered as actions in the message.
                                             * @return A thenable that resolves to the selected item or `undefined` when being dismissed.
                                          export function showInformationMessage(message: string, ...items: string[]): Thenable<string | un
● 6027 * Show an information message to users. Optionally provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed provide an array of items which will be pressed by the provide an array of items which will be pressed by the provide array of items which will be pressed by the pressed provide an array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by the pressed provide array of items which will be pressed by t
```

createTextEditorDecorationType

而 createTextEditorDecorationType 的结构如下:

```
export interface DecorationRenderOptions extends ThemableDecorationRenderOptions {
    isWholeLine?: boolean;
    rangeBehavior?: DecorationRangeBehavior;
    overviewRulerLane?: OverviewRulerLane;
    light?: ThemableDecorationRenderOptions;
    dark?: ThemableDecorationRenderOptions;
}
```

createTextEditorDecorationType 继承自 ThemableDecorationRenderOptions , 不过它多加了几个属性。比如是否将这个 decoration 运用在整行代码上,是否要将颜色渲染在滚动条上等。不过比较重要的两个属性其实是 light 和 dark。

**light** 和 **dark** 的类型,都是 ThemableDecorationRenderOptions,只要设置了这两个值,VS Code 就会根据当前的主题是深色还是浅色,决定是加载 light 还是 dark 的值,如果这两个值没有设置的话,那么就会查看 DecorationRenderOptions 上的其他属性。

```
export interface ThemableDecorationRenderOptions {
    backgroundColor?: string | ThemeColor;
   outline?: string;
   outlineColor?: string | ThemeColor;
   outlineStyle?: $ring;
   outlineWidth?: $tring;
   border?: string;
   borderColor?: string | ThemeColor;
   borderRadius?: string;
   borderSpacing?: string;
   borderStyle?: string;
   borderWidth?: $tring;
   fontStyle?: string;
   fontWeight?: $tring;
   textDecoration?: $tring;
   cursor?: string;
   color?: string | ThemeColor;
   opacity?: string;
   letterSpacing?: string;
   gutterIconPath?: string | Uri;
   gutterIconSize?: string;
   overviewRulerColor?: string | ThemeColor;
   before?: ThemableDecorationAttachmentRenderOptions;
   after?: ThemableDecorationAttachmentRenderOptions;
}
```

看到这里你可能会大吃一惊,这也太多了,那应该从哪里学起呢?别着急,我们来给这些属性归归类。

#### 1 Color

首先,就是跟代码颜色和背景相关的属性。

```
backgroundColor?: string | ThemeColor;
color?: string | ThemeColor;
overviewRulerColor?: string | ThemeColor;
```

我们除了使用类似于"#fff"这样的字符串以外,还可以使用 ThemeColor,也就是颜色主题(themes)里的颜色定义,比如:

```
new vscode.ThemeColor('editorWarning.foreground')
```

这样一来,当我们切换主题的时候,这个颜色就会随之改变了。这几个属性的效果,通过文章一开始的例子,相信你已经有所了解,这里不多赘述。

#### 2 Border

第二类就是 Border 边框,熟悉 CSS 的同学肯定不会觉得陌生。

```
border?: ftring;
borderColor?: ftring | ThemeColor;
borderRadius?: ftring;
borderSpacing?: ftring;
borderStyle?: ftring;
borderWidth?: ftring;
```

比如,我们对上面的样例代码略作修改:

```
vscode.commands.registerCommand('extension.sayHello', () => {
    let decorationType = vscode.window.createTextEditorDecorationType({
        border: '1px solid red;'
    });
    let editor = vscode.window.activeTextEditor;
    editor.setDecorations(decorationType, [new vscode.Range(0, 0, 0, 1)]);
});
```

然后运行代码,就能够给代码块添加边框了。

```
extension.js — myextension
                        ♦ 🌣 🖸
                                                                                                    感 皿 …
                                    JS extension.js ×
      调试 Extension
                                     JS extension.js ▶ 🕅 activate
                                           const vscode = require('vscode');
                                           function activate(context) {
                                               vscode.commands.registerCommand('extension.sayHello', () \Rightarrow {}
                                                   let decorationType = vscode.window.createTextEditorDecoration
                                                       border: '1px solid red;
     ▲ 监视
                                                   let editor = vscode.window.activeTextEditor;
                                                   editor.setDecorations(decorationType, [new vscode.Range(0,
                                           exports.activate = activate;
     ◢ 调用堆栈
                                           function deactivate() {
                                           exports.deactivate = deactivate;
     ⊿ 断点
      All Exceptions
      Uncaught Exceptions
       Promise Rejects
行 4, 列 24 空格: 4 UTF-8 LF JavaScript 😃 🛕 1
```

设置 Border

### 3 Outline

在 CSS 中 Outline (轮廓) 是用于在 Border 边框的周围画一条线,以突出元素。我们同样可以使用下面这些配置,来分别控制 Outline 的各个属性。

```
outline?: ftring;
outlineColor?: ftring | ThemeColor;
outlineStyle?: ftring;
outlineWidth?: ftring;
```

#### 比如, 我们将样例代码修改成如下:

```
vscode.commands.registerCommand('extension.sayHello', () => {
    let decorationType = vscode.window.createTextEditorDecorationType({
        outline: '#00FF00 dotted'
    });
    let editor = vscode.window.activeTextEditor;
    editor.setDecorations(decorationType, [new vscode.Range(1, 1, 1, 4)]);
```

#### 然后运行。

```
÷ 🌣 🖸
                                                                                                 感 皿 …
      调试 ▶ Extension
                                   JS extension.js ×
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                                          function activate(context) {
                                              vscode.commands.registerCommand('extension.sayHello', () ⇒ {
                                                  let decorationType = vscode.window.createTextEditorDecoration
                          B
                                                      outline: '#00FF00 dotted'
                                                  let editor = vscode.window.activeTextEditor;
                                                  editor.setDecorations(decorationType, [new vscode.Range(1,
                                              });
                                     10
                                          exports.activate = activate;
                                          function deactivate() {
     ▲ 调用堆栈
                                          exports.deactivate = deactivate;
     ▲ 断点
      All Exceptions
      Uncaught Exceptions
      Promise Rejects
行 10, 列 8 空格: 4 UTF-8 LF JavaScript 😃 🔔 1
```

设置 Outline

这里还请注意,为了更好地看到效果,我把 range 修改成了 new vscode.Range(1, 1, 1, 4)。

#### 4 Font

下一组属性则是跟文字相关,我们可以通过 fontStyle 和 fontWeight 来控制字体,也可以通过 opacity 来控制透明度,或者使用 letterSpacing 控制文字之间的间距。

```
fontStyle?: string;
fontWeight?: string;
opacity?: string;
letterSpacing?: string;
```

#### 比如我们将代码修改为:

```
vscode.commands.registerCommand('extension.sayHello', () => {
```

```
let decorationType = vscode.window.createTextEditorDecorationType({
    fontStyle: 'italic',
    letterSpacing: '3px'
});
let editor = vscode.window.activeTextEditor;
editor.setDecorations(decorationType, [new vscode.Range(1, 1, 1, 4)]);
});
```

然后运行代码。

```
extension.js - myextension
                        ‡ ☆ ∑
                                                                                                   ® □ ···
            Extension
                                    Js extension.js ×
                                     JS extension.js ▶ 🕅 activate
                                           t vscode = require('vscode');
                                           tion activate(context) {
                                           vscode.commands.registerCommand('e
                                       4
                                               let decorationType = vscode.window.createTextEditorDecorationTy
                                                   fontStyle:
     ⊿ 监视
                                                   letterSpacing:
                                               let editor = vscode.window.activeTextEditor;
                                               editor.setDecorations(decorationType, [new vscode.Range(1, 1, 1
                                           rts.activate = activate;
     ▲ 调用堆栈
                                           tion deactivate() {
                                           rts.deactivate = deactivate;
     ⊿ 断点
      All Exceptions
      Uncaught Exceptions
      Promise Rejects
行 4, 列 5 (已选择355) 空格: 4 UTF-8 LF JavaScript
```

设置字体

## 5、其他

除此之外,我们还可以通过 gutterIconPath 和 gutterIconSize 在行号旁边添加图标。

```
gutterIconPath?: string | Uri;
gutterIconSize?: string;
```

比如说 VS Code 中的断点,就可以通过这个属性在插件中实现。

```
extension.js — myextension
                                                                                                                   ල<del>ි</del> Ⅲ …
       调试 🕨 Extension
                            ♦ 🌣 ∑
                                          JS extension.js ×
                                           JS extension.js ▷ ۞ activate ▷ ۞ <function> ▷ 🖾 decorationType
                                                 const vscode = require('vscode');
                                             3   function activate(context) {
(%)
                                                      vscode.commands.registerCommand('extension.sayHello', () ⇒ {
                                             5 ⊡
                                                           let decorationType = vscode.window.createTextEditorDecorati
(i)
                                                                fontStyle: 'italic',
      ⊿ 监视
                                                                letterSpacing: '3px'
                                                           let editor = vscode.window.activeTextEditor;
                                                           editor.setDecorations(decorationType, [new vscode.Range(1,
                                                  exports.activate = activate;
      ▲ 调用堆栈
                                                  function deactivate() {
                                                  exports.deactivate = deactivate;
      ⊿ 断点
        All Exceptions
        Uncaught Exceptions
        Promise Rejects
② extension.is 5

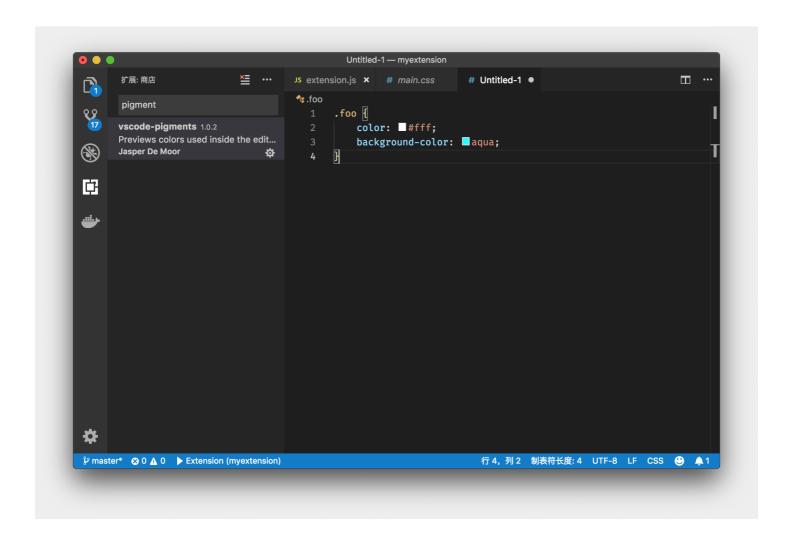
$\mathcal{V}$ master* ② 0 \( \Delta \) 0 \( \Delta \) Extension (myextension)
                                                                               行 5, 列 16 空格: 4 UTF-8 LF JavaScript 😃 🜲 1
```

#### 断点

另外,也可以通过 before 和 after 在某个代码的前面或者后面创建 decorations,

```
before?: ThemableDecorationAttachmentRenderOptions;
after?: ThemableDecorationAttachmentRenderOptions;
```

比如说,CSS 文件里颜色前的 Color Decorator "小方格",就是使用 before 属性来实现。



CSS color decorator

## 小结

以上就是 Decoration API 的大部分知识了,可能还有部分 API 或者属性,我没有介绍,不过相信你可以自己挖掘出它们的作用。

最后,我想对 Decoration 的使用讲讲我自己的心得体会。

DecorationRenderOptions 里的大部分属性,其实就是 CSS 里的各种属性,如果你知道如何使用 CSS 来对元素布局的话,那么使用这些 API 就难不倒你。不过,最难的还是想象力,如何活用这套 API,将 重要的信息呈现给用户,而又不会打扰到用户的正常体验,这就体现功力了。

比如说,我们之前介绍过 Import Cost 插件,这个插件就巧妙地将每个 javascript 模块的大小,渲染在了这一行代码的最后,十分显眼,但又不会影响到你查看代码。



#### Import Cost

GitLens 插件也有类似的设计,它可以把当前这行是谁写的从 Git 中读取出来,然后渲染在本行代码的最后,同时,这些信息的颜色比较浅,从而不会喧宾夺主,但是当你需要的时候,也可以轻松迅速地查看代码的修改信息。

#### GitLens Blame 信息

而文章最开始介绍的 Rainbow Brackets 等,也都是对 Decoration API 的活用。看完这些例子后,不知道你有没有酝酿出什么有趣的想法和技巧,不妨和我们分享分享,一起学习;)



精选留言