```
2
 4
 5
 6
 7
 8
 9
10
11
12
13
14
15
16
17
18
      IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY
19
      FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL TH
20
21
22
23
24
25
26
27
   import { FontStyle } from './stackElementMetadata'
28
   import { IThemedToken } from './themedTokenizer'
29
30
   export interface HtmlRendererOptions {
31
      langId?: string
32
     fg?: string
33
     bg?: string
34
35
36
   export function renderToHtml(
37
     lines: IThemedToken[][],
38
     options: HtmlRendererOptions = {}
39
40
     const bg = options.bg | '#fff'
41
42
     let html = ''
43
44
     html += `re class="shiki" style="background-color: ${bq}">`
45
     if (options.langId) {
46
       html += `<div class="language-id">${options.langId}</div>`
47
48
     html += `<code>`
49
50
     lines.forEach((l: IThemedToken[]) => {
51
       html += `<span class="line">
52
53
        1.forEach((token) => {
54
          const cssDeclarations = [`color: ${token.color || options.fg}`]
55
          if (token.fontStyle & FontStyle.Italic)
56
            cssDeclarations.push('font-style: italic')
57
58
          if (token.fontStyle & FontStyle.Bold) {
59
            cssDeclarations.push('font-weight: bold')
60
61
            (token.fontStyle & FontStyle.Underline) {
62
            cssDeclarations.push('text-decoration: underline')
```

```
63
 64
           html += `<span style="${cssDeclarations.join('; ')}">${escapeHtml(
 65
             token.content
 66
           ) < / span >
 67
 68
         html += \</span>\n
 69
      html = html.replace(/\n*$/, '') // Get rid of final new lines
 70
 71
      html += `</code>
 72
 73
74
       return html
 75
 76
    const htmlEscapes = {
 77
       '&': '&',
       '<': '&lt;'
 78
      '>': '>'
 79
      '"': '"'
 80
       "'": ''',
 81
 82
 83
 84
    function escapeHtml(html: string)
 85
      return html.replace(/[&<>"']/g, (chr) => htmlEscapes[chr])
 86
 87
 88
 89
 90
    import type {
 91
      Highlighter,
 92
      HighlighterOptions,
 93
      ILanguageRegistration,
 94
       IShikiTheme,
 95
       IThemeRegistration,
 96
       StringLiteralUnion,
 97
     } from './types'
 98
    import { Resolver } from './resolver'
    import { tokenizeWithTheme } from './themedTokenizer'
import { renderToHtml } from './renderer'
 99
100
101
102
    import { getOnigasm } from './loader'
             Lang, languages as BUNDLED_LANGUAGES } from './languages'
103
    import {
             Registry } from './registry'
104
    import
105
    import { Theme } from './themes'
106
107
    function resolveLang(lang: ILanguageRegistration | Lang) {
108
       return typeof lang === 'string'
109
         ? BUNDLED_LANGUAGES.find((1) => l.id === lang | l.aliases?.includes(lang
110
         : lang
111
112
113
     function resolveOptions(options: HighlighterOptions) {
114
       let _languages: ILanguageRegistration[] = BUNDLED_LANGUAGES
115
       let _themes: IThemeRegistration[] = options.themes | | []
116
117
       if (options.langs?.length) {
118
         _languages = options.langs.map(resolveLang)
119
120
       if (options.theme) {
121
         _themes.unshift(options.theme)
122
123
       if (!_themes.length) {
124
         _themes = ['nord']
125
126
127
       return { _languages, _themes }
128
129
130
    export async function getHighlighter(
```

```
131
      options: HighlighterOptions
132
    ): Promise<Highlighter> {
133
      const { _languages, _themes } = resolveOptions(options)
134
      const _resolver = new Resolver(getOnigasm(), 'onigasm')
135
      const _registry = new Registry(_resolver)
136
137
      if (options.paths?.themes) {
138
         _registry.themesPath = options.paths.themes
139
140
141
      if (options.paths?.languages) {
142
         _resolver.languagesPath = options.paths.languages
143
144
145
      const themes = await _registry.loadThemes(_themes)
      const _defaultTheme = themes[0]
146
      let _currentTheme: IShikiTheme
147
                                       undefined
148
      await _registry.loadLanguages(_languages)
149
150
151
152
153
154
155
156
157
      const COLOR_REPLACEMENTS: Record<string, string> = {
158
         '#000001': 'var(--shiki-color-text)',
159
         '#000002': 'var(--shiki-color-background)',
160
         '#000004': 'var(--shiki-token-constant)',
161
         '#000005': 'var(--shiki-token-string)',
162
         '#000006': 'var(--shiki-token-comment)'
         '#000007': 'var(--shiki-token-keyword)'
163
164
         '#000008': 'var(--shiki-token-parameter)',
         '#000009': 'var(--shiki-token-function)',
165
166
         '#000010': 'var(--shiki-token-string-expression)',
         '#000011': 'var(--shiki-token-punctuation)',
167
168
         '#000012': 'var(--shiki-token-link)',
169
170
171
      function fixCssVariablesTheme(theme: IShikiTheme, colorMap: string[]) {
172
         theme.bg = COLOR_REPLACEMENTS[theme.bg]
                                                     theme.bg
173
         theme.fg = COLOR_REPLACEMENTS[theme.fg]
                                                     theme.fg
174
         colorMap.forEach((val, i) => {
175
          colorMap[i] = COLOR_REPLACEMENTS[val] | val
176
         })
177
178
179
       function getTheme(theme?: IThemeRegistration) {
         const _theme = theme ? _registry.getTheme(theme) : _defaultTheme
180
181
              _theme)
         if (!_
182
           throw Error(`No theme registration for ${theme}`)
183
184
         if (!_currentTheme | | _currentTheme.name !== _theme.name) {
           _registry.setTheme(_theme)
185
186
           _currentTheme = _theme
187
188
        const _
               _colorMap = _registry.getColorMap()
         if (_theme.name === 'css-variables') {
189
190
           fixCssVariablesTheme(_theme, _colorMap)
191
192
         return { _theme, _colorMap }
193
194
195
       function getGrammer(lang: string) {
196
        const _grammer = _registry.getGrammer(lang)
197
         if (!_grammer) {
```

```
198
           throw Error(`No language registration for ${lang}`)
199
200
         return { _grammer }
201
202
203
       function codeToThemedTokens(
204
         code: string,
205
         lang = 'text',
206
         theme?: StringLiteralUnion<Theme>,
207
         options = { includeExplanation: true }
208
209
         if (isPlaintext(lang)) {
210
211
           return [[{ content: code }]]
212
         const { _grammer } = getGrammer(lang)
213
                  _theme, _colorMap } = getTheme(theme)
214
         return tokenizeWithTheme(_theme, _colorMap, code, _grammer, options)
215
216
217
218
       function codeToHtml(
         code: string,
219
         lang = 'text',
220
         theme?: StringLiteralUnion<Theme>
221
222
         const tokens = codeToThemedTokens(code, lang, theme, {
223
           includeExplanation: false,
224
225
         const { _theme } = getTheme(theme)
226
         return renderToHtml(tokens, {
227
           fg: _theme.fg,
228
           bg: _theme.bg,
229
230
231
232
       async function loadTheme(theme: IShikiTheme | Theme) {
233
         await _registry.loadTheme(theme)
234
235
236
       async function loadLanguage(lang: ILanguageRegistration | Lang) {
237
         const _lang = resolveLang(lang)
238
         _resolver.addLanguage(_lang)
239
         await _registry.loadLanguage(_lang)
240
241
242
       function getLoadedThemes() {
243
         return _registry.getLoadedThemes()
244
245
246
       function getLoadedLanguages() {
247
         return _registry.getLoadedLanguages()
248
249
250
       function getBackgroundColor(theme?: StringLiteralUnion<Theme>) {
251
         const { _theme } = getTheme(theme)
252
         return _theme.bg
253
254
255
       function getForegroundColor(theme?: StringLiteralUnion<Theme>) {
256
         const { _theme } = getTheme(theme)
257
         return _theme.fg
258
259
260
      return {
261
        codeToThemedTokens,
262
         codeToHtml,
263
         getTheme: (theme: IThemeRegistration) => {
264
           return getTheme(theme)._theme
265
266
         loadTheme,
267
         loadLanguage,
```

```
getBackgroundColor,
                                                                        getForegroundColor,
                                                                        getLoadedThemes,
                                                                        getLoadedLanguages,
 function isPlaintext(lang: string | null | undefined) {
                                    return !lang | ['plaintext', 'txt', 'text'].includes(lang)
   const ReallyReallyLongFileName =
                                           'really-really-really-really-really-really-really-really-really-real
 ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really
 ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really
 ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really
 ly-really-really-really-really-really-really-really-really-really-really-real
ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really
ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really
ly-really-really-really-really-really-really-really-really-really-
 -really-really-really-really-really-really-really-really-really-
-real' + 'ly-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-really-rea
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