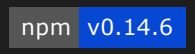
Behind the Scenes of CodeSlide CLI 🔗

```
<code id="slide" class="cli">
  CodeSlide CLI
</code>
```

CodeSlide CLI



Usage demo

See also Example usages

Installation

1. Prepare `Node.js` runtime and `NPM` package manager
2. Run `npm install -g codeslide-cli` on the command line

Features

- It allows you to easily make awesome slideshows for code snippets on command lines
- It is an application of CodeSlide
- It is a Node.js Command Line Interface (CLI)

Documents

- See Reference for more information

Dependencies

- It uses esbuild as module bundler
- It uses gray-matter as YAML Front Matter parser
- It uses Commander.js as CLI framework
- It uses Eta as HTML template engine
- It uses Highlight.js as syntax highlighter
- It uses Marked as Markdown renderer
- It uses Node Fetch as resource fetcher
- It uses Puppeteer as PDF printer
- It uses TypeScript as the main programming language
- It uses Zod as JSON schema validator

Creator

- AsherJingkongChen

The general process 🔗

1. Build a schema
2. Render HTML and CSS to slideshow with it
3. Print the rendered slideshow to the output

Manifest 🔗

- The main schema
- A combination of `FrontMatter` and `SlideShow`
- An extended `Renderer` schema
- `Manifest.parse`: Parse a manifest file into a `Manifest` schema
- `Manifest.render`: Render the slideshow

```
import matter from 'gray-matter';
import { launch } from 'puppeteer';
import { FrontMatter } from './FrontMatter';
import { SlideShow } from './SlideShow';
import { Renderer } from '../../../../src';

export type Manifest = FrontMatter & SlideShow;

export namespace Manifest {
  export type Result = {
    data: string,
    encoding: BufferEncoding,
  };

  export const parse = async (
    manifest: string
  ): Promise<Manifest> => {
    manifest = manifest.replace(
      /^[\u200B\u200C\u200D\u200E\u200F\uFEFF]/, ''
```

```
  );
  const { content, data: { codeslide } } = matter(manifest);
  const fm = await FrontMatter.parse(codeslide);
  const slides = await SlideShow.parse(content);
  return { ...fm, ...slides };
};

export const render = async (
  manifest: Manifest
): Promise<Result> => {
  if (manifest.format === 'html') {
    return {
      data: Renderer.render(manifest),
      encoding: 'utf8',
    };
  } else {
    const browser = await launch();
    const page = await browser.newPage();
    await page.setContent(Renderer.render(manifest));
    const result = await page.pdf({
      printBackground: true,
      format: manifest.pageSize,
      landscape: manifest.orientation! === 'landscape',
    });
    await browser.close();
    return {
      data: result.toString('base64'),
      encoding: 'base64',
    };
  }
```

```
    };
}
```

Manifest file 🔗

- A markdown document constructed of the Front Matter section and the Slide Show section
- The specifications of Manifest file is here

FrontMatter 🔗

- The Front Matter section schema
- An extended `Renderer` schema
- Parsed from the Front Matter section of manifest file (YAML syntax)

```
import semver from 'semver-regex';
import { z } from 'zod';
import { Renderer } from '../../../../src';
import { homepage, version } from '../../package.json';
import { formatZodError, getContent } from '../utils';

export type FrontMatter = z.infer<typeof FrontMatter.schema>;

export namespace FrontMatter {
  export const parse = async (
    fm?: Partial<FrontMatter>
  ): Promise<FrontMatter> => (
    schema.default({}).parseAsync(fm)
  );

  export const schema =
    z.object({
      version: z.string()
        .regex(semver(), 'Expect semver string')
        .default(version),
      format: z.enum(['html', 'pdf']).default('html'),
      pageSize: z.enum([
```

```
    'ledger', 'legal', 'letter', 'tabloid',
    'A0', 'A1', 'A2', 'A3', 'A4', 'A5', 'A6',
  ]).optional(),
  orientation: z.enum([
    'landscape', 'portrait',
  ]).optional(),
})
.and(
  Renderer.schema.omit({ slides: true })
)
.superRefine((fm, ctx) => {
  if (fm.format === 'pdf') {
    fm.pageSize = fm.pageSize ?? 'A4';
    fm.orientation = fm.orientation ?? 'landscape';
  } else {
    if (fm.pageSize) {
      ctx.addIssue({
        code: 'invalid_type',
        path: ['pageSize'],
        expected: 'never',
        received: 'string',
      });
    }
    if (fm.orientation) {
      ctx.addIssue({
        code: 'invalid_type',
        path: ['orientation'],
        expected: 'never',
        received: 'string',
      });
    }
  }
```

```
    })
    .transform(async (fm) => {
      fm.styles = await Promise.all(
        fm.styles.map((path) => getContent(path))
      );
      if (fm.codeFont.rule) {
        fm.codeFont.rule = await getContent(fm.codeFont.rule);
      }
      if (fm.slideFont.rule) {
        fm.slideFont.rule = await getContent(fm.slideFont.rule);
      }
      return fm;
    })
    .catch((e) => {
      throw new Error(`\
Cannot parse the Front Matter section:
\t${formatZodError(e.error, ['codeslide'])}
\tReference: ${homepage}/docs/REFERENCE.md`
      );
    });
}
```

SlideShow 🔗

- The Slide Show section schema
- An labeled object whose type is `{ slides: string[] }`
- Parsed from the Slide Show section of manifest file (Markdown syntax)
- Each slide is splitted by a horizontal line
- Has special rules for rendering embedding code snippets and slides

```
import hljs from 'highlight.js';
import { marked } from 'marked';
import { markedHighlight } from 'marked-highlight';
import { getContent } from '../utils';

export type SlideShow = { slides: string[] };

export namespace SlideShow {
  export const parse = async (
    markdown: string
  ): Promise<SlideShow> => {
    const html = await _parseMarkdown(markdown);
    return { slides: html.split('<hr>').map((s) => s.trim()) };
  };
}

const _parseMarkdown = (
  markdown: string
): Promise<string> => (
```

```
  marked.parse(markdown, { async: true }).catch((err: Error) => {
    err.message = `Cannot parse the Slide Show section:\n\t${
      err.message.replace(
        '\nPlease report this to https://github.com/markedjs/marked.', ''
      )
    }`;
    throw err;
  })
);

const langPrefix = 'hljs language-';

marked.use(
  markedHighlight({
    langPrefix,
    highlight: (code, lang) => _highlight(code, lang).value,
  }),
  {
    async: true,
    mangle: false,
    renderer: {
      heading(
        text: string,
        level: 1 | 2 | 3 | 4 | 5 | 6,
        raw: string,
      ): string {
        const id = _slugger.slug(raw);
        return `\
<h${level} id="${id}">
  ${text}
  <a class="hljs anchor" href="#${id}">🔗</a>
</h${level}>
```

```
`;
      }
    },
    walkTokens: async (token: marked.Token) => {
      if (token.type === 'link') {
        const { href, text } = token;
        if (! text.startsWith(':')) {
          return;
        }

        const [prefix, suffix] = <[string, string | undefined]>
          text.split('.');
        if (prefix === ':slide') {
          token = _toHTMLToken(token);
          token.text = await _parseMarkdown(
            await getContent(href)
          );
        } else if (prefix === ':code') {
          token = _toHTMLToken(token);
          const { language, value } = _highlight(
            await getContent(href), suffix,
          );
          token.text = `\
<pre><code class="${langPrefix}${language}">${
  value
}</code></pre>
`;
        } else if (prefix === ':video') {
          token = _toHTMLToken(token);
          token.text = `\
<div class="video">
  <video controls src="${href}">
```

```
    <a class="hljs" href="${href}">📹</a>
  </video>
  <a class="hljs" href="${href}">📹</a>
</div>
`;
        }
      }
    },
  },
);

const _highlight = (
  code: string,
  language?: string,
) => {
  try {
    language = language || 'plaintext';
    return hljs.highlight(code, { language });
  } catch (e) {
    const err = e as Error;
    err.message =
      `Cannot parse the code "${
        code.substring(0, 30).split('\n')[0]
      } ...":\n\t${err.message}`;
    throw e;
  }
};

const _slugger = new marked.Slugger();

const _toHTMLToken = (
  token: marked.Token
```

```
): marked.Tokens.HTML => {
  for (const p in token) {
    if (token.hasOwnProperty(p) && p !== 'raw'){
      delete token[p as keyof marked.Token];
    }
  }
  token = token as marked.Token;
  token.type = 'html';
  return token as marked.Tokens.HTML;
};
```

Renderer 🔗

- The slideshow renderer schema
- Depends on Eta to render HTML template
- `Renderer.parse`: Parse an object into a `Renderer` schema
- `Renderer.render`: Render the slideshow to HTML text

Note 🔗

- `Renderer` is the root schema of `Manifest`. That is, `Manifest` is an extended `Renderer`.

```
declare module '*.css' {
  const _: string;
  export default _;
}
declare module '*.html' {
  const _: string;
  export default _;
}
```

```
import { render } from 'eta';
import HighlightCSS from './highlight.css';
import SlidesCSS from './slides.css';
import SlidesHTMLTemplate from './slides.html';

export { HighlightCSS, SlidesCSS };
```

```
export const SlidesHTML = ({ slides, styles }: {
  slides: string[],
  styles: string[],
}): string => render(
  SlidesHTMLTemplate,
  {
    slides: `\
<div id="slides">
${
  slides
    .map((slide, index) => `\
<div class="slide" id="slide_${index}">
${slide}
</div>`
    )
    .join('\n')
}
</div>`,
    style: `\
<style>
${styles.join('\n')}
</style>`,
  }
);


import { z } from 'zod';
import {
  HighlightCSS,
  SlidesCSS,
  SlidesHTML,
```

```
} from '../assets';

export type Renderer = z.infer<typeof Renderer.schema>;

export namespace Renderer {
  export const parse = (
    renderer?: Partial<Renderer>
  ): Renderer => (
    schema.default({}).parse(renderer)
  );

  export const render = (
    renderer: Renderer
  ): string => {
    const { slides } = renderer;
    const styles = new Array<string>();
    if (! renderer.styles.length) {
      styles.push(HighlightCSS);
    }
    styles.push(SlidesCSS, ...renderer.styles);

    if (renderer.codeFont.rule) {
      styles.push(`\
/*! CodeSlide codeFont at-rule */
${renderer.codeFont.rule}`);
    }
    if (renderer.slideFont.rule) {
      styles.push(`\
/*! CodeSlide slideFont at-rule */
${renderer.slideFont.rule}`);
    }
```

```
    styles.push(`\
/*! CodeSlide codeFont properties */
code {
  font-family: ${renderer.codeFont.family};
}
pre > code {
  font-size: ${renderer.codeFont.size};
  font-weight: ${renderer.codeFont.weight};
}

/* CodeSlide slideFont properties */
#slides {
  font-family: ${renderer.slideFont.family};
  font-size: ${renderer.slideFont.size};
  font-weight: ${renderer.slideFont.weight};
}`);

    return SlidesHTML({ slides, styles });
  };

  export const schema = z.object({
    slides: z.array(z.string()).default([]),
    styles: z.array(z.string()).default([]),
    codeFont: z.object({
      family: z.string().optional().transform((arg) => `\
${arg ? `${arg}, ` : ''}ui-monospace, SFMono-Regular, \
SF Mono, Menlo, Consolas, Liberation Mono, monospace`
      ),
      rule: z.string().optional(),
      size: z.string().default('smaller'),
      weight: z.string().default('normal'),
    }).default({}),
```

```
    slideFont: z.object({
      family: z.string().optional().transform((arg) => `\
${arg ? `${arg}, ` : ''}system-ui`
      ),
      rule: z.string().optional(),
      size: z.string().default('large'),
      weight: z.string().default('normal'),
    }).default({}),
  });
}
```

HTML template 🔗

{% and %} are interpolation characters

```
<!DOCTYPE html>
<html class="hljs">
<head>
<meta charset="utf-8">
<meta
  name="description"
  content="CodeSlide makes a slideshow for code snippets">
<meta
  name="viewport"
  content="width=device-width, initial-scale=1, user-scalable=no">
<link
  href="https://fonts.gstatic.com"
  rel="preconnect" crossorigin>
<%~ it.style %>
</head>
<body>
<%~ it.slides %>
</body>
</html>
```

Default CSS for slides 🔗

```css
/*! CodeSlide Presets */
a {
  color: dodgerblue;
}
a.anchor {
  display: inline;
  text-decoration: none;
  font-size: 0.5em;
  padding-left: 0.15em;
}
blockquote {
  border-left: currentColor solid medium;
  margin-inline: 1em;
  padding-inline: 1em;
  opacity: 0.5;
}
body {
  margin: 0;
  overflow: hidden;
}
code {
  font-size: 85%;
  padding-inline: 0.2em;
}
html {
  overflow: hidden;
```

```
}
img {
  max-width: 100%;
  max-height: 80vh;
  max-height: 80dvh;
}
li {
  margin-top: 0.25em;
}
ol {
  padding-left: 2em;
}
p:empty {
  display: none;
}
pre {
  white-space: pre-wrap;
  overflow-wrap: break-word;
}
pre > code {
  display: block;
  padding: 1em;
}
ul {
  padding-left: 2em;
}
video {
  max-width: 100%;
  max-height: 80vh;
  max-height: 80dvh;
}
.slide {
```

```
  padding: 1em 2em;
}
#slides {
  line-height: 1.5;
}
@media screen {
  .slide {
    min-width: calc(100vw - 4em);
    height: calc(100vh - 2em);
    height: calc(100dvh - 2em);
    overflow-y: scroll;
    scroll-snap-align: start;
    scroll-snap-stop: always;
    scrollbar-width: none;
  }
  .slide::-webkit-scrollbar {
    display: none;
  }
  .video > a {
    display: none;
  }
  #slides {
    display: flex;
    flex-direction: row;
    overflow-x: scroll;
    overscroll-behavior: none;
    scroll-behavior: smooth;
    scroll-snap-type: x mandatory;
  }
}
@media print {
  @page {
```

```
    margin: 0;
  }
  html {
    print-color-adjust: exact;
    -webkit-print-color-adjust: exact;
  }
  /* [NOTE] A little glitchy */
  h1, h2, h3, h4, h5, h6 {
    break-after: avoid-page;
  }
  .slide {
    break-after: page;
  }
  .video > a {
    text-decoration: none;
  }
  .video > video {
    display: none;
  }
}
```

Default CSS for syntax highlighting 🔗

Visual Studio 2015 Dark retrieved from Highlight.js

```
/*! Highlight.js Visual Studio 2015 Dark */
.hljs {
  background: #1e1e1e;
  color: #dcdcdc;
}
.hljs-keyword,
.hljs-literal,
.hljs-name,
.hljs-symbol {
  color: #569cd6;
}
.hljs-link {
  color: #569cd6;
  text-decoration: underline;
}
.hljs-built_in,
.hljs-type {
  color: #4ec9b0;
}
.hljs-class,
.hljs-number {
  color: #b8d7a3;
}
.hljs-meta .hljs-string,
```

```
.hljs-string {
  color: #d69d85;
}
.hljs-regexp,
.hljs-template-tag {
  color: #9a5334;
}
.hljs-formula,
.hljs-function,
.hljs-params,
.hljs-subst,
.hljs-title {
  color: #dcdcdc;
}
.hljs-comment,
.hljs-quote {
  color: #57a64a;
  font-style: italic;
}
.hljs-doctag {
  color: #608b4e;
}
.hljs-meta,
.hljs-meta .hljs-keyword,
.hljs-tag {
  color: #9b9b9b;
}
.hljs-template-variable,
.hljs-variable {
  color: #bd63c5;
}
.hljs-attr,
```

```
.hljs-attribute {
  color: #9cdcfe;
}
.hljs-section {
  color: gold;
}
.hljs-emphasis {
  font-style: italic;
}
.hljs-strong {
  font-weight: 700;
}
.hljs-bullet,
.hljs-selector-attr,
.hljs-selector-class,
.hljs-selector-id,
.hljs-selector-pseudo,
.hljs-selector-tag {
  color: #d7ba7d;
}
.hljs-addition {
  background-color: #144212;
  display: inline-block;
  width: 100%;
}
.hljs-deletion {
  background-color: #600;
  display: inline-block;
  width: 100%;
}
```

The entry point 🔗

```
import { program } from 'commander';
import { readFileSync, writeFileSync } from 'fs';
import { stdin, stdout } from 'process';
import { version, homepage, name } from '../package.json';
import { CLIOptions, Manifest } from '.';

program
  .name(name)
  .description(`\
Example: ${name} -m ./manifest.md -o ./output.html

Make a slideshow (HTML/PDF file) for code snippets
with a manifest (Markdown file).

Go to home page for more information:
${homepage}`)
  .version(version, '-v, --version', `\
Check the version number.`)
  .helpOption('-h, --help', `\
Check all options and their description.`)
  .option('-m, --manifest [local_path]', `\
The "manifest file path" of slideshow.
By default it reads manifest from stdin.`)
  .option('-o, --output [local_path]', `\
The "output file path" of slideshow.
By default it writes the output to stdout.`)
```

```
.action(async (options: CLIOptions) => {
  let { output, manifest } = CLIOptions.parse(options);
  const file = output ?? stdout.fd;
  if (manifest) {
    const _manifest = await Manifest.parse(
      readFileSync(manifest, 'utf8')
    );
    const { data, encoding } = await Manifest.render(
      _manifest
    );
    writeFileSync(file, data, encoding);
  } else {
    let buffer = Buffer.alloc(0);
    stdin
      .on('data', (d) => {
        buffer = Buffer.concat([buffer, d]);
      })
      .once('end', async () => {
        const _manifest = await Manifest.parse(
          buffer.toString('utf8')
        );
        const { data, encoding } = await Manifest.render(
          _manifest
        );
        writeFileSync(file, data, encoding);
      });
  }
})
.parseAsync()
.catch((err) => { throw err; });
```

CLIOptions

- The CLI options schema
- `-m, --manifest`: Manifest file path
- `-o, --output`: Output file path

```
import { z } from 'zod';
import { formatZodError } from '../utils';
import { homepage } from '../../package.json';

export type CLIOptions = z.infer<typeof CLIOptions.schema>;

export namespace CLIOptions {
  export const parse = (
    options?: Partial<CLIOptions>
  ): CLIOptions => (
    schema.default({}).parse(options)
  );

  export const schema = z
    .object({
      manifest: z.string().optional(),
      output: z.string().optional(),
    })
    .strict()
    .catch((e) => {
      throw new Error(`\
Cannot parse the Front Matter section:
\t${formatZodError(e.error, ['codeslide'])}
\tReference: ${homepage}/docs/REFERENCE.md`
```

```
        );
      });
  }
```

Miscellaneous 🔗

- Because Node Fetch does not handle `file:` URI scheme, CodeSlide CLI implements it with `fs.readFileSync`:

```
import fetch from 'node-fetch';
import statuses from 'statuses';
import { readFileSync } from 'fs';
import { pathToFileURL } from 'url';

export const getContent = async (
  path: string | URL,
): Promise<string> => {
  if (typeof path === 'string') {
    try {
      path = new URL(path);
    } catch (err) {
      path = pathToFileURL(path.toString());
    }
  }
  try {
    if (path.protocol === 'file:') {
      return readFileSync(path, 'utf8');
    } else {
      const res = await fetch(path);
      if (res.ok) {
        return await res.text();
      }
      const { status } = res;
```

```
      throw new Error(`HTTP Status ${status} (${statuses(status)})`);
    }
  } catch (e) {
    const err = e as Error;
    throw new Error(
      `Cannot GET ${path.href}:\n\t${err.message}`
    );
  }
};
```

Thanks for your watching! 🔗

> This slideshow is made by CodeSlide as well

- The repository of this example is here
- See other CodeSlide CLI examples here
- See the installation guide of CodeSlide CLI here