

# Lab1-设计文档-陈沛仪

## 程序运行方式

对给定的jar包执行命令：

```
java -jar html-editor.jar
```

可执行的测试脚本（包含对13个命令的测试）：

```
init
print-indent
append h1 header body Welcome to my webpage
print-tree
edit-id header header-new
print-tree
undo
print-tree
redo
print-tree
edit-text header-new New header text
print-tree
insert p paragraph header-new this is a new paragraph.
print-tree
spell-check
delete paragraph
print-tree
save src/main/resources/html_files/test4.html

read src/main/resources/html_files/test1.html
print-tree
```

上述命令执行结果如下：

```

This is a HTML editor, code whatever you want here.
Enter command:
init
Enter command:
print-indent
<html>
<head>
  <title>
</title>
</head>
<body>
</body>
</html>
Enter command:
append h1 header body Welcome to my webpage
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   └─ h1#header
      └─ Welcome to my webpage
Enter command:
edit-id header header-new
Enter command:
print-tree

```

```

html
├─ head
│  └─ title
└─ body
   └─ h1#header-new
      └─ Welcome to my webpage
Enter command:
undo
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   └─ h1#header
      └─ Welcome to my webpage
Enter command:
redo
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   └─ h1#header-new
      └─ Welcome to my webpage

```

```

Enter command:
edit-text header-new New header text
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   └─ h1#header-new
      └─ New header text
Enter command:
insert p paragraph header-new this is a new paragraph.
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   ├── p#paragraph
   │   └─ this is a new paragraph.
   └─ h1#header-new
      └─ New header text
Enter command:
spell-check

```

```

new element() {this is a new paragraph.
  suggested context at character 0: This sentence does not start with an uppercase letter.
  suggested context(s): {this}
new element() {this is a new paragraph.
  suggested context at character 0: This sentence does not start with an uppercase letter.
  suggested context(s): {this}
Enter command:
insert paragraph
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   ├── p#paragraph
   │   └─ New header text
   └─ h1#header-new
      └─ New header text
Enter command:
insert h2 h2#header header-new this is a new paragraph.
Enter command:
print-tree
html
├─ head
│  └─ title
└─ body
   ├── p#paragraph
   │   └─ New header text
   ├── h2#header
   │   └─ this is a new paragraph.
   └─ h1#header-new
      └─ New header text
Enter command:
spell-check

```

```

html
├─ head
│  └─ title
│     └─ HTML Document: Test 1
└─ body
   ├── h1#header
   │   └─ Header
   ├── p#paragraph1
   │   └─ This is a paragraph.
   ├── ul#list
   │   ├── li#sub1
   │   │   └─ List item 1
   │   ├── li#sub2
   │   │   └─ List item 2
   │   └── li#sub3
   │       └─ List item 3
   └─ div#content
      └─ p#paragraph2
         └─ This is some content inside a div.

```

所有单元测试运行情况：

> ✓ AppendCommandTest	17 ms
> ✓ DeleteCommandTest	7 ms
> ✓ EditIdCommandTest	2 ms
> ✓ EditTextCommandTest	9 ms
> ✓ InitCommandTest	2 ms
> ✓ InsertCommandTest	5 ms
> ✓ PrintIndentCommandTest	8 ms
> ✓ PrintTreeCommandTest	2 ms
> ✓ ReadCommandTest	263 ms
> ✓ RedoCommandTest	1 sec 426 ms
> ✓ SaveCommandTest	15 ms
> ✓ SpellCheckCommandTest	2 sec 501 ms
> ✓ UndoCommandTest	6 ms

## 架构设计

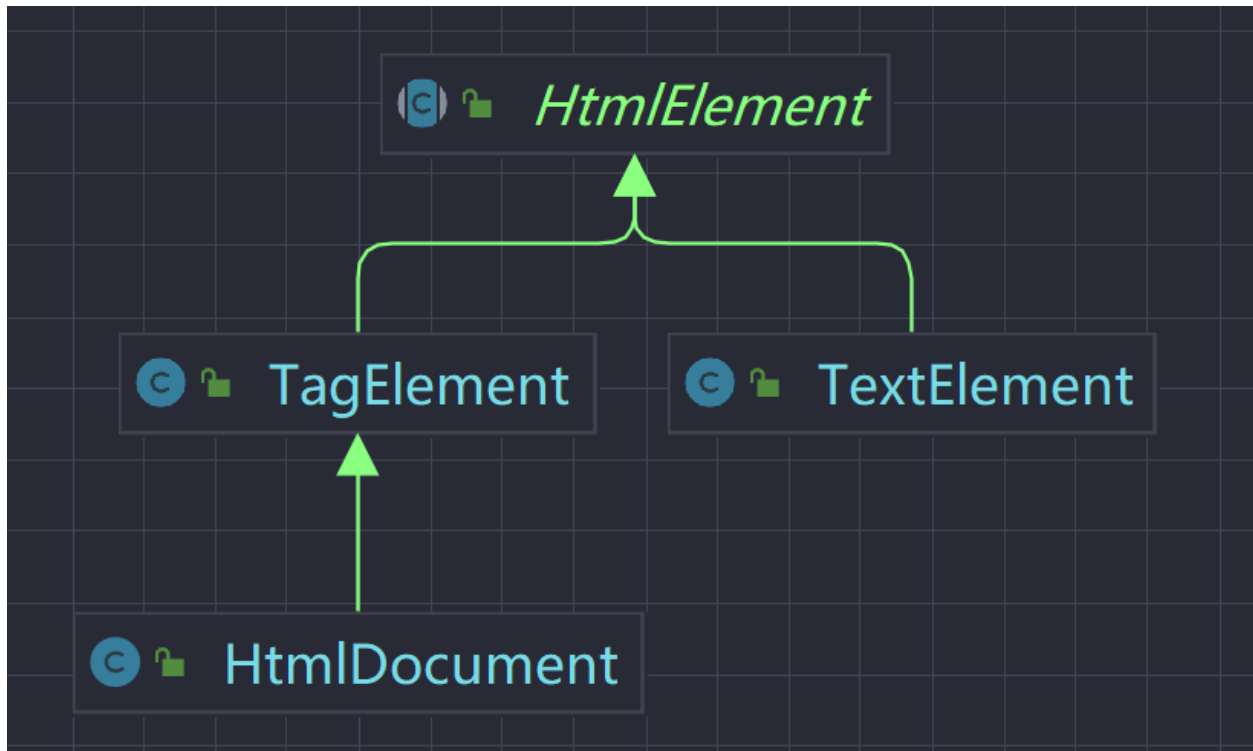
各个模块的描述以及依赖关系。可以补充一些关键的设计决策的说明

## 组合模式

对于HTML文档模型，采用组合模式以实现文档树结构：

- HTMLElement：组合模式的Component，定义了组合中所有对象的通用接口，它声明了用于访问和管理子组件的方法，包括添加、删除、获取子组件等
- TextElement：组合模式的leaf，纯文本元素，不包含子元素

- TagElement：组合模式的Composite对象，复合节点可以包含子节点，可以是叶子节点
- HtmlDocument：继承TagElement，表示整个HTML文档结构



## 命令模式

对于不同的HTML编辑器命令，采用命令模式以实现对命令的统一操作，同时也便于实现undo和redo操作：

- Command类定义了命令的抽象接口
  - 包括execute、undo和redo方法
  - 包含一个枚举CommandType，用于标识命令的类型（编辑、显示、输入输出、撤销重做）
- ConcreteCommand类继承了抽象类Command，用于实现命令的具体方法
- CommandExecutor是命令模式中的调用者（Invoker）
  - 负责调用命令对象
  - 管理命令的执行顺序，保存执行历史和重做栈

- HtmlDocument类是命令模式中的receiver，将命令的具体操作委托给该接收者

