

软件设计 Lab1 文档

一. 技术概要

本次 Lab1 当中主要用到的设计模式有命令模式，观察者模式和单例模式。其中，命令模式主要用于处理输入的命令解析，观察者模式是用于展示文本内容（例如 `list` 和 `list-tree`），而单例模式则是用在文件处理（因为所有命令都只是针对一个文件）以及日志记录（将所有命令记录保存在一个单例中）。

二. 运行方式和运行环境

Jdk1.8，IDEA 里面进行的编译工作

找到 `Main.java`，直接 `run Main.main()` 即可。

三. 功能完成度列表

由于我是以 `save` 命令来终止对于一个文件的处理（从在 `save` 之后输入的命令显示报错信息也可以看出来）否则 `load` 的第二个文件会与第一个文件发生冲突，因此这个命令之后的输入并不会被读入到文件当中去，除此之外的基本都完成了，详细结果可以见第四部分的运行结果展示。

四. 运行结果展示

下面几张截图是测试用例 1 的展示，表示 `load`，`save`，`insert`（包括 `append-head`，`append-tail`），`delete`，`list`，`list-tree` 功能已完成。

```
load test1.md
Enter a command (type 'help' for a list of commands):
list
Enter a command (type 'help' for a list of commands):
insert ## 程序设计
Insert successfully
Enter a command (type 'help' for a list of commands):
append-head # 我的资源
Append successfully to the head
Enter a command (type 'help' for a list of commands):
append-tail ### 软件设计
Append successfully to the tail
```

```
append-tail ##### 设计模式
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail 1. 观察者模式
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail 3. 单例模式
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
insert 6 2. 策略模式
Insert successfully
Enter a command (type 'help' for a list of commands):
delete 单例模式
Delete successfully
```

```
append-tail 3. 组合模式
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
list-tree
├─我的资源
│   └─程序设计
│       └─软件设计
│           └─设计模式
│               ├──1. 观察者模式
│               ├──2. 策略模式
│               └─3. 组合模式
```

```
append-tail ## 工具箱
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail ### Adobe
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
```

```
list-tree
├─我的资源
│   └─程序设计
│       └─软件设计
│           └─设计模式
│               ├──1. 观察者模式
│               ├──2. 策略模式
│               └─3. 组合模式
└─工具箱
    └─Adobe
```

下面几张截图是测试用例 2，表示 undo，redo 功能实现：

```
append-tail ## 亚洲
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail 1. 中国
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail 2. 日本
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
delete 亚洲
Delete successfully
Enter a command (type 'help' for a list of commands):
```

```
undo
Enter a command (type 'help' for a list of commands):
redo
Delete successfully
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   ├──1. 中国
│   └──2. 日本
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.
```

下面几张截图是测试用例 3，也就是混合撤销与重做命令，可以看到如果 redo 前面一个命令不是 undo 的话不会执行任何操作：

```
load test3.md
Enter a command (type 'help' for a list of commands):
append-head # 书籍推荐
Append successfully to the head
Enter a command (type 'help' for a list of commands):
append-tail * 《深入理解计算机系统》
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
undo
Delete successfully
Enter a command (type 'help' for a list of commands):
append-tail ## 编程
Append successfully to the tail
```

```

append-tail * 《设计模式的艺术》
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
redo
Enter a command (type 'help' for a list of commands):
list-tree
├──书籍推荐
│   └──编程
│       └──* 《设计模式的艺术》
Enter a command (type 'help' for a list of commands):
append-tail * 《云原生：运用容器、函数计算和数据构建下一代应用》
Append successfully to the tail
Enter a command (type 'help' for a list of commands):
append-tail * 《深入理解Java虚拟机》

```

```

undo
Delete successfully
Enter a command (type 'help' for a list of commands):
redo
Enter a command (type 'help' for a list of commands):
list-tree
├──书籍推荐
│   └──编程
│       ├──* 《设计模式的艺术》
│       ├──* 《云原生：运用容器、函数计算和数据构建下一代应用》
│       └──* 《深入理解Java虚拟机》
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.

```

下面是测试用例 4 的实现截图，这里相对于测试用例的输入，我的程序必须在 load 完一个文件，对其操作之后需要 save 一下，因为我是以 save 命令来终止对于一个文件的处理（从在 save 之后输入的命令显示报错信息也可以看出来）否则 load 的第二个文件会与第一个文件发生冲突：

```
load test4.md
Enter a command (type 'help' for a list of commands):
append-head # 旅行清单
Insert successfully
Enter a command (type 'help' for a list of commands):
append-tail ## 亚洲
Insert successfully
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.
Enter a command (type 'help' for a list of commands):
append-tail 1. 中国
File is already saved. Cannot perform insert operation.
Enter a command (type 'help' for a list of commands):
```

```
append-tail 2. 日本
File is already saved. Cannot perform insert operation.
Enter a command (type 'help' for a list of commands):
append-tail ## 欧洲
File is already saved. Cannot perform insert operation.
Enter a command (type 'help' for a list of commands):
load test3.md
Enter a command (type 'help' for a list of commands):
list-tree
├─书籍推荐
│   └─编程
│       ├──* 《设计模式的艺术》
│       ├──* 《云原生：运用容器、函数计算和数据构建下一代应用》
│       └──* 《深入理解Java虚拟机》
```

```
save
Log file saved successfully.
Enter a command (type 'help' for a list of commands):
load test4.md
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   └─亚洲
Enter a command (type 'help' for a list of commands):
```

下面是测试用例 5 的输出：

```
load test5.md
Enter a command (type 'help' for a list of commands):
append-head # 旅行清单
Insert successfully
Enter a command (type 'help' for a list of commands):
append-tail ## 欧洲
Insert successfully
Enter a command (type 'help' for a list of commands):
insert 2 ## 亚洲
Insert successfully
Enter a command (type 'help' for a list of commands):
insert 3 1. 中国
Insert successfully
Enter a command (type 'help' for a list of commands):
```

```
insert 4 2. 日本
Insert successfully
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.
Enter a command (type 'help' for a list of commands):
undo
Enter a command (type 'help' for a list of commands):
list-tree
Index 0 out of bounds for length 0
Enter a command (type 'help' for a list of commands):
delete 亚洲
File is already saved. Cannot perform this operation.
Enter a command (type 'help' for a list of commands):
list-tree
```

```
history 2
20231102 14:47:23 delete 亚洲
20231102 14:47:26 list-tree
Enter a command (type 'help' for a list of commands):
```

至于测试用例 5 接下来的部分，由于我的程序在 `save` 之后会拒绝一切增删命令，所以 `list-tree` 不会显示任何内容，以下的截图是不进行 `save` 之后的测试输入：

```
insert 4 2. 日本
Insert successfully
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   └─亚洲
│       ├──1. 中国
│       └──2. 日本
└─欧洲
Enter a command (type 'help' for a list of commands):
delete 亚洲
Delete successfully
Enter a command (type 'help' for a list of commands):
```

```
delete 亚洲
Delete successfully
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   ├──1. 中国
│   └──2. 日本
└─欧洲
```

```
undo
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   ├──1. 中国
│   └──2. 日本
└─欧洲
Enter a command (type 'help' for a list of commands):
redo
Enter a command (type 'help' for a list of commands):
list-tree
├─旅行清单
│   ├──1. 中国
│   └──2. 日本
└─欧洲
```

接下来展示测试用例里面没有涉及到的功能，也就是 **dir-tree** 和日志模块。


```

load test.md
Enter a command (type 'help' for a list of commands):
dir-tree 设计模式
├─设计模式
│   ├──1. 观察者模式
│   └──2. 策略模式
└─工具箱
    └─Adobe
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.
Enter a command (type 'help' for a list of commands):

```

```

load test1.md
Enter a command (type 'help' for a list of commands):
list-tree
Index 0 out of bounds for length 0
Enter a command (type 'help' for a list of commands):
save
Log file saved successfully.
Enter a command (type 'help' for a list of commands):
stats current
./test1.md 0 小时 0 分钟 10 秒
Enter a command (type 'help' for a list of commands):
stats all
Session start at 20231102 15:27:59
./test.md 0 小时 0 分钟 21 秒
./test1.md 0 小时 0 分钟 10 秒

```

以下是在 log.txt 里的输出和在 filelog.txt 里的输出：

```

Session start at 20231102 15:27:59
20231102 15:28:02 load test.md
20231102 15:28:08 dir-tree 设计模式
20231102 15:28:24 save
20231102 15:28:29 load test1.md
20231102 15:28:33 list-tree
20231102 15:28:39 save

```

```

stats all
Session start at 20231102 15:32:15
./test.md 0 小时 0 分钟 2 秒
./test1.md 0 小时 0 分钟 5 秒
Enter a command (type 'help' for a list of commands):

```

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

```

Session start at 20231102 15:32:15
./test.md 0 小时 0 分钟 2 秒
./test1.md 0 小时 0 分钟 5 秒

```