C++夏令营进度汇报

李瑞堃

总体进度

- 主程序：git.cpp
- 实现功能：cmdline、diff、commit、add、rm、mv

```
self-git > h git.h > ...
 1  #include <stdlib.h>
 2  #include <stdio.h>
 3  #include <string>
 4  #include <string.h>
 5  #include <unistd.h>
 6  #include <dirent.h>
 7  #include <sys/stat.h>
 8  #include <sys/types.h>
 9
10  #define MAX_ACTION_NUM 30    //最大动作数量
11  #define MAX_SHORT_OPT_NUM 5  //每个动作最大短选项数量
12  #define MAX_LONG_OPT_NUM 5   //每个动作最大长选项数量
13  #define MAX_PARAM_NUM 5      //每个选项最大参数数量
14
15  #define DIFF_MAX_ROW_NUM 200 //diff读取的文件的最大行数s
16
17  bool file_copy(char old_file[], char new_file[]); //文件copy函数的声明
```

Cmdline

类定义：

```cpp
class cmdl
{
public:
    char action_name[MAX_ACTION_NUM][301];                              //用于存储动作名称，目前最多30个
    char action_help[MAX_ACTION_NUM][301];                              //用于存储动作的说明
    char action_short_options[MAX_ACTION_NUM][MAX_SHORT_OPT_NUM];       //用于存储每个动作的短选项，目前最多5个
    char action_long_options[MAX_ACTION_NUM][MAX_LONG_OPT_NUM][301];    //用于存储每个动作的长选项，目前最多5个
    int action_option_num[MAX_ACTION_NUM][2];                           //用于存储每个动作的长/短选项的数量,[0]存短选项、[1]存长选项
    int action_num;                                                     //已存储动作的数量

    std::string action_now;                   //从命令行获取的本轮动作
    char short_option_now;                    //从命令行获取的动作短选项
    char long_option_now[301];                //从命令行获取的动作长选项
    char action_help_now[301];                //当前动作的说明
    char action_param_now[MAX_PARAM_NUM][301]; //当前动作的选项的参数，目前最多5个
    int action_param_num;                     //当前动作的选项的参数数量

    cmdl();   // 类的构造函数
    ~cmdl();  // 类的析构函数

    bool add_action(const char *action, const char short_opt, const char *long_opt, const int param_num, const char *help);
    bool parse(const int argc, char *argv[]);
};
```

Cmdline

效果演示：

```
cmdl cmd;
cmd.add_action("diff", ' ', "", 2, "Show changes between param_file1 and param_file2");
cmd.add_action("add", ' ', "", 2, "submit the files from work dir to stage dir");
cmd.add_action("commit", 'm', "message", 1, "commit the files from stage dir to local dir with the parameter as message");
cmd.parse(argc, argv);
```

```
lrk@lrk-virtual-machine:~/桌面/C++/self-git$ ./git diff
命令行解析:
action: diff
help: Show changes between param_file1 and param_file2
no short option
no long option
no parameter
命令行解析结束
```

```
lrk@lrk-virtual-machine:~/桌面/C++/self-git$ ./git commit -m just-for-test
命令行解析:
action: commit
help: commit the files from stage dir to local dir with the parameter as message
short option: m
no long option
1 parameter(s): just-for-test
命令行解析结束
```

Diff

预期效果：输入指定两文件，比较增删；后期补上 work_dir 与 stage 的差异对比功能

思路：1. 逐行比较
      2. LCS算法

效果演示：

Add

预期效果：从工作目录向暂存区拷贝文件

效果演示：

```
lrk@lrk-virtual-machine:~/桌面/C++/self-git$ ./git add /home/lrk/桌面/C++/self-git/work_dir /home/lrk/桌面/C++/self-git/stage_dir
命令行解析:
action: add
help: submit the files from work dir to stage dir
no short option
no long option
2 parameter(s): /home/lrk/桌面/C++/self-git/work_dir    /home/lrk/桌面/C++/self-git/stage_dir
命令行解析结束


git add /home/lrk/桌面/C++/self-git/work_dir /home/lrk/桌面/C++/self-git/stage_dir
工作目录: /home/lrk/桌面/C++/self-git/work_dir
暂存目录: /home/lrk/桌面/C++/self-git/stage_dir

/home/lrk/桌面/C++/self-git/work_dir/Cpp_package_client.cpp      -->      /home/lrk/桌面/C++/self-git/stage_dir/Cpp_package_client.cpp
/home/lrk/桌面/C++/self-git/work_dir/Cpp_package_server.cpp      -->      /home/lrk/桌面/C++/self-git/stage_dir/Cpp_package_server.cpp
/home/lrk/桌面/C++/self-git/work_dir/generate_makefile.c         -->      /home/lrk/桌面/C++/self-git/stage_dir/generate_makefile.c
/home/lrk/桌面/C++/self-git/work_dir/Server.cpp                  -->      /home/lrk/桌面/C++/self-git/stage_dir/Server.cpp
/home/lrk/桌面/C++/self-git/work_dir/Client.cpp                  -->      /home/lrk/桌面/C++/self-git/stage_dir/Client.cpp


git add finish
```

Commit

预期效果：从暂存区向本地仓库移动文件

效果演示：

```
lrk@lrk-virtual-machine:~/桌面/C++/self-git$ ./git commit --message for-test /home/lrk/桌面/C++/self-git/stage_dir /home/lrk/桌面/C++/self-git/local_dir
命令行解析：
maction: commit
help: commit the files from stage dir to local dir with the parameter as message
no short option
long option: message
3 parameter(s): for-test          /home/lrk/桌面/C++/self-git/stage_dir    /home/lrk/桌面/C++/self-git/local_dir
命令行解析结束


git commit --message for-test /home/lrk/桌面/C++/self-git/stage_dir /home/lrk/桌面/C++/self-git/local_dir
message: for-test
暂存目录：/home/lrk/桌面/C++/self-git/stage_dir
本地仓库：/home/lrk/桌面/C++/self-git/local_dir

/home/lrk/桌面/C++/self-git/stage_dir/Cpp_package_client.cpp   -->     /home/lrk/桌面/C++/self-git/local_dir/Cpp_package_client.cpp
/home/lrk/桌面/C++/self-git/stage_dir/Cpp_package_server.cpp   -->     /home/lrk/桌面/C++/self-git/local_dir/Cpp_package_server.cpp
/home/lrk/桌面/C++/self-git/stage_dir/generate_makefile.c     -->     /home/lrk/桌面/C++/self-git/local_dir/generate_makefile.c
/home/lrk/桌面/C++/self-git/stage_dir/Server.cpp              -->     /home/lrk/桌面/C++/self-git/local_dir/Server.cpp
/home/lrk/桌面/C++/self-git/stage_dir/Client.cpp              -->     /home/lrk/桌面/C++/self-git/local_dir/Client.cpp

git commit finish
```

Rm

预期效果：删除暂工作目录和暂存区的指定文件

效果演示：

Mv

预期效果：移动或重命名暂工作目录和暂存区的指定文件

效果演示：