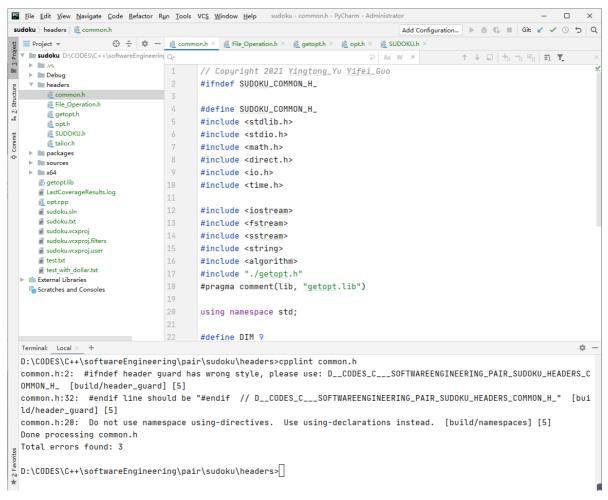
headers

common.h



说明:

- 1. cpplint要求尽量将路径全部写入H_宏之中,但个人认为没有必要,因为软件项目随时上传、下载,他人修改时并不是这个路径,宏过长反而导致一行中有太多字符;
- 2. cpplint要求不要使用using namespace std,而在本项目中common.h是所有头文件参考的基础, 个人认为只需要全部使用名字空间即可。

File_Operation.h

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help sudoku - File_Operation.h - PyCharm - Adm
                                                                                                                                                                                                                                                                                                                                                      sudoku > headers > 🛍 File_Operation.h
                                                           ⊕ 🚡 🕏 — 🖺 File_Operation.h × 🛍 getopt.h × 🛍 opt.h × 🛍 SUDOKU.h ×
       ■ Proiect ▼
       ▼ Im sudoku D:\CODES\C++\softwareEngineerine 1
                                                                                                                    // Copyright 2021 Yingtong_Yu Yifei_Guo
        ▶ III .vs
                                                                                                                      #pragma once
           ▼ lim headers
      € common.h 4
                                                                                                                    #ifndef FILEOP_H_
1. Z: Str.
                       File_Operation.h
                                                                                                  5
              getopt.h
                                                                                                                    #define FILEOP_H_
                   ₫ opt.h
                   # SUDOKU.h
                      🏭 tailor.h
                                                                                                8
                                                                                                                   #include <string>
         packages
                                                                                                                   #include "./common.h"
          sources
                                                                                               10
                👸 getopt.lib
                                                                                                11 class Write_File{
                  LastCoverageResults.log
                                                                                                                         explicit Write_File(string file);
                                                                                                                   public:
                  🙇 opt.cpp

≝ sudoku.txt

                                                                                                                              ~Write_File();
                  sudoku vexproi
                                                                                               15
                                                                                                                        bool write_data();
bool write_data(string result);
char board[DIM][DIM];
                 sudoku.vcxproj.filters
                                                                                                16
                 sudoku.vcxproj.user

    test.txt
    test.txt

                                                                                               18 private:
     ▶ IIII External Libraries
                                                                                                19
                                                                                                                           ofstream WriteFile;
           Scratches and Consoles
                                                                                                20 👍};
                                                                                                                    class Read_File{
                                                                                                                      nublic:
      Terminal: Local × +
      D:\CODES\C++\softwareEngineering\pair\sudoku\headers>cpplint File Operation.h
      Done processing File_Operation.h
      D:\CODES\C++\softwareEngineering\pair\sudoku\headers>
```

opt.h

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help sudoku - opt.h - PyCharm - Administrator
                                                                                                                                   Add Configuration... ▶ 🀞 🖏 🔳 Git: 🗸 🗸 🕥 💍 Q
\operatorname{sudoku} \rangle headers \rangle \stackrel{?}{\not\sqsubseteq} \operatorname{opt.h}
                       \textcircled{-} \overset{\bullet}{\Rightarrow} \overset{\bullet}{\Rightarrow} \overset{\bullet}{=} \overset{\bullet}{=} opt.h \times
  ■ Project ▼
  ▼ ■ sudoku D:\CODES\C++\softwareEngineerine 1
                                          // Copyright 2021 Yingtong_Yu Yifei_Guo
   ▶ IIII .vs
   ► 🖿 Debug
                                            #pragma once
    ▼ lim headers
       🖺 common.h
                                            #ifndef SUDOKU OPT H
       # File Operation.h
                           5 #define SUDOKU_OPT_H_
        # getopt.h
                    6
7 #include <string>
opt.h

₫ SUDOKU.h

                                    8 #include "./common.h"
       ill tailor.h
   packages
                                            #include "./SUDOKU.h"
                                     9
    sources
                                    10
    ► 🖿 x64
      👣 getopt.lib
                                    enum { END_BOARD = 1, SOLVE_BOARD, GEN_BOARD }; // mode
      enum { Difficulty = 1, HoleNumbers, OnlySolution };
      🖺 opt.cpp
      sudoku.txt
                                          class opt {
      sudoku.vcxproj
                                           public:
                                    15
      sudoku.vcxproj.filters
                                              opt() :opt_type(0), opt_append(0) { sudoku = new SUDOKU(Output_Path); }
~opt();
                                    16
      sudoku.vcxproj.user
      ≝ test.txt
                                              bool get_n_arg(int &hole_num_min, int &hole_num_max, bool &distinct);
bool get_opt(int argc, char* argv[]);
bool do_solve_board();
bool do_end_board();
      test_with_dollar.txt
                                    18
  ► ||||| External Libraries
                                    19
    Scratches and Consoles
                                    20
                                             bool do_gen_board();
                                                 bool do_opt();
  Terminal: Local × +
  D:\CODES\C++\softwareEngineering\pair\sudoku\headers>cpplint opt.h
  opt.h:18: Is this a non-const reference? If so, make const or use a pointer: int &hole_num_min [runtime/references]
  [2]
  opt.h:18: Is this a non-const reference? If so, make const or use a pointer: int &hole_num_max [runtime/references]
   [2]
  opt.h:18: Is this a non-const reference? If so, make const or use a pointer: bool &distinct [runtime/references] [2
  1
  Done processing opt.h
 Total errors found: 3
★ D:\CODES\C++\softwareEngineering\pair\sudoku\headers>
```

SUDOKU.h

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help sudoku - SUDOKU.h - PyCharm - Administrator
  \mathbf{sudoku} \ \rangle \ \mathsf{headers} \ \rangle \ \underline{\rlap{/}\ell} \ \mathsf{SUDOKU.h}
                                                                                                                                                                                                                                                                                      Add Configuration... ▶ # 5 ■ Git: ✓ ✓ ⊙ 5 Q
 ▼ Project ▼ ③ 🖫 | � — 🚜 SUDOKU.h × 🚜 getopth × 🐉 ▼ 🖿 sudoku D\CODES\C++\softwar 1 // Conuriah†
       ▼ ■ sudoku D:\CODES\C++\softwar 1
                                                                                                           // Copyright 2021 Yingtong_Yu Yifei_Guo
                #pragma once

#common.h
#ifindef SUDOKU_H
#define SUDOKU_H
#opth
#opth
#include <string>
#include "./common.h"
#include "./file_Operation.h"
#include "./file_Operation.h"
#include "./file_Operation.h"
#include "./file_Operation.h"
#include "./file_Operation.h"
#include "./file_Operation.h"
             ▼ lim headers
# 2: Structure
                                                                                                           #include "./File_Operation.h"
            sources
                                                                                    10
             ▶ 1 x64
                    getopt.lib
                     12 class SUDOKU {
                    ₫ opt.cpp
                                                                                   13 string public:
                                                                                                                     string Output_Path;
                    SUDOKU() {}
explicit SUDOKU(string output) :Output_Path(output) {}
                    sudoku.vcxproj.filters
                                                                                    16

    test.txt
    test.txt
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                    test_with_dollar.txt
                                                                                                                     bool CorrectPlace(int x, int y);
                                                                                     18
      ▶ Illi External Libraries
                                                                                    19
            Scratches and Consoles
                                                                                     20
                                                                                                                   void Display(Write_File *write_obj, string ps = "");
                                                                                                                          int Backtrack(Write_File *w_obj, int t = 0, bool w = 1, bool distinct = 0);
      D:\CODES\C++\softwareEngineering\pair\sudoku\headers>cpplint SUDOKU.h
       Done processing SUDOKU.h
       D:\CODES\C++\softwareEngineering\pair\sudoku\headers>
```

说明

getopt.h和tailor.h是引入的头文件,非自己编写,故不进行质量检查

sources

File_Operation.cpp

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help sudoku - File_Operation.cpp - PyCharm - Administrator
                                                                                                                         Add Configuration... ▶ 🀞 🕟 🔳 Git: 🗸 🗸 🕔 💍 Q
sudoku > sources > # File_Operation.cpp
  ■ Project ▼ 😲 🛨 💠 — 🞉 File_Operation.cpp
  sudoku D:\CODES\C++\softwar
                                  // Copyright 2021 Yingtong_Yu Yifei_Guo
                                  #pragma once
   ▶ ■ headers
                                 #include <string>
   packages
  ▼ sources

#include "./File_Operation.h"

#include "./File_Operation.h"

#write_File::Write_File(string
                                -Write_File::Write_File(string file) {
      🐔 getopt.c
       # main.cpp
                                      // output
       il opt.cpp

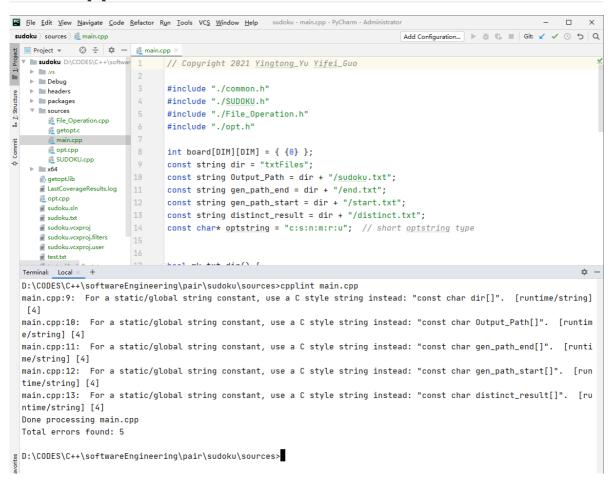
₫ SUDOKU.cpp

                           9
                                           this->WriteFile.open(file, ios::out);
                                   }
   ▶ III x64
                         10
     🎁 getopt.lib
     catch (exception) {
     ₫ opt.cpp
                                       throw "error occured while opening a file to write";

■ sudoku sln

     sudoku.vcxproj
                                     if (!this->WriteFile.is_open()) {
      sudoku.vcxproj.filters
                          15
                                       throw "Output file cannot open";
     sudoku.vcxproj.user
                                     cout << "Output file " << file << " open" << endl;
      test with dollar.txt
                           18
                                     for (int i = 0; i < DIM; i++)
   Scratches and Consoles
                                          for (int j = 0; j < DIM; j++)
                           20
                                              this->board[i][j] = 0;
                                  Write_File::~Write_File() {
 D:\CODES\C++\softwareEngineering\pair\sudoku\sources>cpplint File_Operation.cpp
  Done processing File_Operation.cpp
 D:\CODES\C++\softwareEngineering\pair\sudoku\sources>
```

main.cpp



如果使用常量字符数组,则后续拼接等较麻烦。

opt.cpp

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help sudoku - opt.cpp - PyCharm - Administrator
                                                                                                                                                                                                                                                                                                                                                                                     Add Configuration... ▶ 🇯 🖏 🔳 Git: 🗸 🗸 🕓 🤈 Q
      ■ Project ▼ ⊕ 🚡 🌣 — 👢 opt.cpp
        ▼ ■ sudoku D:\CODES\C++\softwar
                                                                                                          // Copyright 2021 Yingtong_Yu Yifei_Guo
                                                                                                        #include <string>
           ▶ ■ headers
... Z: Structure
           ▶ ■ packages
                                                                                                      #include "./opt.h"
                                                                                 5 #include "./File_Operation.h"
                       File_Operation.cpp
                                                                                                        #include "./SUDOKU.h"
                       🖺 getopt.c
                        ili main.cop
        opt.cpp 8
                                                                                                  bool get_range(string arg, int* range_min, int* range_max) {
                                                                             9
                                                                                                                unsigned int i = 0;
           ► I x64
                                                                                                                      for (; i < arg.size(); i++) {
                   🎁 getopt.lib
                                                                                                              if (arg[i] == '~') break;
}
if (i <= 0 || i >= arg.size() - 1) return 0;
                   LastCoverageResults.log 11
                   ₫ opt.cpp
                   il sudoku sln
                   sudoku.vcxproj 14
sudoku.vcxproj.filters 15
sudoku.vcxproj.user 16
                                                                                                                string range_min_str = "", range_max_str = "";
                                                                                                                for (unsigned int j = 0; j < i; j++)
                                                                                                    for (unsigned int j = 0; j < i; j++)
    range_min_str = range_min_str + arg[j];</pre>

    test.txt
    test.txt

      D:\CODES\C++\softwareEngineering\pair\sudoku\sources>cpplint opt.cpp
      Done processing opt.cpp
      D:\CODES\C++\softwareEngineering\pair\sudoku\sources>
```

SUDOKU.cpp

```
Eile Edit View Navigate Code Refactor Run Iools VCS Window Help sudoku - SUDOKU.cpp - PyCharm - Administrator
                                                                                                                                sudoku \rangle sources \rangle \stackrel{d}{\not\sqsubseteq} SUDOKU.cpp
                                                                                          28
   ▶ III .vs
                          29 string gen_first_line() {
   ► 🖿 Debug
                                      int diff[DIM] = \{0\}, index, j = 0;
      headers 30
headers 31
sources 32
Effic Operation.cpp
getopt.c
main.cpp 34
South
                            30
   ▶ I headers
   packages
                                        char c;
   ▼ 🖿 sources
                                       string first_line = "";
                                      while (j < DIM) {
                                    .and() % DIM;
if (diff[index]) {
    continue;
}
c = index + 1 + '0';
first_line = first_line + c;
diff[index] = 1;
j++;
      © opt.cpp 35
   ▶ ■ x64
      getopt.lib 37
      getopt.lib

LastCoverageResults.log 38
     38
39
■ sudoku.txt 40
■ sudoku.vexproj.filters
■ sudoku.vexproj.user
■ test.bt
                                      }
                                        return first_line;
  Terminal: Local × +
  D:\CODES\C++\softwareEngineering\pair\sudoku\sources>cpplint SUDOKU.cpp
  SUDOKU.cpp: 34: Consider using \ rand\_r(...) \ instead \ of \ rand(...) \ for \ improved \ thread \ safety. \ [runtime/threadsafe\_fn]
  SUDOKU.cpp:54: Consider using rand_r(...) instead of rand(...) for improved thread safety. [runtime/threadsafe_fn]
  SUDDKU.cpp:67: Consider using rand_{r}(...) instead of rand(...) for improved thread safety. [runtime/threadsafe_fn]
  [2]
  SUDOKU.cpp:68: Consider using rand_r(...) instead of rand(...) for improved thread safety. [runtime/threadsafe_fn]
  SUDDKU.cpp:187: Consider using rand_r(...) instead of rand(...) for improved thread safety. [runtime/threadsafe_fn]
  [2]
  Done processing SUDOKU.cpp
  Total errors found: 5
B:\CODES\C++\softwareEngineering\pair\sudoku\sources>
```

如果使用rand_r,每次都会生成相同的随机数,而该处使用随机数是为了确定初局/终局的第一行,为每一个生成结果都尽可能不相同,故不使用rand_r。

说明