OS Coding Project2

Part1

1. Compile parse1.c

```
Jiayings-MacBook-Pro:hw2 jiayingyu$ gcc parse1.c -o parse1
parse1.c:94:60: warning: format specifies type 'int' but the argument has type 'long' [-Wformat]
                        printf("Reading file: %s in thread #%d\n", ent->d_name, tid);
                                                               ~~              ^~~
                                                               %ld
parse1.c:97:58: warning: format string contains '\0' within the string body [-Wformat]
                        snprintf(full_filename, sizeof full_filename, "./%s%s\0", dir_name, ent->d_name);
                                                                      ~~~~~~~~^~
/usr/include/secure/_stdio.h:57:62: note: expanded from macro 'snprintf'
  __builtin___snprintf_chk (str, len, 0, __darwin_obsz(str), __VA_ARGS__)
                                       ^
parse1.c:118:1: warning: control may reach end of non-void function [-Wreturn-type]
}
^
3 warnings generated.
Jiayings-MacBook-Pro:hw2 jiayingyu$ ./parse1 access_logs/
In main: creating thread 0
In main: creating thread 1
In main: creating thread 2
In main: creating thread 3
In main: creating thread 4
```

2. The program concurrently reading the files in the directory. We do not print file content to make screen output clean and concise.

```
^
3 warnings generated.
Jiayings-MacBook-Pro:hw2 jiayingyu$ ./parse1 access_logs/
In main: creating thread 0
In main: creating thread 1
In main: creating thread 2
In main: creating thread 3
In main: creating thread 4
Reading file: . in thread #0
Reading file: .. in thread #0
Reading file: access1.log in thread #0
Reading file: access10.log in thread #1
Reading file: access11.log in thread #2
Reading file: access12.log in thread #3
Reading file: access13.log in thread #4
Reading file: access14.log in thread #0
Reading file: access15.log in thread #1
Reading file: access16.log in thread #2
Reading file: access17.log in thread #3
Reading file: access18.log in thread #4
Reading file: access19.log in thread #0
Reading file: access2.log in thread #1
Reading file: access20.log in thread #2
Reading file: access21.log in thread #3
Reading file: access22.log in thread #4
Reading file: access23.log in thread #0
Reading file: access24.log in thread #1
Reading file: access25.log in thread #2
Reading file: access3.log in thread #3
Reading file: access4.log in thread #4
Reading file: access5.log in thread #0
Reading file: access6.log in thread #1
Reading file: access7.log in thread #2
Reading file: access8.log in thread #3
Reading file: access9.log in thread #4
Jiayings-MacBook-Pro:hw2 jiayingyu$
```

Part2

1. Compile both parse2.c and strmap.c

```
Jiayings-MacBook-Pro:hw2 jiayingyu$ gcc parse2.c strmap.c -o parse2
parse2.c:113:59: warning: format string contains '\0' within the string body [-Wformat]
  ...snprintf(full_filename, sizeof full_filename, "./%s%s\0", dir_name, ent->d_name);
                                                        ~~~~~~~~~
/usr/include/secure/_stdio.h:57:62: note    expanded from macro 'snprintf'
  __builtin__snprintf_chk (str, len, 0, __darwin_obsz(str), __VA_ARGS__)
                                                                 ^
parse2.c:141:1: warning: control may reach end of non-void function [-Wreturn-type]
}
^
2 warnings generated.
strmap.c:341:11: warning: using the result of an assignment as a condition without parentheses
      [-Wparentheses]
        while (c = *str++) {
               ~~^~~~~~~~
strmap.c:341:11: note    place parentheses around the assignment to silence this warning
        while (c = *str++) {
                 ^
                 (        )
strmap.c:341:11: note    use '==' to turn this assignment into an equality comparison
        while (c = *str++) {
                 ^
                 ==
1 warning generated.
```

2. 5 threads concurrently reading files using mutex for synchronization. Total unique IP count is 182.

```
1 warning generated.
Jiayings-MacBook-Pro:hw2 jiayingyu$ ./parse2 access_logs/
In main: creating thread 0
In main: creating thread 1
In main: creating thread 2
In main: creating thread 3
In main: creating thread 4
Reading file: . in thread #0
Reading file: .. in thread #1
Reading file: access1.log in thread #2
Reading file: access10.log in thread #3
Reading file: access11.log in thread #4
Reading file: access12.log in thread #0
Reading file: access13.log in thread #1
Reading file: access14.log in thread #2
Reading file: access15.log in thread #3
Reading file: access16.log in thread #4
Reading file: access17.log in thread #0
Reading file: access18.log in thread #1
Reading file: access19.log in thread #2
Reading file: access2.log in thread #3
Reading file: access20.log in thread #4
Reading file: access21.log in thread #0
Reading file: access22.log in thread #1
Reading file: access23.log in thread #2
Reading file: access24.log in thread #3
Reading file: access25.log in thread #4
Reading file: access3.log in thread #0
Reading file: access4.log in thread #1
Reading file: access5.log in thread #2
Reading file: access6.log in thread #3
Reading file: access7.log in thread #4
Reading file: access8.log in thread #0
Reading file: access9.log in thread #1
IP counts: 182
Jiayings-MacBook-Pro:hw2 jiayingyu$
```