

Programming Exercise – 4

Siri n Shetty – PES2UG22CS556 (Semester-4 Section-J)

Q2) Write a C program to change the permissions of files in a directory created after a certain date. Inputs to the program: directory, date and new permission to be set as run time arguments.

Code:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <sys/types.h>
4  #include <sys/stat.h>
5  #include <dirent.h>
6  #include <string.h>
7  #include <time.h>
8  #include <errno.h>
9  #include <limits.h>
10
11 void changePermission(const char *path, const char *date_str, mode_t mode) {
12     int year, month, day;
13     if (sscanf(date_str, "%d-%d-%d", &year, &month, &day) != 3) {
14         fprintf(stderr, "Invalid date format\n");
15         return;
16     }
17     struct tm specified_date = {0};
18     specified_date.tm_year = year - 1900;
19     specified_date.tm_mon = month - 1;
20     specified_date.tm_mday = day;
21     time_t specified_time = mktime(&specified_date);
22
23     if (specified_time == -1) {
24         perror("mktime error");
25         return;
26     }
27
28     DIR *dir = opendir(path);
29     if (!dir) {
30         perror("Unable to open directory");
31         return;
32     }
33 }
```

```

34     struct dirent *entry;
35     struct stat info;
36     char full_path[PATH_MAX];
37     char timebuf[80];
38     struct tm *timeinfo;
39
40     while ((entry = readdir(dir)) != NULL) {
41         if (strcmp(entry->d_name, ".") == 0 || strcmp(entry->d_name, "..") == 0)
42             continue;
43
44         snprintf(full_path, sizeof(full_path), "%s/%s", path, entry->d_name);
45         if (lstat(full_path, &info) == -1) {
46             perror("Unable to get file status");
47             continue;
48         }
49
50         timeinfo = localtime(&info.st_mtime);
51         strftime(timebuf, sizeof(timebuf), "%Y-%m-%d %H:%M:%S", timeinfo);
52         printf("Checking file: %s, Last modified: %s\n", full_path, timebuf);
53
54         if (S_ISREG(info.st_mode) && info.st_mtime > specified_time) {
55             if (chmod(full_path, mode) == -1) {
56                 perror("Unable to change permission");
57             } else {
58                 printf("Changed permission of %s to %o\n", full_path, mode);
59             }
60         }
61     }
62
63     if (closedir(dir) == -1) {
64         perror("Unable to close directory");
65     }
66 }

```

```

1  int main() {
2      char directory[PATH_MAX];
3      char date_str[11];
4      char permission_str[4];
5
6      printf("Enter directory path: ");
7      if (scanf("%1023s", directory) != 1) {
8          fprintf(stderr, "Error reading directory path.\n");
9          return EXIT_FAILURE;
10     }
11
12     printf("Enter date in YYYY-MM-DD format: ");
13     if (scanf("%10s", date_str) != 1) {
14         fprintf(stderr, "Error reading date.\n");
15         return EXIT_FAILURE;
16     }
17
18     printf("Enter new permission in octal: ");
19     if (scanf("%3s", permission_str) != 1) {
20         fprintf(stderr, "Error reading permission.\n");
21         return EXIT_FAILURE;
22     }
23
24     mode_t new_permission = strtol(permission_str, NULL, 8);
25     changePermission(directory, date_str, new_permission);
26     return 0;
27 }

```

Output:

```

siri@DESKTOP-F9UMPJU:~/L4$ ./a.out
Enter directory path: /home/siri/MiniProject
Enter date in YYYY-MM-DD format: 2024-03-25
Enter new permission in octal: 644
Checking file: /home/siri/MiniProject/process_creator.c, Last modified: 2024-03-25 00:37:13
Changed permission of /home/siri/MiniProject/process_creator.c to 644
Checking file: /home/siri/MiniProject/run_project.sh, Last modified: 2024-03-25 00:40:31
Changed permission of /home/siri/MiniProject/run_project.sh to 644
Checking file: /home/siri/MiniProject/makefile, Last modified: 2024-03-25 00:46:38
Changed permission of /home/siri/MiniProject/makefile to 644
Checking file: /home/siri/MiniProject/process_tree_module.c, Last modified: 2024-03-25 00:39:11
Changed permission of /home/siri/MiniProject/process_tree_module.c to 644

```