



PES UNIVERSITY

Department of Computer Science & Engineering

Operating Systems Assignment

UE23CS242B

Exercise 4 Submission

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Please look at page 4 for execution

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Q3) Write a C program to truncate files in a directory created after a certain date to half its original size. Inputs to the program directory and date as runtime arguments.
Example: a.out /home/Ubuntu 31-Mar-2025

Program screenshot:

```
Exercise4 > C prog-exercise_4.c > main(int, char * [])
1 // Write a C program to truncate files in a directory created after a certain date to half its original size.
2 // Inputs to the program directory and date as runtime arguments
3 // Example: a.out /home/Ubuntu 31-Mar-2025
4
5 #include <stdio.h>
6 #include <stdlib.h>
7 #include <dirent.h>
8 #include <sys/stat.h>
9 #include <sys/types.h>
10 #include <unistd.h>
11 #include <time.h>
12 #include <string.h>
13
14 int main(int argc, char *argv[])
15 {
16     DIR *directory;
17     struct dirent *dir_entry;
18     struct stat file_info;
19     char file_path[1024];
20     time_t cutoff_time;
21     struct tm date_components;
22
23     if (argc != 3)
24     {
25         printf("Usage: %s <directory> <date(DD-MMM-YYYY)>\n", argv[0]);
26         return 1;
27     }
28
29     memset(&date_components, 0, sizeof(struct tm));
30
31     if (strptime(argv[2], "%d-%b-%Y", &date_components) == NULL)
32     {
33         printf("Error: Date must be in DD-MMM-YYYY format (e.g., 31-Mar-2025)\n");
34         return 1;
35     }
36
37     cutoff_time = mktime(&date_components);
38     if (cutoff_time == -1)
39     {
40         printf("Error: Invalid date\n");
41         return 1;
42     }
43 }
```

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```
44 directory = opendir(argv[1]);
45 if (directory == NULL)
46 {
47     printf("Error: Cannot open directory '%s'\n", argv[1]);
48     return 1;
49 }
50
51 while ((dir_entry = readdir(directory)) != NULL)
52 {
53     if (strcmp(dir_entry->d_name, ".") == 0 || strcmp(dir_entry->d_name, "..") == 0)
54     {
55         continue;
56     }
57
58     snprintf(file_path, sizeof(file_path), "%s/%s", argv[1], dir_entry->d_name);
59
60     if (stat(file_path, &file_info) == -1)
61     {
62         printf("Error: Cannot get information for file '%s'\n", file_path);
63         continue;
64     }
65
66     if (S_ISREG(file_info.st_mode) && file_info.st_mtime > cutoff_time)
67     {
68         long original_size = file_info.st_size;
69         long new_size = original_size / 2;
70
71         printf("Processing: %s (modified after cutoff date)\n", dir_entry->d_name);
72
73         if (truncate(file_path, new_size) != 0)
74         {
75             printf("Error: Failed to truncate file '%s'\n", file_path);
76         }
77         else
78         {
79             printf("Success: Truncated '%s' from %ld to %ld bytes\n",
80                 dir_entry->d_name, original_size, new_size);
81         }
82     }
83 }
84
85 closedir(directory);
86 printf("Finished processing all files.\n");
87
88 return 0;
```

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Execution screenshot:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %ls -lh /Users/pranavhemanth/Code/Academics/OS-S4/Exercise4/test_folder
total 24
-rw-r--r--@ 1 pranavhemanth  staff   448B Apr 17 08:57 1.txt
-rw-r--r--@ 1 pranavhemanth  staff   615B Apr 17 08:57 2.txt
-rw-r--r--@ 1 pranavhemanth  staff   577B Apr 17 08:56 3.txt
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %gcc -o prog-exercise_4 prog-exercise_4.c
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %./prog-exercise_4
Usage: ./prog-exercise_4 <directory> <date(DD-MMM-YYYY)>
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %./prog-exercise_4 /Users/pranavhemanth/Code/Academics/OS-S4/Exercise4/test_folder/ 31-Mar-2025
Processing: 3.txt (modified after cutoff date)
Success: Truncated '3.txt' from 577 to 288 bytes
Processing: 2.txt (modified after cutoff date)
Success: Truncated '2.txt' from 615 to 307 bytes
Processing: 1.txt (modified after cutoff date)
Success: Truncated '1.txt' from 448 to 224 bytes
Finished processing all files.
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %ls -lh /Users/pranavhemanth/Code/Academics/OS-S4/Exercise4/test_folder
total 24
-rw-r--r--@ 1 pranavhemanth  staff   224B Apr 17 09:14 1.txt
-rw-r--r--@ 1 pranavhemanth  staff   307B Apr 17 09:14 2.txt
-rw-r--r--@ 1 pranavhemanth  staff   288B Apr 17 09:14 3.txt
venvpranavhemanth@Pranavs-MacBook-Pro-M3 Exercise4 %
```

Truncated vs Original file (1.txt as an example):

```
Exercise4 > test_folder > 1.txt
1 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
2 Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo co

Exercise4 > original_files > 1.txt
1 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
2 Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.
3 Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.
4 Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
```