22. Write a C program to implement the two-level directory system.

Test Case:

3 user directories have to be created with name of user1, user2, user3 and also to create 3 files with user1 directory,2 files with user2 and user3 directory

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#define MAX\_DIRS 10

#define MAX\_FILES 20

#define MAX\_NAME\_LEN 20

typedef struct {

char name[MAX\_NAME\_LEN];

int num\_files;

char files[MAX\_FILES][MAX\_NAME\_LEN];

} Directory;

Directory dirs[MAX\_DIRS];

int num\_dirs = 0;

int create\_dir(char \*name) {

if (num\_dirs == MAX\_DIRS) {

printf("Max directory limit reached\n");

return -1;

}

for (int i = 0; i < num\_dirs; i++) {

if (strcmp(dirs[i].name, name) == 0) {

printf("Directory already exists\n");

return -1;

}

}

Directory new\_dir;

strncpy(new\_dir.name, name, MAX\_NAME\_LEN);

new\_dir.num\_files = 0;

dirs[num\_dirs] = new\_dir;

num\_dirs++;

printf("Directory created successfully\n");

return 0;

}

int create\_file(char \*dir\_name, char \*file\_name) {

for (int i = 0; i < num\_dirs; i++) {

if (strcmp(dirs[i].name, dir\_name) == 0) {

if (dirs[i].num\_files == MAX\_FILES) {

printf("Max file limit reached for directory %s\n", dir\_name);

return -1;

}

for (int j = 0; j < dirs[i].num\_files; j++) {

if (strcmp(dirs[i].files[j], file\_name) == 0) {

printf("File already exists in directory %s\n", dir\_name);

return -1;

}

}

strncpy(dirs[i].files[dirs[i].num\_files], file\_name, MAX\_NAME\_LEN);

dirs[i].num\_files++;

printf("File %s created successfully in directory %s\n", file\_name, dir\_name);

return 0;

}

}

printf("Directory %s does not exist\n", dir\_name);

return -1;

}

int main() {

// Create directories

create\_dir("user1");

create\_dir("user2");

create\_dir("user3");

// Create files

create\_file("user1", "file1.txt");

create\_file("user1", "file2.txt");

create\_file("user1", "file3.txt");

create\_file("user2", "file4.txt");

create\_file("user2", "file5.txt");

create\_file("user3", "file6.txt");

create\_file("user3", "file7.txt");

return 0;

}

