7. Write a C program which display the information of a given file similar to given by the unix /linux command on current directory (l.e File Access

permission, file name, file type, User id, group id, file size, file access and modified time and so on)

ls –l

#include <stdio.h>

#include <stdlib.h>

#include <sys/stat.h>

#include <sys/types.h>

#include <unistd.h>

#include <pwd.h>

#include <grp.h>

#include <time.h>

void display\_file\_info(const char \*filename) {

struct stat file\_stat;

struct passwd \*pwd;

struct group \*grp;

char permissions[11];

if (stat(filename, &file\_stat) == -1) {

perror("stat");

exit(EXIT\_FAILURE);

}

// File permissions

permissions[0] = (S\_ISDIR(file\_stat.st\_mode)) ? 'd' : '-';

permissions[1] = (file\_stat.st\_mode & S\_IRUSR) ? 'r' : '-';

permissions[2] = (file\_stat.st\_mode & S\_IWUSR) ? 'w' : '-';

permissions[3] = (file\_stat.st\_mode & S\_IXUSR) ? 'x' : '-';

permissions[4] = (file\_stat.st\_mode & S\_IRGRP) ? 'r' : '-';

permissions[5] = (file\_stat.st\_mode & S\_IWGRP) ? 'w' : '-';

permissions[6] = (file\_stat.st\_mode & S\_IXGRP) ? 'x' : '-';

permissions[7] = (file\_stat.st\_mode & S\_IROTH) ? 'r' : '-';

permissions[8] = (file\_stat.st\_mode & S\_IWOTH) ? 'w' : '-';

permissions[9] = (file\_stat.st\_mode & S\_IXOTH) ? 'x' : '-';

permissions[10] = '\0';

// User and group ID

pwd = getpwuid(file\_stat.st\_uid);

grp = getgrgid(file\_stat.st\_gid);

// File size

off\_t size = file\_stat.st\_size;

// File access and modification time

char access\_time[20];

char modify\_time[20];

strftime(access\_time, 20, "%Y-%m-%d %H:%M:%S", localtime(&file\_stat.st\_atime));

strftime(modify\_time, 20, "%Y-%m-%d %H:%M:%S", localtime(&file\_stat.st\_mtime));

printf("%s %ld %s %s %ld %s %s\n", permissions, (long)file\_stat.st\_nlink,

(pwd != NULL) ? pwd->pw\_name : "Unknown",

(grp != NULL) ? grp->gr\_name : "Unknown",

size, access\_time, modify\_time);

}

int main(int argc, char \*argv[]) {

if (argc != 2) {

fprintf(stderr, "Usage: %s <filename>\n", argv[0]);

return EXIT\_FAILURE;

}

display\_file\_info(argv[1]);

return EXIT\_SUCCESS;

}