1. Illustrate the various File Access Permission and different types users in Linux.

#include <stdio.h>

#include <fcntl.h>

#include <sys/stat.h>

#include <unistd.h>

void displayPermissions(mode\_t mode) {

printf("User: ");

printf((mode & S\_IRUSR) ? "r" : "-");

printf((mode & S\_IWUSR) ? "w" : "-");

printf((mode & S\_IXUSR) ? "x" : "-");

printf(" Group: ");

printf((mode & S\_IRGRP) ? "r" : "-");

printf((mode & S\_IWGRP) ? "w" : "-");

printf((mode & S\_IXGRP) ? "x" : "-");

printf(" Others: ");

printf((mode & S\_IROTH) ? "r" : "-");

printf((mode & S\_IWOTH) ? "w" : "-");

printf((mode & S\_IXOTH) ? "x\n" : "-\n");

}

int main() {

const char \*filename = "test\_permissions.txt";

int fd = creat(filename, 0644);

if (fd < 0) {

perror("File creation failed");

return 1;

}

close(fd);

printf("File '%s' created.\n", filename);

struct stat fileStat;

if (stat(filename, &fileStat) < 0) {

perror("Could not get file status");

return 1;

}

printf("Initial permissions:\n");

displayPermissions(fileStat.st\_mode);

chmod(filename, 0770);

stat(filename, &fileStat);

printf("Updated permissions:\n");

displayPermissions(fileStat.st\_mode);

return 0;

}