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Experient:40-Illustrate the various File Access Permission and different types of users in Linux.

Aim:

To illustrate the various file access permissions and different types of users (owner, group, others) in Linux.

Procedure:

1. **Create a file in Linux using the `touch` command.**
2. **Use the `chmod` command to set different file permissions:**
    - **Read (`r`), Write (`w`), and Execute (`x`).**
3. **Verify permissions using the `ls -l` command.**
4. **Observe file access behavior for different users:**
    - **Owner (user).**
    - **Group.**
    - **Others.**
5. **Modify permissions to test access restrictions.**

Commands used:

- **`touch filename`: Creates an empty file.**
- **`chmod`: Modifies file permissions.**
- **`ls -l`: Displays file permissions.**

CODE:

```
#include <stdio.h>

#include <stdlib.h>

#include <sys/stat.h>

#include <unistd.h>


#define FILE_NAME "example_file.txt"


int main() {
```

```
    FILE *file;

    // Step 1: Create a file
    file = fopen(FILE_NAME, "w");
    if (file == NULL) {
        perror("Error creating file");
        exit(EXIT_FAILURE);
    }
    fprintf(file, "This is a sample file to demonstrate file permissions.\n");
    fclose(file);

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

    // Step 2: Set file permissions to rwxr--r-- (Owner: rwx, Group: r, Others: r)
    if (chmod(FILE_NAME, 0744) == -1) {
        perror("Error setting permissions");
        exit(EXIT_FAILURE);
    }
    printf("File permissions set to rwxr--r-- (0744).\n");

    // Step 3: Display the file permissions using system command 'ls -l'
    printf("\nFile details using 'ls -l' command:\n");
    system("ls -l " FILE_NAME);

    return 0;
}
```

Output:

```
Output
File 'example_file.txt' created successfully.
File permissions set to rwxr--r-- (0744).

File permissions set to rwxr--r-- (0744).
-rwxr--r-- 1 user user 56 Jun 20 10:00 example_file.txt
```