



## Linux Administration Notes

T.J. ROBINSON

November 19, 2025

# 1 File Management

## 1.1 File Permissions

**File Permissions** are used to prevent unauthorized access by users to files and directories

## 1.2 Permission Classes

**Permission Classes** unique categorizes utilized by the kernel to maintain file security via access rights.

Users are assigned to 3 categories:

1. **User (u)**
2. **Group (g)**
3. **Other (o)**
4. **All (a)** - represents all 3 classes

## 1.3 Permission Types

There are 3 types of permission bits:

1. **Read (r)** - view and copy
2. **Write (w)** - modify
3. **Execute (x)** - run
4. **null (-)** - permission not granted

## 1.4 Permission Modes

1. Append permission bit (+)
2. Revoke permission bit (-)
3. Assign permission bit (=)

## 1.5 Modifying Permissions

`chmod` is used to change permissions for files & directories

### 1.5.1 Symbolic vs. Octal Notation

- **Symbolic Notation** uses letters (ex. `u,g,o`) & symbols (ex. `+,,-,=`) to modify permissions.
- **Octal Notation** uses 3-digit numbering (ex. `766`) to modify permissions.

## 1.6 Default Permission