

# Working with Files: Takeaways

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## Syntax

- Create a file

```
touch [name of file]
```

- Print text

```
echo [string of text]
```

- Write text to file

```
echo [string of text] > [name of file]
```

- Edit a file without redirection

```
nano [name of file]
```

- View permissions on files and folders

```
ls -l
```

- Get info about a file

```
stat [file name]
```

- Modify file permissions

```
chmod [octal notation integer] [file name]
```

- Move file

```
mv [file name] [destination path]
```

- Copy file

```
cp [file name] [new file name]
```

- Delete file

```
rm [name of file]
```

- Switch and run as root user

```
sudo
```

## Concepts

- Every program writes to standard output and receives input through standard output.
- If the program throws an error while running, it writes it to standard error.
- `stderr` and `stdout` usually display on the monitor, while `stdin` is the input from the keyboard.
- `stdout`, `stderr`, and `stdin` exist because these standard streams allow the interfaces to be abstract.
- We can redirect standard streams to connect them to different sources.
- In Unix, every file and folder has permissions associated with it. These permissions have three scopes:
  - `owner` : The user who created the file or folder
  - `group` : Users in the owner's group (on Unix systems, an owner can place users in groups)
  - `everyone` : All other users on the system who aren't the user or in the user's group
- Each scope can have any of three permissions (a scope can have multiple permissions at once):
  - `read` : The ability to see what's in a file (if defined on a folder, the ability to see what files are in a folder)
  - `write` : The ability to modify a file (if a folder, the ability to delete, modify, and rename files in the folder)
  - `execute` : The ability to run a file (some files are executable, and need this permission to run)
- Each permission can be granted or denied to each scope.
- The character for read is `r`, the character for write is `w`, and the character for execute is `x`.
- If a scope doesn't have a permission, a dash takes the place of it instead.
- We can use octal notation to represent permissions for all scopes with 4 digits.
  - `---` : No permissions; corresponds to 0
  - `--x` : Execute only permission; corresponds to 1
  - `-w-` : Write only permissions; corresponds to 2
  - `-wx` : Write and execute permissions; corresponds to 3
  - `r--` : Read only permissions; corresponds to 4
  - `r-x` : Read and execute permissions; corresponds to 5
  - `rw-` : Read and write permissions; corresponds to 6

- `rwx` : Read, write, and execute permissions; corresponds to 7
- Files typically have extensions like `.txt` and `.csv` that indicate the file type.
- Rather than relying on extensions to determine file type, Unix-based operating systems like Linux use media types, which are also called MIME types.
- The root user has all permissions and access to all files by default.

## Resources

- [Standard streams](#)
- [Octal](#)



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