## Course Overview and Structure

- The course includes regular revision sessions, typically every two weeks or monthly, to cover all topics and address questions.

- The 60-day program focuses on \*\*cybersecurity complete practical training\*\*, encompassing both offensive and defensive aspects.

## Linux User Types and File Permissions

- Linux systems have three types of accounts: \*\*root user\*\*, \*\*standard user\*\*, and \*\*service user\*\* (service accounts).

- Correspondingly, there are three types of users for permissions: the \*\*logged-in user\*\*, \*\*group of users\*\*, and \*\*other users\*\*.

- File and folder permissions include \*\*Read (R)\*\*, \*\*Write (W)\*\*, and \*\*Execute (X)\*\*.

- These permissions are represented by octal numbers:

- Read (R) = 4

- Write (W) = 2

- Execute (X) = 1

- Full permissions (R+W+X) = 7 (4+2+1)

- No permissions = 0

| Permission | Symbol | Octal Value | Description |

| :--------- | :----- | :---------- | :---------------------------------------- |

| \*\*Read\*\* | `r` | `4` | Allows viewing file content or listing directory content. |

| \*\*Write\*\* | `w` | `2` | Allows modifying file content or creating/deleting files in a directory. |

| \*\*Execute\*\*| `x` | `1` | Allows running a file (if executable) or entering a directory. |

## Key Linux Commands for File Management and Search

- The `ls -l` command lists files and directories with detailed metadata, including permissions, owner, group, size, and modification date.

- The `man <command>` command displays the complete manual and usage options for any command.

- The `chmod` command is used to change file and folder permissions, using either octal numbers (e.g., `777` for full permissions to all users) or symbolic modes (e.g., `g-w` to remove write permission for a group).

- The `chown` command changes the ownership of a file or directory.

- Example: `chown root file1.txt` changes the owner of `file1.txt` to `root`.

- The `umask` command sets the default permissions profile for newly created files and directories.

- The `stat <file>` command displays comprehensive metadata about a file, including size, inode number, links, owner, access times, modification times, and creation times.

- The `find` command searches for files by name or extension within a specified directory, often requiring superuser (sudo) privileges for sensitive areas.

- The `locate` command quickly finds files using a cached database of file locations.

- The `sudo updatedb` command updates the `locate` command's file database to include newly added or created files.

- The `cat <file>` command displays the content of a file.

- The `grep` command searches for specific text patterns within files and displays matching lines.

- `grep -c <pattern> <file>` counts the occurrences of a pattern in a file.

- The `egrep` command (extended grep) allows searching for multiple patterns using OR logic.

- The `fgrep` command (fixed string grep) performs an exact string match without using regular expressions.

- The `which <command>` command shows the full path to an executable command or package.

- The `basename <path>` command extracts only the file name from a full path.

- The `dirname <path>` command extracts only the directory path from a full file path.

## Linux File System Directories

- The Linux file system organizes all files and directories hierarchically, similar to the C drive in Windows.

## User Management (Future Topics)

- Future sessions will cover adding new users, setting user passwords, creating and managing groups, adding members to groups, and implementing access controls.

> \*\*💡 Key Insight:\*\* The instructor emphasizes that practical experience gained from this course, including mastering Linux configurations and settings, will be sufficient for career advancement in cybersecurity, even surpassing some bachelor's or master's level knowledge.