

**Unit: IV**  
**Shell Introduction and Shell Scripting**  
**Lecture: 3**  
**Shell Scripting**

A shell script is just a normal Unix file which contains Unix and shell commands. The simplest shell scripts simply group together commonly used sequences of commands. A shell script have syntax just like any other programming language.

A script is a program written for a software environment that automate the execution of tasks which could alternatively be executed one-by-one by a human operator.

**Each shell script is saved with .sh file extension e.g. myscript.sh.**

**Why do we need shell scripts?**

- To avoid repetitive work and automation
- System admins use shell scripting for routine backups
- System monitoring
- Adding new functionality to the shell etc.

**Advantages of shell scripts:**

- The command and syntax are exactly the same as those directly entered in command line, so programmer do not need to switch to entirely different syntax.
- Writing shell scripts are much quicker.
- Quick Start
- Interactive debugging etc.

**Disadvantages of shell scripts:**

- Prone to costly errors, a single mistake can change the command which might be harmful.
- Slow execution speed
- not well suited for large and complex task.

Like any other program under Unix a shell script must have the execute permission bit turned on. To do use:

```
bash$ chmod +x script-name
```

In Unix, there are three types of file permissions:

- read(r)
- write(w)
- execute (x)

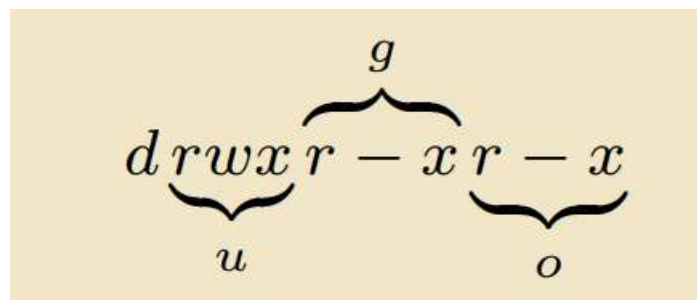
for three types of users:

- user
- group
- world i.e. everyone else who has access to the system.

drwxr-xr-x.	2	user	user	4096	Jan	28	08:27	Public
-rw-rw-r--.	1	user	user	3047	Jan	28	09:34	README

The first character signifies the type of the file:

- d for directory
- l for symbolic link
- - for normal file



The next three characters of first triad signify what the owner can do.

The second triad signifies what group member can do.

The third triad signifies what everyone else can do.

- Read carries a weight of 4
- write carries a weight of 2
- execute carries a weight of 1

The weights are added to give value of 7(rwx),6(rw),5(rx) or 3(wx) permissions.

**chmod is a command to change permissions on a file.**

e.g. to give user rwx, group rx and world x permission, the command is:

```
chmod 751 filename
```

Instead of using numerical permissions, you can also use symbolic mode:

u/g/o or a → user/group/ world or all i.e. ugo

+/- → Add/ remove permission

r/w/x read/write/execute

e.g. Give everyone execute permission:

```
chmod a+x hello.sh
```

```
chmod ugo+x hello.sh
```

Remove group and world read and write permission:

```
chmod go-rw hello.sh
```

Use the `-R` flag to change permissions recursively, all files and directories and their contents.

```
chmod -R 755 ${HOME}/*
```