Binary System and chmod

chmod is used to set permissions on a file.

Eg: chmod 777 file.txt

The above command would give read, write and execute permissions to the user owner, group and other users.

The file permissions are represented as: -rwxrwxrwx

Where 1’st bit is the sticky bit and tells what kind of file it is.

So, 1st 3 bits after sticky bit represent user owner permissions

the next 3 bits represent group permissions and the

last 3 bits represent permissions for all other users.

Each bit in the permission is a binary bit and to turn on a permission bit we use 1 and to turn off we use 0.

So, if we want a file to be only read, write and executed by the user owner and nobody else i.e. we want our file permissions to look like

-rwx------

Then, the command would be chmod 700 file.txt.

Here, we are converting a set of three bits into its equivalent decimal number.

In the above example, we wanted all 3 permissions for the user owner and nothing for anyone else, therefore it’s binary is:

User Owner Group Others

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r w x r w x r w x

1 1 1 0 0 0 0 0 0

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Converting set of 3 bits into decimal => (700)10 , and hence the command is chmod 700 file.txt

Similarly, if want the file permissions to have full access by user owner and only read and execute permissions for group and other users, then

User Owner Group Others

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r w x r w x r w x

1. 1 1 1 0 1 1 0 1

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= > (755)10

Therefore, the chmod command is: chmod 755 file.txt