File Permissions I

- In *NIX OS's, you have three types of file permissions
  1. read (r)
  2. write (w)
  3. execute (x)
- for three types of users
  1. user
  2. group
  3. 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 signifies what the owner can do
- The second triad signifies what group member can do

File Permissions II

- The third triad signifies what everyone else can do

$$d \underbrace{rwx}_{u} \overbrace{r-x}^{g} \underbrace{r-x}_{o}$$

- Read carries a weight of 4
- Write carries a weight of 2
- Execute carries a weight of 1
- The weights are added to give a value of 7 (rwx), 6(rw), 5(rx) or 3(wx) permissions.
- `chmod` is a *NIX command to change permissions on a file
- 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

File Permissions III

- Give everyone execute permission:

  `chmod a+x hello.sh`

  `chmod ugo+x hello.sh`

- Remove group and world read & 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}/*`

  What is the permission on ${HOME}?

If you want to share your files with your friends

1. Make your home directory read accessible to the world

   `chmod 755 ${HOME}`

   DO NOT USE THE RECURSIVE -R FLAG

2. Change to your home directory and give read access to the directory that you want to share using the -R flag