RedHat Certified System Administrator (RHEL 9)

SUMMARY

File Ownership

- A file is owned by a user & a group
- Display file ownership by listing:
  `ls -l`
- Change ownership using:
  `chown (-R) user:group [file]`
  `chown (-R) user.group [file]`
  [-R: extends the ownership change to the files inside the directory]

Basic Permissions

- Basic file permissions are READ(r), WRITE(w) and Execute(x)
- There are specific perms for the ower user, owner group and everyone else.
- Display file permissions:
  `ls -l`
- Change permissions:
  `chmod (-R) u=rwx,g=rw,o=r [file]`
  `chmod (-R) 764 [file]`
  [-R: extends the permission change to the files inside the directory]
  `chmod (-R) u+x,o-rw [file]`
  PS: The numeric representation is:
  READ: 4, WRITE: 2, EXEC: 1
  If you want a combination of perms, add their equivalent numbers together.

Extended Permissions

- Extended permissions are :
  SUID(4): is an owner user permission
  SGID(2): is an owner group permission
  Sticky Bit(1): is relevant to the others
- SUID makes the file execute with the right of its owner user:
  chmod u+s [file]
- SGID makes the creation of new files inside the directory have the same owner group of the directory:
  chmod g+s [directory]
- Sticky bit makes the file undeletable by the a non owner:
  chmod u+s [file/folder]

UMASK

- When a new user is created, and he creates a file in his home directory the file has default permissions, that is the 'umask', by default it is (022) but can be changed:
  umask will show the current umask
  umask 137 will change it to 137
- The calculations are simple:
  To calculate the umask you need to subtract the max permissions from what permission you want as default.
  Example: You want 6(rw)4(r)-
  777 - 640 = 137
  PS: the max permission for a directory is 777 and for a simple file is 666.
  For security reasons, the x perm is omitted for files.