#Notes Lecture 06 | Managing Data and File permissions ##Managing Data

- Backup- Copies files and directories to an archive
- System backup- Use to restore data in case of a system failure or data loss and corruption
- Archive- File containing many other files, each of which is still identified by its filename, owner, permissions, and timestamp ###Archiving utilities
- Tar(Tape archive)- creates archives by combining files and directories into a single file
- CPIO- Creates an archive, restores files from an archive, or copies a directory hierarchy. The CPIO utility has three modes of operation:
    - Create mode places multiple files into a single archive file
    - Extract mode restores files from an archive
    - Pass-through mode copies a directory hierarchy
- Ar- Creates, modifies, and extracts from archives ###File Compression
- Gzip, Bzip2, and xz commands are used for compression
- Gzip, Bzip2, and xz compress files in place meaning the original file is deleted after compression
- bzip offers better compression ratios in comparision to gzip
- xz produces better compression ratios than gzip and bzip2 ###Useful commands
- gunzip= gzip -d
- bunzip= bzip -d
- unxz= xz -d ###Zip, 7Zip, and rar
- Zip is an archiving and compression utility
- 7zip is an open source, cross-platform and fully-featured file archiver with a high compression ratio
- To use 7zip on linux you need the package: p7zip-full
- RAR is a proprietary archive file format developed by Eugene Roshal. The command unrar allows Linux users to extract rar archives. ##File Permissions
- A file can be owned only by one user and one group
- ls -l shows you the file user owner and group owner
- The /etc/passwd file contains a list of all the users in Linux
- The /etc/group file contains a list of all the groups in Linux
- The chown command is used for changing group owner ###Files vs Directories ###Files
- R(read)
    - Gives users permission to open and view a files contents
- W(write)
    - Gives users permission to open a file and edit it contents
- X(execute)
    - Allows users to run the file
- Directories
    - R(read)
        - Allows users to list a directory's contents with commands such as ls
    - W(write)
        - Allows users to add or remove files and subdirectories
    - X(execute)
        - Allows users to switch to the directory with the cd command ###chmod command
- The chmod command is used to change permissions on files and directories
- The permissions argument is the information used to change permissions
- The file/directory argument specifies the file or directory you want to change

- You can use the chmod command in two ways to change file permissions:
  - Symbolic Notation
  - Numeric Notation