

<CH.9>[Archiving and Compression]

'Archiving: combine multiple files into one.'

'Compressing: Makes the files smaller by removing redundant information.'

<Compressing Files>

'Compression reduces the amount of data needed to store or transmit a file.'

'a compression algorithm is a procedure to encode the original file,'

'and as a result, make it smaller.'

1-'Lossless: No information is removed from the file'

2-'Lossy: Information might be removed from the file.'

gzip [OPTION]... [FILE]... →'compress files'

⇒'Lempel-Ziv compression algorithm'

gzip file →'compresses file to file.gz (deletes original file)'

gzip -l →'list relevant fields:'

'(compressed, uncompressed, ratio, uncompressed_name)'

gunzip or gzip -d →'expand files (decompress)'

'other commands:'

bzip2 & bunzip2 a →'block-sorting file compressor'

⇒'Burrows-Wheeler algorithm (can compress files smaller than gzip at'
'the expense of more CPU time.)'

xz & unxz →'compress or decompress .xz or .lzma files.'

⇒'Lempel-Ziv-Markov (LZMA) chain algorithm, results in lower'

'decompression CPU times on par with gzip and better compression than bzip2'

<Archiving Files>

```
tar → 'TApe aRchive'
'the' tar 'command takes in several files and creates a single output file that'
'can be split up again into the original files.'
tar 'modes:'
  1-Create 'make a new archive out of a series of files.'
  2-Extract 'pull one or more files out of an archive.'
  3-List    'show contents without extracting.'
```

-Create Mode:

```
tar -c [-f ARCHIVE] [OPTIONS] [FILE ... ]
tar -czf 'create and compress (using gzip) [.tar.gz | .tgz]'
tar -cjf 'create and compress (using bzip2) [.tar.bz2 | .tbz | .tbz2]'
tar -cJf 'create and compress (using xz) [.tar.xz | .txz]'
```

-List Mode:

```
tar -t [-f ARCHIVE] [OPTIONS]
tar -tjf 'list files in an archive compressed with bzip2'
```

-Extract Mode:

```
tar -x [-f ARCHIVE] [OPTIONS]
tar -xjvf 'extract verbosely with bzip2'
```

<ZIP Files>

```
zip [OPTIONS] [zipfile [file ...]]
zip file.zip file → 'compress file into file.zip'
unzip -l          → 'lists files in the .zip archive'
unzip file.zip    → 'decompresses `file.zip`'
```