Archive and Compress

Agenda

- Why compression matter ?
- Core concepts and tools
- Methods of comparison

Session Goals

- ✅ Create compressed archives with tar
- ✅ Extract files from archives
- ✅ Choose the right compression method
- ✅ Use exclude patterns for selective backups
- ✅ List and inspect archive contents
- ✅ Restore files from backups
- ✅ Apply compression to real scenarios

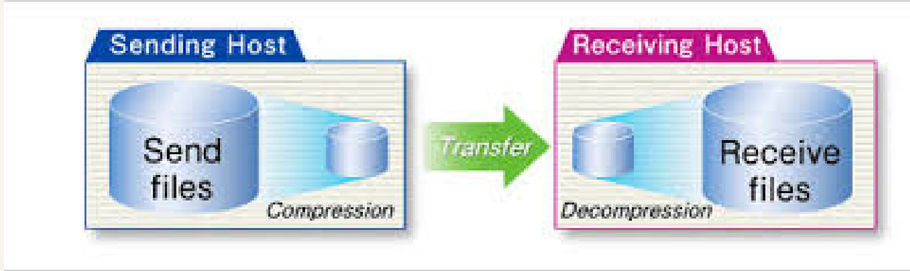
💼 Career Essential

💰 Cost Savings

🚀 Practical Benefits

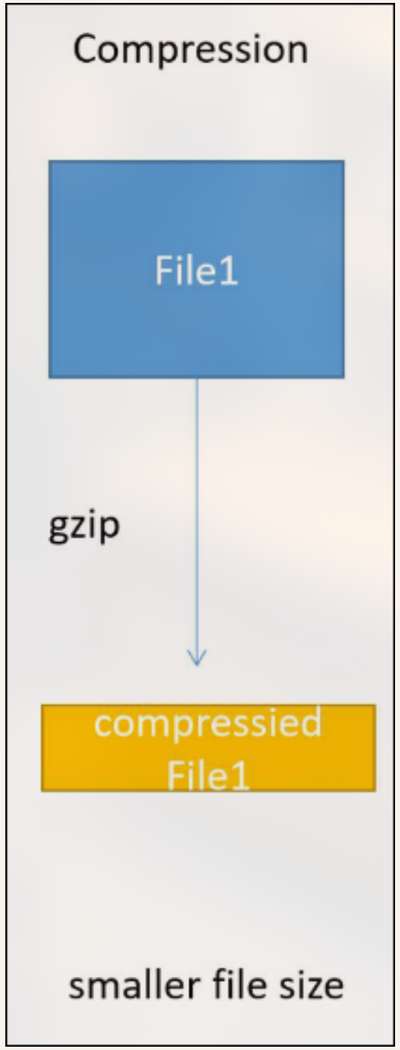
Storage Problem

Network Transfare



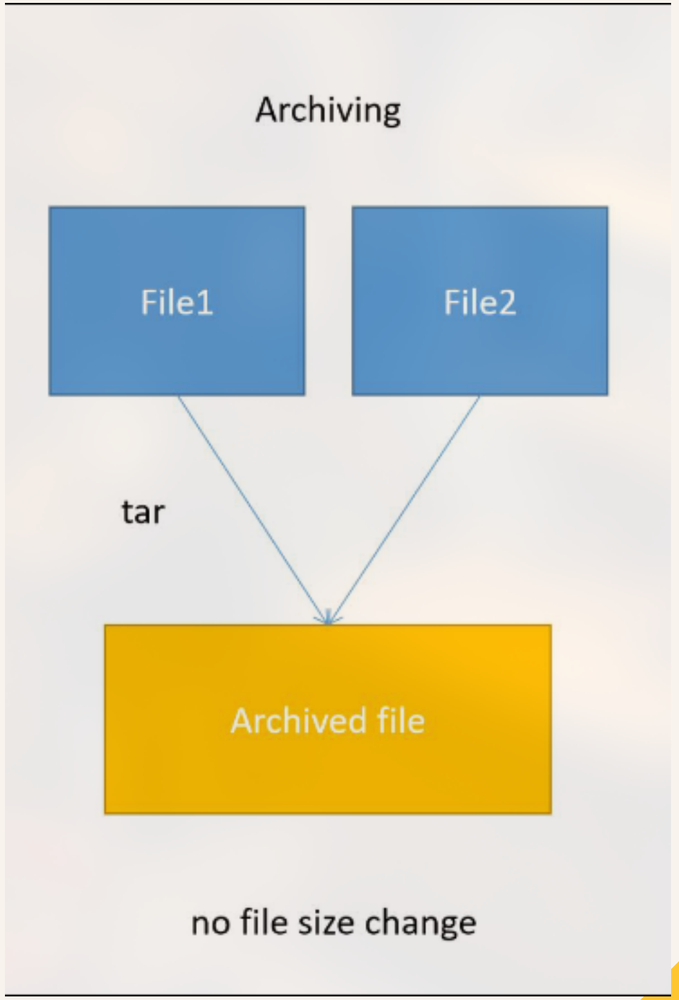
What’s the Compression?

Compression, in computer science language, is a process that aims to represent the data contained in a file with less data

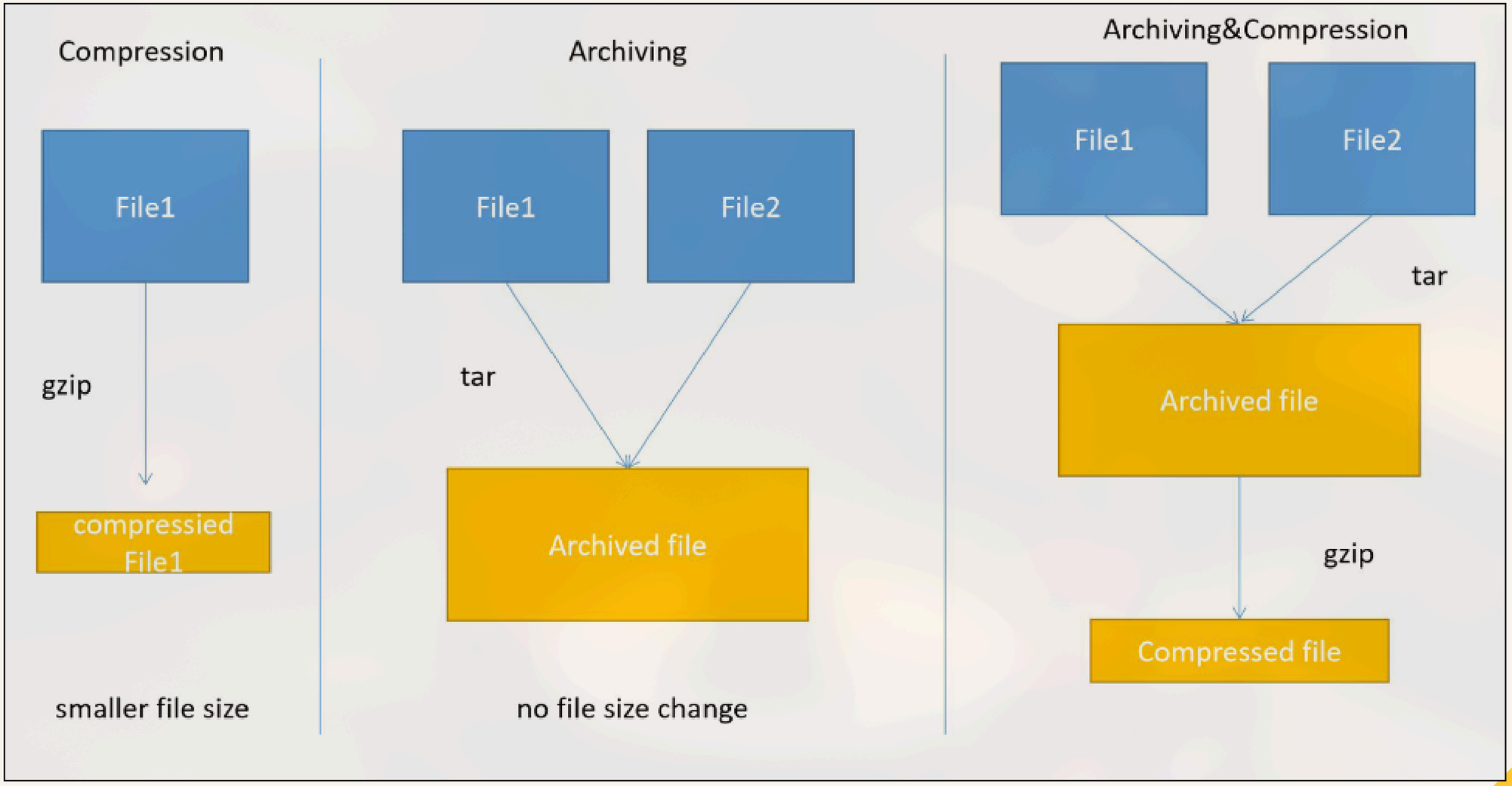


What’s the Archiving ?

An archive file is a collection of files and directories that are stored in one file. The archive file is not compressed — it uses the same amount of disk space as all the individual files and directories combined.



Compression VS Archiving



Tools

zip

gzip

bzip2

tar

tar

tar is an archiving tool.

tar -options -f <archive name> <files to be archived>

tar

tar -options -f <archive name> <files to be archived>

What do you want to do?

- -c (create)
- -x (extract)
- -r (append)
- -t (list content)

Compress?

- -z (gzip)
- -j (bzip2)

Optional

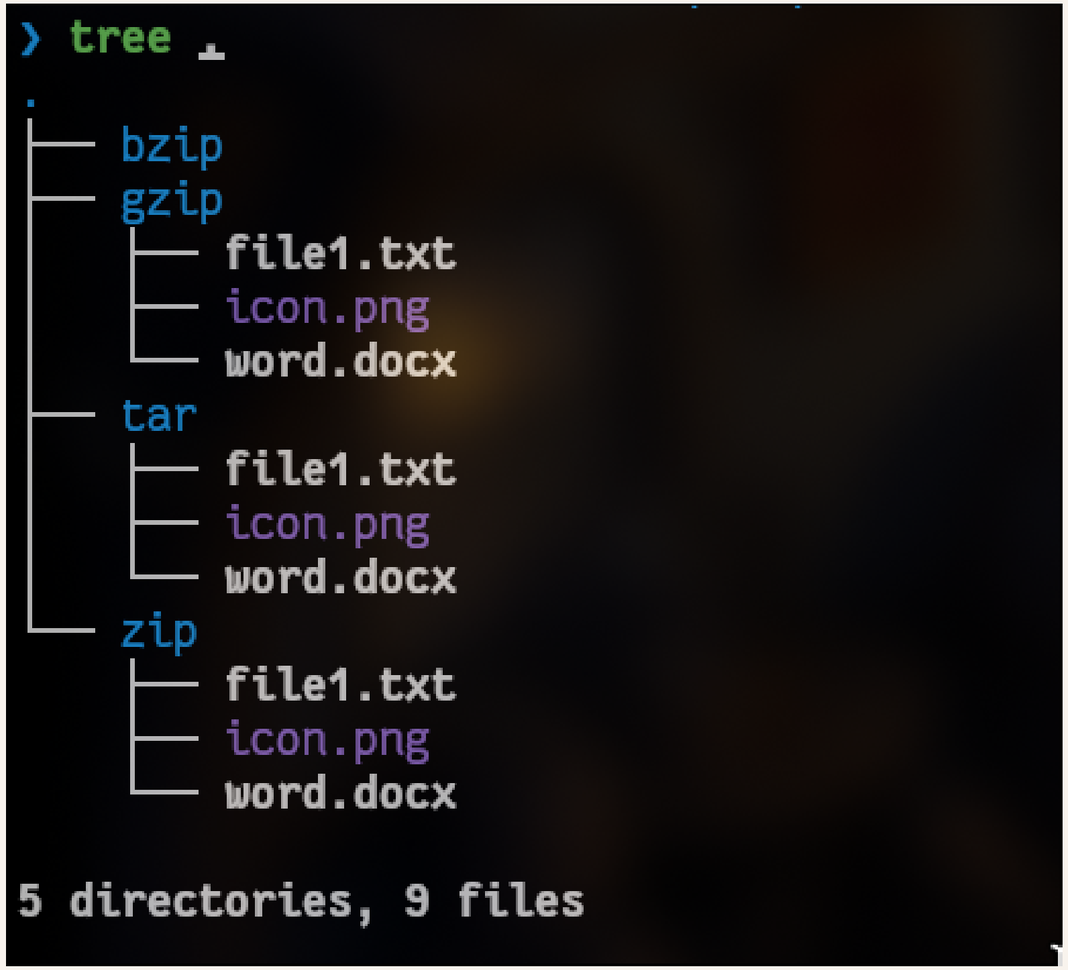
- -v (verbose) (مطوَّل)

Note: -f must be followed by the archive file name

HANDS ON TIME

Hands on

make this tree in directory and archive it with your name



compress tools

Tool	Compression Algorithm	Utility	Year
`zip`	Deflate	Compressor and Archiver	1989
`gzip`	Deflate	Compressor	1992
`bzip2`	BWT + Huffman coding	Compressor	1998

zip

This tool does both compression and archiving.

- **To compress multiple files :**

zip files.zip file1 file2 file3 → Output : files.zip

- **To compress multiple files and directories :**

zip -r filename.zip file1 file2 file3 /usr/work/school

- **The above command compresses file1, file2, file3, and the contents of /usr/work/school and places them in an archive named filename.zip.**

zip

Tool	Extension	Decompression Tool
zip	.zip	unzip

Syntax:

```
zip [options] zipname.zip files
```

gzip and bzip2

Compression Tool	Extension	Decompre -ssion Tool	Syntax
gzip	.gz	gunzip	**Compress:** gzip fileName **Decompress:** gunzip fileName.gz
bzip2	.bz2	bunzip2	**Compress:** bzip2 fileName **Decompress:** bunzip2 fileName.bz2

gzip and bzip2

Option	Description
`-1 .. -9`	Set amount of compression. Default is 6. ○ `-1, --fast`: **Compress** faster. ○ `-9, --best`: **Compress** better.
`-f`	**Force** compression even if a compressed version of the original file already exists.
`-k`	**Keep** a copy of the original file.
`-v`	**Verbose**.

gzip

This tool does compression only.

- **To compress the file and replace it**

  gzip path/to/file

- **Decompress a file, replacing it with the original uncompressed version:**

  gzip --decompress path/to/file.gz

- **Compress a file, specifying the output filename:**

  gzip --stdout path/to/file > path/to/compressed_file.gz

- **Display the name and reduction percentage for each file compressed or decompressed:**

  gzip --verbose --decompress path/to/file.gz

gzip

hmmmmm.....There’s an option we don’t say it.

bzip2

This tool does compression only.

- **To compress the file and replace it**

  bzip2 path/to/file

- **Decompress a file, replacing it with the original uncompressed version:**

  bzip2 --decompress path/to/file.gz

- **Compress a file, specifying the output filename:**

  bzip2 --stdout path/to/file > path/to/compressed_file.gz

- **Display the name and reduction percentage for each file compressed or decompressed:**

  bzip2 --verbose --decompress path/to/file.gz

HANDS ON TIME

Task 1 — Make a backup of a folder using tar.gz

```
tar -czvf mybackup.tar.gz my_project/
```

Task 2 — Make multiple compressed copies

```
gzip -k myfile
bzip2 -k myfile
zip myfile.zip myfile
```

Task 3 — Share a project in zip format

```
zip -r project.zip src/ docs/
```

Task 4 — Extract everything into a clean directory

```
mkdir restore
tar -xvf mybackup.tar.gz -C restore
```

KAHOOT TIME

THANK YOU