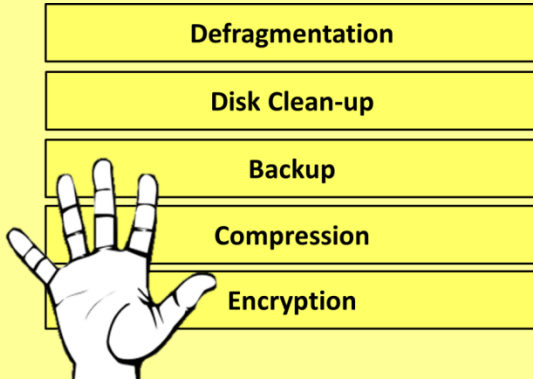


# GCSE Computer Science

## Topic 1.7 System Software (2)

**UTILITY SOFTWARE:** software designed to help maintain / optimise a computer system.



ENCRYPTED data is scrambled (unreadable) to unauthorised users. A decryption key is required to make sense of the data.

DEFRAGMENTATION: reorganising data on a hard drive to put broken-up files back together and collect up the free space.

DISK CLEAN-UP is a utility that frees up disk space on a computer's hard drive.

The utility first searches and analyses the hard drive for files that are no longer of any use and then removes the unnecessary files.

A BACK UP is a copy of a computer's files and settings stored externally. This means data can be recovered in the event of data loss.

COMPRESSION software reduces the size of files so they take up less disk space.

Files are often compressed when uploaded to the internet so they can be downloaded quicker.

There are two types of compression: lossy and lossless.

Lossy – works by permanently removing data from the file. This limits the number of bits needed to store the file.	Lossless – temporarily removes data to store the file then restores the data when it is opened.
<ul style="list-style-type: none"> <li>✓ Greatly reduces file size.</li> <li>✓ Take up less bandwidth.</li> <li>✓ Commonly used – compatible with lots of software.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Data only removed temporarily – no reduction in quality.</li> <li>✓ Can decompress – getting original file back.</li> <li>✓ Can be used on text files /software.</li> </ul>
<ul style="list-style-type: none"> <li>✗ Loses data – cant be restored</li> <li>✗ Cant be used on text files/ software.</li> <li>✗ Result in poorer quality (but not often noticeable)</li> </ul>	<ul style="list-style-type: none"> <li>✗ Only a slight reduction of file size (so still require a lot of storage space)</li> </ul>



**FULL BACKUP:**  
A copy is taken of every file on the system.

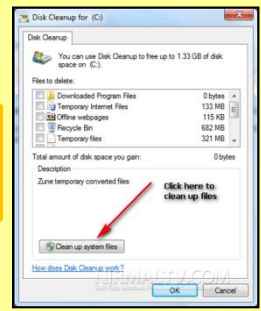
- Take up a lot of storage space.
- Take a long time to create.
- Faster to restore from.

**INCREMENTAL BACKUP:**  
Only the files created or edited since the last back up are copied.

- Less storage space used.
- Quicker to create.
- Take longer to restore from as last FULL back up must be restored followed by every incremental back up since that point.



**OTHER UTILITY SOFTWARE:** system restore, file manager, automatic updating, system diagnosis, anti-virus, firewall, anti-spyware,



# GCSE Computer Science - Topic 1.7 System Software (2)

## What I need to know:

- Define utility software.
- Name the 5 pieces of utility software you need to know about.
- Describe the purpose of compression software.
- Name the two types of compression software.
- Describe the difference between lossy and lossless compression.
- Describe the purpose of encryption software.
- Describe the purpose of defragmentation software.
- Describe the purpose of disk-clean-up software.
- Define the term 'back up'.
- List some reasons that data might be lost.
- What are the two types of back up?
- What are the main differences between full and incremental back-ups?
- Name some storage devices that back up data may be stored on.
- What precautions can be taken to keep back-up data safe?
- Name two extra pieces of utility software that the user may wish to install.

An accounting firm plans to introduce a new scheme for regularly backing up its data.

a) Define what is meant by the following types of backup.

Full backup .....

Incremental backup ..... [2]

c) The utility also reports that Annie's hard disk is 25% fragmented.

i) Describe how a hard disk can become fragmented over time.

.....

..... [3]

ii) Explain **one** problem caused by a fragmented hard disk.

.....

..... [2]

iii) Briefly describe the defragmentation process.

.....

..... [3]

Annie runs some 'Disk Health' utility software to check for any problems with her HDD.

i) Define what is meant by utility software.

..... [1]

ii) Give **two** other examples of utility software.

1 .....

2 ..... [2]