

# GCSE OCR

Computer Science  
J277

4

## Utility software

Unit 4 Network security  
and systems software



PG ONLINE

# Objectives

- Describe the purpose and functionality of common utility software including:
  - Encryption software
  - Defragmentation software
  - Data compression software



# Utility software

- Operating systems provide some core functions such as memory management
  - What are **four** other core functions they provide?
- They also have utility software which helps to keep them working well
  - What are **four** types of utility software that operating systems often make use of?



# Utility software

Answers

- Operating system functions (from the previous topic)
  - User interface
  - Multitasking
  - Peripheral management and drivers
  - User management, file management
- Utility software
  - Encryption software
  - Defragmentation software
  - Data compression
  - Disk clean-up tools, disk formatters, anti-virus software



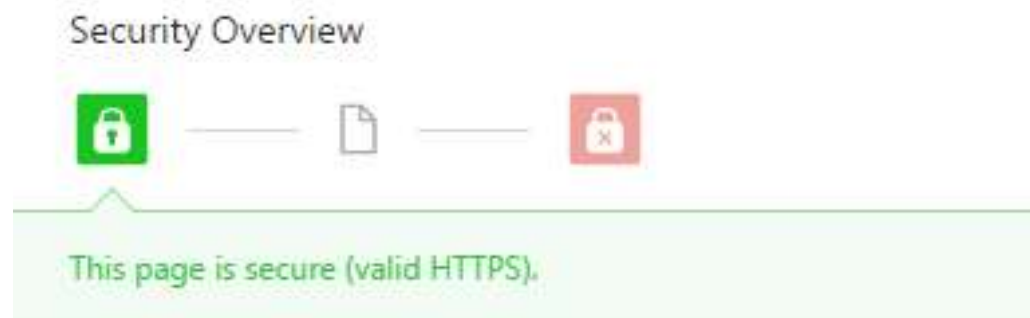
# What is utility software?

- The operating system controls and manages the computer system
- Utility programs perform extra functionality and housekeeping tasks that keep computers running efficiently
  - They are often packaged as part of the operating system
  - Some utility programs, such as Antivirus software, are bought as stand-alone software programs



# Encryption software

- Encryption software is used to encode text so that it cannot be read without knowing the key to decode it
  - How do you know if a connection to a website is encrypted?
  - What organisations encrypt their emails or file attachments?





# Encryption software

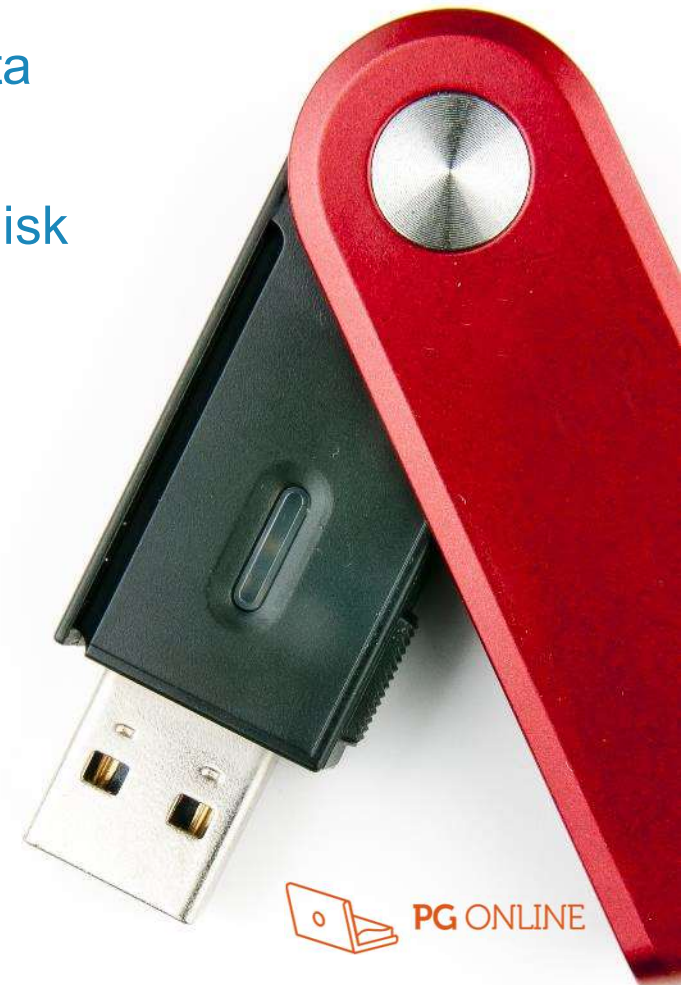
Answers

- Encryption for connections to websites
  - Web browsers usually show a padlock for sites that are using HTTPS (Hypertext Transfer Protocol Secure)
- Organisations that use email encryption, or encryption of attachments include:
  - Councils when discussing sensitive personal information such as special needs or disabilities
  - Accountants discussing financial information of companies
  - Companies sharing confidential internal files



# Encryption tools

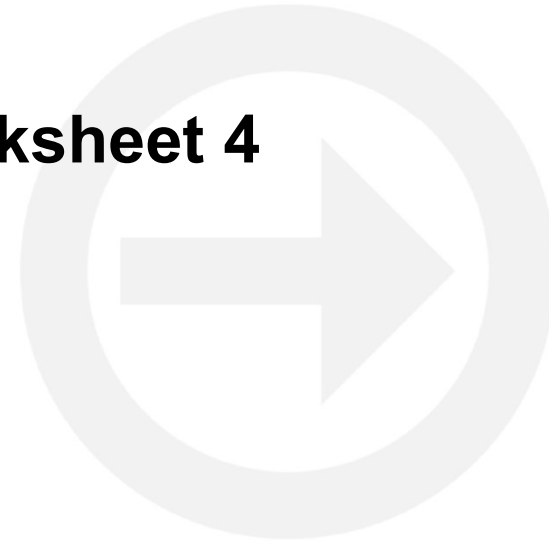
- Encryption software utilities are commonly used to:
  - Encrypt entire hard disks so that the data cannot be read if the computer is stolen
  - Encrypt files and folders on a portable disk such as USB removable storage
  - Encrypt communication with websites
  - Encrypt data in an organisation's database – especially sensitive data such as passwords





# Worksheet 4

- Now complete **Task 1** on **Worksheet 4**



# Disk defragmentation

- When you save a large file it may not fit on the disk in consecutive memory locations
- The file is referred to as 'fragmented'
  - In order to read the file, the drive head will need to move to more locations
  - This makes it far slower to access files and programs
- Defragmenting the hard disk reorganises files so they are stored together
  - Read times are far faster
  - Free space is also in one place so new files do not need to be fragmented



# Defragmentation

Orange	Orange	Blue	Blue	Blue	Yellow	Green	Green
Green	Green	Green	Orange	Orange	White	Orange	White
Yellow	Yellow	Yellow	White	Green	Green	White	Yellow
White	White	White	White	White	White	White	White
White	White	White	White	White	White	White	White

**Before:**  
Files stored  
are fragmented

Orange	Orange	Orange	Orange	Orange	Blue	Blue	Blue
Green	Green	Green	Green	Green	Green	Green	Yellow
Yellow	Yellow	Yellow	Yellow	White	White	White	White
White	White	White	White	White	White	White	White
White	White	White	White	White	White	White	White

**After:**  
Files and free  
space now  
defragmented



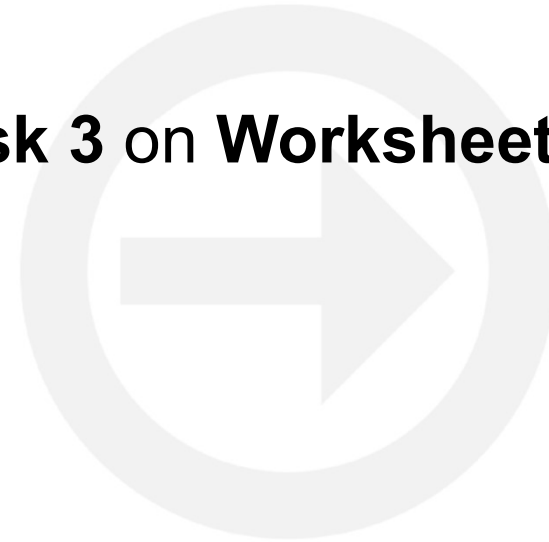
# Data compression software

- Utilities such as WinZip enable users to compress and decompress files or folders
  - This reduces the amount of storage space needed on a disk
  - If sending the files, it reduces the amount of data that is sent
  - Compression may allow attachments to be sent via email that would otherwise have been larger than a file-size limit
  - More data can be stored on backup media



# Worksheet 4

- Now complete **Task 2** and **Task 3** on **Worksheet 4**



# Plenary

- With a partner, fill in the gaps below

\_\_\_\_\_ perform extra functionality beyond the core features of an operating system. They are used for \_\_\_\_\_ and to help keep the system secure. \_\_\_\_\_ compression reduces a file's file size.

\_\_\_\_\_ software will \_\_\_\_\_ a file so that it cannot be read without a decryption \_\_\_\_\_.

\_\_\_\_\_ software will put all \_\_\_\_\_ of a file together so that the file can be read faster.

**Fragments      Encode      Encryption      Utility software**

**Housekeeping      Compression      Defragmentation      Key**



# Plenary

**Answers**

- With a partner, fill in the gaps below

Utility software perform extra functionality beyond the core features of an operating system. They are used for housekeeping and to help keep the system secure. Data compression reduces a file's file size.

Encryption software will encode a file so that it cannot be read without a decryption key.

Defragmentation software will put all fragments of a file together so that the file can be read faster.

**Fragments      Encode      Encryption      Utility software**

**Housekeeping    Compression    Defragmentation    Key**



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