1.5 System Software

Keywords & Definitions

Operating System: Software responsible for running the computer, managing hardware, applications, users and resources

User Interface: Provides a way for the user to interact with the computer

Peripheral: External hardware connected to a computer

Multitasking: Running more than one application at the same time

Encryption: scrambling data

Defragmentation: reorganising data on a hard drive

Compression: Making a file smaller

Driver: A piece of software used to control a piece of hardware

What is systems software?

Software which allows a computer to run and to be maintained. "Operating System" software and "Utility Software" are the two main types of system software

The Operating System

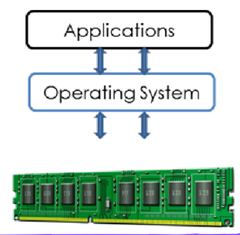
- most important piece of software on any computer - without it, no programs will run.
- Responsible for controlling / communicating with the computer hardware
- It provides a platform on which games, browsers, music players etc, can all work.

Roles of the OS

- peripheral management & drivers
- Memory management /Multitasking
- User management
- User Interface
- File management

Memory Management

- The OS manages the RAM
- When an application is loaded, the OS will copy the application to the RAM
- The OS will ensure that each program has its own space on the RAM
- it also manages virtual memory
- Enables multitasking



File Management

- allows users to:
  - Move files
  - delete files
  - copy files
  - rename files
  - create folders

User Management

- Allows different users to log onto the computer
- Retains settings for the different users (backgrounds, icons etc)
- Each user may have different access rights - for security

Peripheral Management

- Allows the computer to communicate with the hardware devices
- Gives programs access to them

User Management

- Allows users to interact with the computer
- GUI and Command Line Interface

1.7 System Software

User Interfaces:

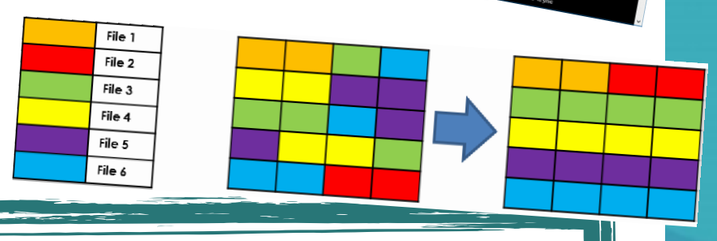
Graphical User Interface

- Uses windows, icons, menus and pointers (WIMP) to control the computer.
- Windows and Apple Mac OSx are examples of this kind of interface
- More user friendly

Command Line Interface

- still used today by 'Linux users'
- uses written commands (text based)
- can be more efficient if used properly

Utility System Software



Encryption Software

- Data is scrambled before being sen across a network
- Makes data difficult to understand if intercepted
- Need a key to decrypt it

Defragmentation Software

- When a hard disk drive is new – files get added onto the disk in order, as files are deleted—this leaves gaps.
- Defragmentation organises files on a hard disk to put fragments of files back together and to collect free space.
- Reduces read/write file movement speeding up file access.

Data Compression Software

- Reduces the size of files
- Reasons for file compression:
  - Less storage space required
  - Faster download times – improving online experience
  - Faster streaming speeds of video/audio files
- Two types of compression:
  - Lossy Compression: Some of the original data is lost and the original file can not be re-created
  - Lossless Compression: The original file can be re-created as no data is lost

Back up Software

- Full Backup:
  - A copy is taken of every file on the system
  - use a lot of storage space
  - takes a long time to create
  - faster to restore
- Incremental Backup:
  - Only the files created or edited since the last backup are copied
  - use less storage space
  - quicker to create
  - Slower to restore

World of work links

Programmer, IT Technician, Software Engineer, Teacher, Systems Architecture, Data Engineer, Software Developer