Day 4	**Operating System + Application Software + System Development**	**18-10-2015 19 -10-2015**

Operating System

- The **O**perating **S**ystem (**OS**) is a special computer program that is essential to the efficient running of all the other programs within the computer.
- The operating system carries out tasks, key press instructions and controls which operations within the computer are carried out. Some common operating systems are *Windows* and *Linux*.
- When the computer is switched on it carries out a Power On Self Test (POST) and boot-up entirely on its own because the necessary software is in ROM memory. This process ensures that all the hardware components are running and that the CPU and memory are functioning correctly. A series of beeps denotes any detected errors.

Operating System (Continued)

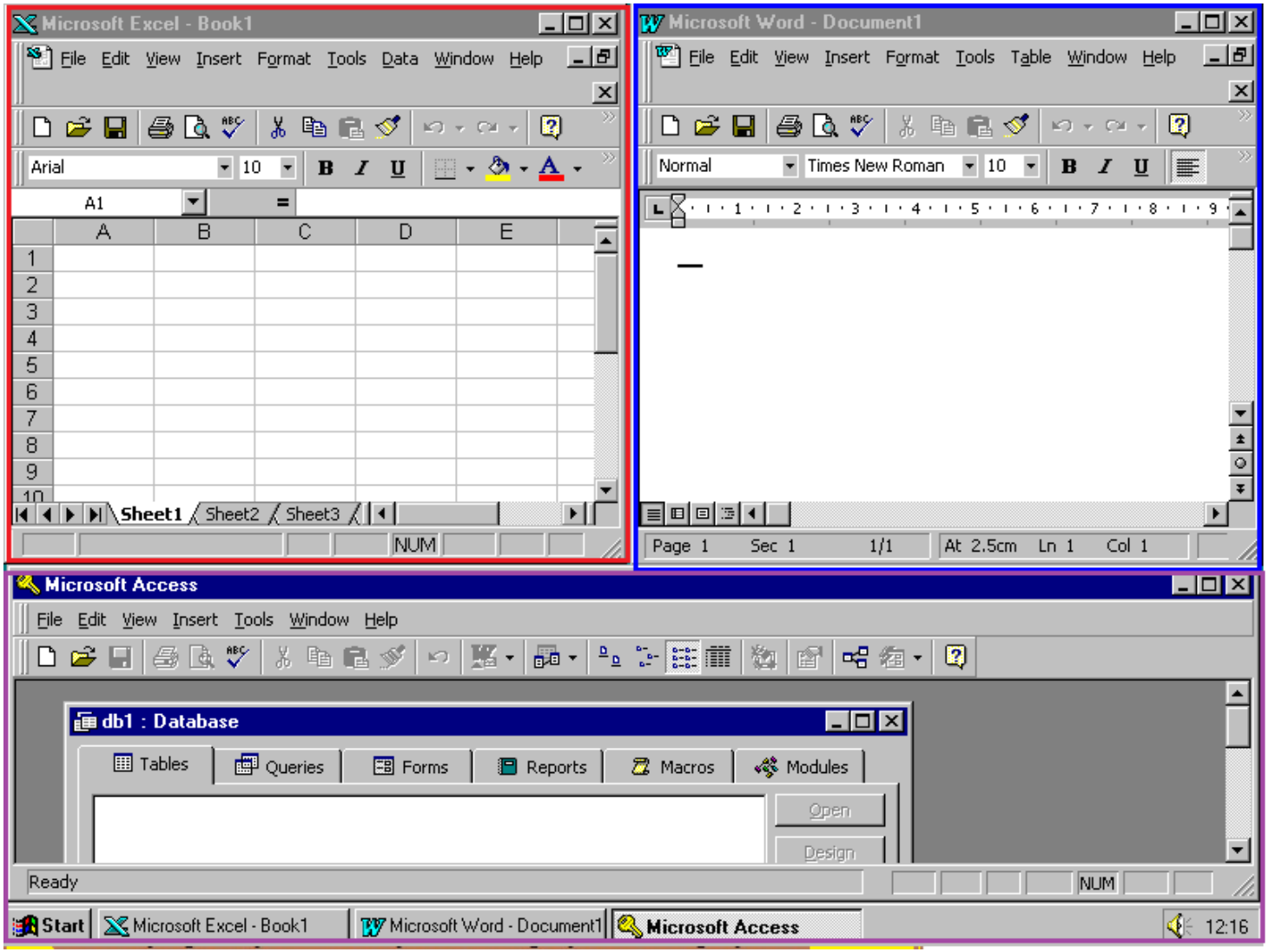
- The second function of the boot-up operation is to search drives for an operating system and then launch it, by reading the operating system files and copying them to the RAM.
- A Graphical User Interface (GUI) is a way of showing the computer's facilities using icons (pictures) and menus (names). Instead of typing a technical instruction the mouse is used to click on an icon (picture) or menu (names) to select or perform an action.

Application Software

- Computer programs such as word processors, spreadsheets, games, etc. are called applications. Applications are separate from the operating system software but must be compatible with it in order to be able to operate, e.g. some applications will only run when Microsoft® Windows is running. Files will only open if they are compatible with the operating system.
- Examples of software applications or programs are:

Microsoft Word	Word processor
Microsoft Excel	Spreadsheet
Microsoft Access	Database
Microsoft PowerPoint	Presentation tools
Microsoft Internet Explorer	Web Browsing facilities
Microsoft Outlook Express	E-mail
CorelDraw!	Graphics

- The picture below shows three separate applications open within the environment of the Microsoft Windows operating system.



Word Processing applications allow text to be typed, amended, formatted, printed and saved as a file (document), which can be reused at a later date.

Spreadsheet applications allow text, numbers and calculations to be entered into a worksheet usually in the form of rows and columns. Spreadsheets allow numbers to be amended and the resulting calculations are updated to take account of the changes.

Database applications store large quantities of data that can be questioned to display only specific pieces of information. A database contains multiple fields and records. A **field** is a column of similar data, e.g. containing like information such as date of birth. A **record** is a collection of associated data, e.g. a row containing entries that relate to an individual person, object, company or stock item, etc.

Desktop Publishing (**DTP**) applications use drawing and graphic design facilities to allow greater control over the layout of pages and the appearance of text and graphics. DTP applications are used rather than word processors to create flyers, posters, cards and newsletters because of the ease of using graphics and text together. Some formatting features within DTP applications can also be found in word processing.

Presentation applications allow sophisticated presentations to be created for use as overhead projections, Web pages or as an on-screen display with the option of incorporating special effects, audio and video clips.

Web Browsing applications allow users to access the information on the Internet; to search for, view and download text and images from the vast collection of data which comprises the World Wide Web.

Software versions are identified numerically to show the order of development, e.g. Word 97 is an older version of the software than Word 2000, which in turn is an older version than Word 2002 (sometimes referred to as Word XP)

System Development

- The development of computer based systems can include a variety of steps, depending largely on the size and type of the application, but a typical development path includes **analysis**, **programming**, **testing** and **documentation**.
- Once the need for a computer system had been identified, the next stage would be to turn the objectives of the proposed system into formal definitions including program specifications, hardware requirements and estimates of final system size. This is the **Systems analysis** stage (performed by systems analysts) and the task would include meetings with various key members of staff to ensure that all the relevant input is considered. As a result of this analysis, a design for the proposed system would be generated.
- It may be that the objectives of the system can be met by an off-the-shelf computer package, but if not then it will be the job of programmers to write the necessary programs to meet the supplied specification (**programming** stage). The computer language used for this task will depend on the nature of the task and integration with existing systems.

System Development (Continued)

- The system must be **tested**, sometimes at stages throughout its development, to ensure that it both meets the original requirements and that any bugs, or faults, are identified and corrected. This can be done by staff within the organisation using a variety of testing techniques and by selected outside users who can test the system in a realistic environment (known as Beta testing).
- Finally **documentation** must be written for the finished system. This is usually at two levels, one detailing the technical operation of the systems and programs to enable future maintenance and the other an instructional guide for system users.

Day 5	**LAN and WAN + The Telephone Network + The Internet + Intranets and Extranets + Electronic Mail**	**-10-2015 -10-2015**

LAN and WAN

- *Network*: has the following features:

  * Two or more PCs (may be several hundred) connected together.

  * Allows PCs to share information and resources via that connection.

  * Shared files may be: e-mail messages – files containing text.

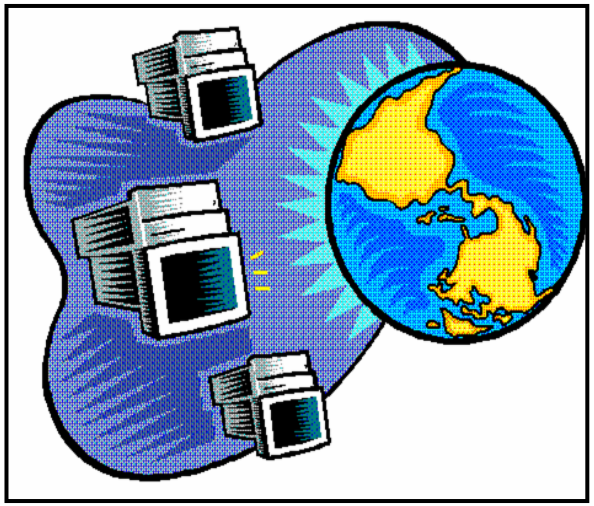
  * Shared resources may be: printers – scanners.

  (This would provide financial advantages - a smaller number of peripheral devices shared between a larger numbers of users require less investment in hardware, together with performance benefits - the network is able to operate more efficiently)

- **Local Area Network (LAN)**: consists of computers that are linked together by lengths of cabling within a building or other close proximity.

- **Wide Area Network (WAN)**: involves computers linked up over longer distances. An example of a WAN is a computer that is linked to another by means of a telecommunications network.

  (A rule of thumb used by telecommunications engineers is that any network covering an area of less than one square kilometre is a LAN, while any network covering more than one square kilometre is a WAN)



- *Client/Server Networks*: is this network; all data is stored on a central server computer. The data may then be accessed by the peripheral PCs or clients, which allow users to interface with the server.