Essentials of ICT
ICT1113
Lecture 06

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Lecture 06
Application Software

Learning Objectives

- **After completing this chapter you should be able to:**
  - Identify different types of application software
  - Explain key features of these various types of software with examples

Software

- There are two types of software in a computer system.
  - **System Software**
  - **Application Software**

Application Software

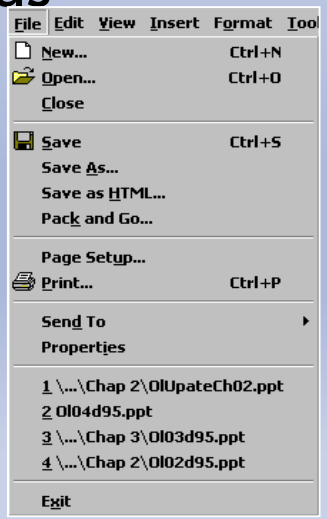
- Application SW are programs that **interact directly with the user** for the performance of a certain type of work
- They generally do not **talk to the HW** (i.e. printer, disk drive, etc) directly, but **through interfaces provided by the OS**

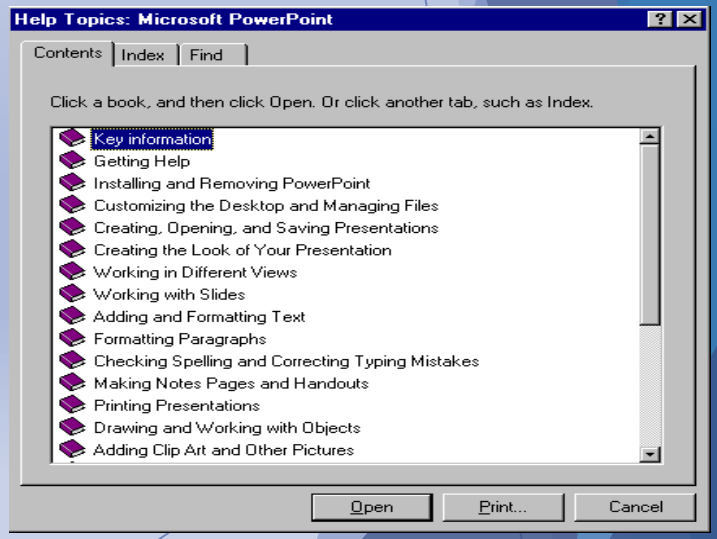
Common Features

- User Interface
  - Important part of software
  - Portion where the user interacts with the software
- Graphical User Interface (GUI)

-Windows -Toolbars

-Menus -Help





Proprietary Vs FOSS

- **Proprietary (Commercial) Software**
  - The software is under restrictive copyright and the source code is usually hidden from the users.
  - Ex:-Microsoft Office Package, Adobe Package (Photoshop, Illustrator)..
- **Free & Open Source Software (FOSS)**
  - Anyone is freely licensed to use, copy, study, and change the software in any way. The source code is openly shared , so that people are encouraged to voluntarily improve the design of the software
  - Ex: Open Office, GIMP, Blender…

Classification According to the Mode in which it is Used

- **Interactive-mode**
  - The user runs the program on the computer and keeps on interacting with the computer while the program runs
  - Example: Word processor
- **Batch-mode**
  - The user starts the program and the computer processes the provided data and produces results without any further intervention from the user
  - Example: Payroll

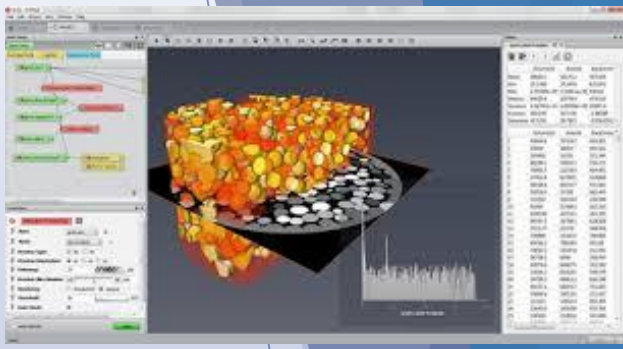
Classification According to the Purpose

- **General-purpose application**
  - Widely used software
  - Common tasks
  - Spreadsheets, Word Processors
- **Special-purpose application**
  - Narrowly focused software
  - Specific tasks
  - Air-line reservation systems, School management systems

Classification According to the Application Area

- Scientific/engineering/graphics
- Business
- Productivity
- Entertainment
- Educational

1) Scientific/Engineering/Graphics Apps



- **Key feature:** Intense floating-point calculations
- **Scientific SW**
  - Simulation of natural systems
    - Deforestation and effect on green-house gases
  - Simulation of artificial systems
    - NeuralWare (Simulator for artificial neural networks)
    - Thermo-nuclear explosions
  - Mathematical computation packages
    - Mathematica (can do hundreds, if not thousands of functions, e.g. solving a differential equation)
    - MathCAD

- **Engineering SW**
  - Computer-aided design (CAD)
    - AutoCAD
    - SPICE
    - Virtual wind tunnels
  - Computer-aided manufacturing (CAM)
  - Telecommunication system SW
    - Centrex
  - Industrial control SW
    - Control program for a water treatment plant

- **Graphics & Animation SW**

1. Vector graphics

- Treats everything that is drawn as an object
- These objects can later be easily moved, stretched, duplicated, deleted, etc
- Are resolution (no. of pixels) independent
- Relatively small file size
- Example: Flash

2. Bit-mapped or raster graphics

- Treats everything that is drawn as a bit-map
- If an object is drawn on top of another, it is difficult to move just 1 of them while leaving the other untouched
- Changing the resolution often requires considerable touch-up work
- Relatively large file size
- Example: MS Paint, Adobe Photoshop

2) Business Applications

- Most of the SW being developed today belongs to this category
- SW that is required to run most any sort of business:
  - Payroll
  - Accounts receivable & accounts payable
  - General ledger
  - Order entry
  - Inventory control

- **E-Commerce SW**
  - Many businesses are already using it to offer their products and/or services over the Internet
  - makes it possible for customers to place orders over the Web without the involvement of any of the seller's salesperson
  - The product is shipped or made available for download immediately after the payment is verified
  - Generally custom-built
  - Key requirements:
    - Reliability
    - Security
    - Ability to handle 1000's of transactions, simultaneously

- **ERP (Enterprise Resource Planning) SW**
  - Very large scale, complex & expensive SW
  - Ties together all key activities & major systems of an organization into a single SW system
  - ***Key benefit***: Optimization of the business processes of an organization as a single system instead of many loosely-related stand-alone systems
  - Example: SAP, Oracle
- **DSS (Decision Support System) SW**
  - Sometimes also called “expert systems”
  - Based on a branch of computer science called “artificial intelligence”
  - Designed to help business managers in making effective decisions in complex situations based on the analysis of the relevant data

3) Productivity SW

- Most popular category in terms of licenses sold
- Common features
  - Ability to simplify, automate everyday business tasks
  - Highly interactive and user-friendly design
  - Designed to run on PC's
  - Most users do not use 90% of the SW features
- Popular productivity SW
  - Word Processing Spreadsheets
  - Presentations Databases

- **Word Processors**
  - The most popular productivity app
  - Initially designed as a replacement for the typewriter
  - Automation
    - Table of contents & index
    - Spelling & grammar checking
  - Two approaches: WYSIWYG (e.g. Word, WordPerfect, Star) or traditional markup (LaTeX)?
  - Desktop publishing

- **Web Page Development SW**
  - Web pages can be developed using a simple plain-text editor like the “notepad”, but HTML editors can make the process quicker (more efficient, easy-to-use)
  - Interfaces (ex:DreamWeaver)
- **Spreadsheet SW**
  - Electronic replacement for ledgers
  - Used for automating engineering, scientific, business calculations
  - VisiCalc was the first popular spreadsheet application on PC’s
  - Consist of **cells** arranged in **rows & columns**

- **Presentation Development SW**
  - Used to prepare multimedia material for lectures & presentations to display key points, graphics, animation, or video with the help of multimedia projectors
  - Key advantages:
    - Easy to modify
    - Can be sent electronically
    - Multimedia nature makes it more interesting for the audience

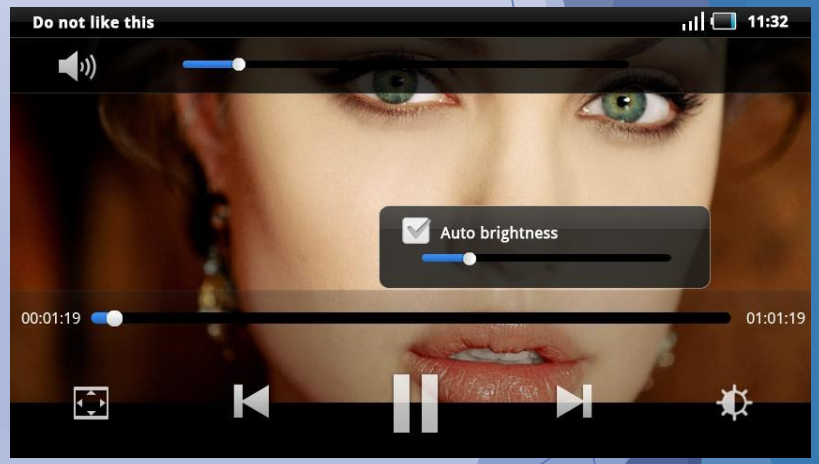
- **Productivity SW Suites**
  - A set of stand-alone productivity applications designed to work easily with each other
  - Share a common UI
  - Available as a bundle along with additional useful utilities
  - Examples: MS Office, Corel WordPerfect Office, Lotus SmartSuite

- **Document Centered Computing (DCC)**
  - *The increasing cooperation among the apps included in productivity suites*
  - *Instead of developing parts of a doc in a number of apps, you stay in a single doc and call-up appropriate apps to insert the required objects*

4) Entertainment SW

Key feature: Simple, User friendly

- Both Microsoft & Apple are pursuing a PC-as-a-personal-entertainment-hub strategy.
- *Probable result*: Already popular entertainment SW will become even more popular



- **Music & Video Players**
  - Music players (WinAmp)
  - Video/Music players (VLC player, Windows Media player, QuickTime player)
  - The Web Browsers can also display video, animation, and play music with the help of helper applications like Flash

- **Music Generation & Movie Editing SW**
  - A PC can be made the hub of a music making studio with help of appropriate HW & SW
  - Inexpensive, easy-to-use
  - Music generation sw (ex: ASIO, DarkWave Studio)
  - Movie Editing sw (Apple iMovie, windows movie maker)
- **Games**
  - Many types
    - Educational
    - Strategy/Simulation
    - Sports

  - The saddest aspect: You do not need any opponents or partners to play computer games

5) Educational SW

- Category with probably the highest growth rate
- **Electronic Encyclopedias**
  - Great resource of useful information presented in a very interesting format
  - Superior to the paper-based version:
    - Access speed is dramatically higher
    - Can contain animation and sound
    - Much lower cost as thousand's of pages in dozens of volumes have been replaced by a couple of CD's

- **On-line Learning**
  - Key features of good online learning SW:
    - The student can learn at his or her own pace
    - The student can select his or her own hours
  - Examples: Coursera, Academic Earth, edx

Attributes of Good Application SW

- Easy to install, un-install
- UI
  - Consistent
  - Configurable
  - Adapts to the users need
- Has a tutorial and a complete help manual
- Does not have any critical bugs

Quiz 02

- Date : 15th May 2018
- Time: At the lecture hours
- Content: Input, output and storage devices, System sw, Application sw, Internet and WWW

Questions ???