

Component 4: Introduction to Information and Computer Science

Unit 4: Application and System Software Lecture 1

This material was developed by Oregon Health & Science University, funded by the Department of Health and Human Services,
Office of the National Coordinator for Health Information Technology under Award Number 1U64OC000015.

Unit 4 Objectives

- ⇒a. Define application vs. system software.
- ⇒b. Give examples of application software and the elements that comprise them, focusing on healthcare systems.
- c. Describe the functions of system software (OS), including file organization (file types, downloading, zipped files).
- d. List different types/brands of Operating Systems.
- e. Explain the purpose and usage of file systems.

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Software

- Collection of programs and data that tell the computer what to do
 - Made up of instructions
 - Allows users to interact with the computer
- Two types of software
 - Application
 - System

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Application Software

- Available in different forms
 - Packaged
 - Custom
 - Web application
 - Open Source
 - Shareware
 - Freeware
 - Public Domain software

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Application Software Categories

- Business
- Science and Mathematics
- Graphics and Multimedia
- Home/Personal Use
- Communications
- Healthcare

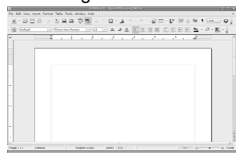
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Business/Home Software Word Processing

- Produces documents
- Has powerful features
 - Auto-correct
 - Spell-check
 - Grammar-check
 - Mail merge
 - Tracking changes
 - Tables
 - Templates
 - Web page development
- Examples
 - Microsoft Word
 - OpenOffice Writer
 - Corel WordPerfect
 - Google Docs



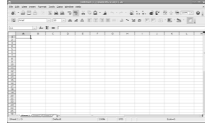
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Business/Home Software Spreadsheets

- Organizes data into columns and rows
 - Performs calculations on the data
 - Can use formulas and functions for calculations
 - Can generate graphs and charts of data
- Examples
 - Microsoft Excel
 - Lotus 1-2-3
 - Corel Quattro-Pro
 - Google Docs
 - OpenOffice Calc



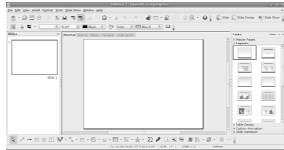
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Business/Home Software Presentation Software

- Creates visual aids for a presentation
 - Developed as a series of slides
 - Can include images, tables, graphs
 - Can include animations, automatic transitions
- Examples
 - Microsoft PowerPoint
 - OpenOffice Impress
 - Apple Keynote



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Business Software Project Management Software

- Plans and schedules events, resources and costs of a project
 - Keeps track of deadlines and deliverables
- Examples
 - Microsoft Project
 - Fast Track Schedule
 - SEER-SEM



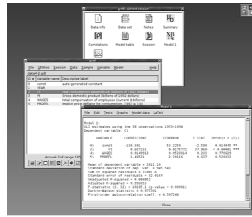
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Science and Mathematics

- Number-crunching software
- Runs models and works with large amounts of data
- Examples:
 - SPSS
 - Gretl
 - Matlab
 - Mathematica



Gretl, an open source statistics software package

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Graphics and Multimedia Software Desktop Publishing

- Professional software used to produce high quality print documents such as textbooks, brochures and catalogs
- Assists with the layout, colors and graphics
- Produces very high resolution output that's suitable for printing
- Adobe PageMaker, Adobe FrameMaker, Microsoft Publisher, Scribus

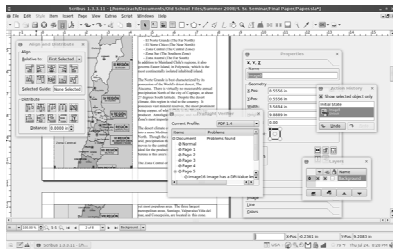
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Desktop Publishing Example

- Open source software, Scribus



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Graphics and Multimedia Software

- Image editing, photo editing and paint software (professional)
 - Paint software allows graphic artists to draw pictures and shapes
 - Image editing software adds the ability to modify existing images and pictures
 - Photo editing software is a type of image editing software that allows users to edit and customize digital photographs
 - Adobe Photoshop, GIMP, Inkscape

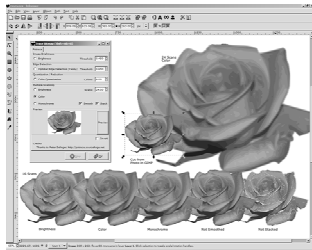
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Image Editing Example

- Open source software, Inkscape



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Graphics and Multimedia Software

- Video Editing Software
 - Can modify a segment of video called a clip
 - Can delete, reorder, add special effects to clips
- Examples
 - Adobe Premiere Elements
 - Pinnacle Studio
 - OpenShot



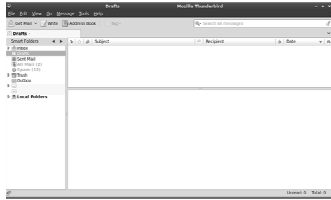
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Communications Software

- Many different types
 - Email
 - IM
 - FTP
 - Web browsers
 - VoIP
 - Blog
 - Wiki



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Healthcare Software

- Many different types
 - EHRs and EMRs
 - Health Information Systems
 - Medical Office Management Systems
 - Patient Registries
 - Imaging
 - Telemedicine

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Examples of EHRs

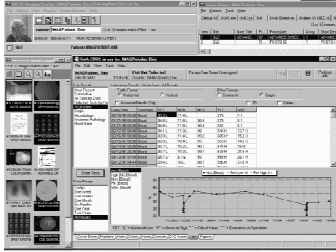
- EpicCare's EHR system - <http://www.epic.com/software-index.php>
- General Electric's Centricity Enterprise EHR system - <https://www2.gehealthcare.com/portal/site/us/en/gehcho me/>
- The Veteran Administration (VA) VistA (Veterans Health Information Systems and Technology Architecture) - http://www.ehealth.va.gov/EHEALTH/CPRS_demo.asp

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Vista



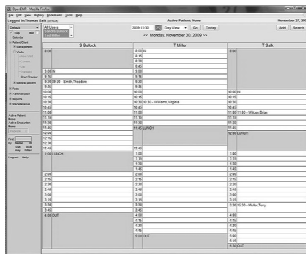
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Medical Office Management Systems

OpenEMR



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Medical Imaging



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Telemedicine

- Clinical medicine where consultations and procedures are managed remotely



Chest scan used in teleradiology

Software Components

- Code
 - Programming statements/instructions that make the program work
 - Example: the .exe file that you run
- Files
 - Data stored on disk that's used by a program
 - Example: the .doc files that Microsoft Word uses
- Database
 - Stores and retrieves data
 - Example: EMRs store data in a database

Different Hardware Needs

- High-resolution graphics and video software (including audio)
 - Good graphics card with its own memory
 - Fast processor with large RAM
 - Good monitor
 - Good speakers
 - Large secondary storage
- Data intensive applications
 - Fast processor with large RAM
 - Large secondary storage
- Software specs list minimum hardware requirements

How to Install/Uninstall

- Installing software depends on how you received it
 - Purchase an install disk—put in drive and it will install
 - Download—run downloaded installer
- Uninstalling
 - Add/Remove Programs on the control panel menu (Windows)
 - Drag icon to the trash (Mac)

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Ethical Considerations

- Software that isn't open source or public domain has a copyright
- Most software you purchase has a license
 - Allows you to install one instance
 - Read license to see if it allows more
 - Cannot distribute copies to friends

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Summary

- Software makes computers useful
- Two types of software
 - Application
 - System
- Application software is vast and varied
 - Many types
 - Available in different forms
- Application software may require training
 - Online tutorials, help
 - Training courses

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