Component 4: Introduction to Information and Computer Science

Unit 4: Application and System Software

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.

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

Application Software

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

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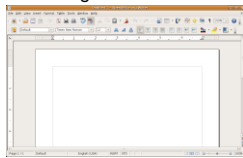Version 1.0/Fall 2010   4

Application Software Categories

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

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Business/Home Software
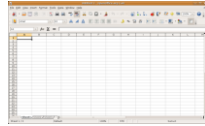## Word Processing

- 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 I-2-3
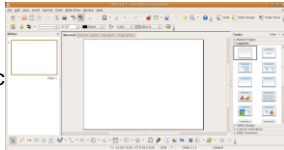 – Corel Quattro-Pro
  – Google Docs
  – OpenOffice Calc

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

Business Software
Project Management Software

- Plans and schedules events, resources and costs of a project
- Keeps track of deadlines and deliverables

- Examples
  – Microsoft Project
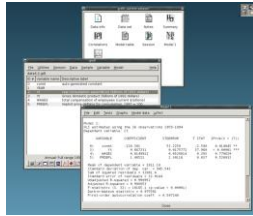 – Fast Track Schedule
  – SEER-SEM

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
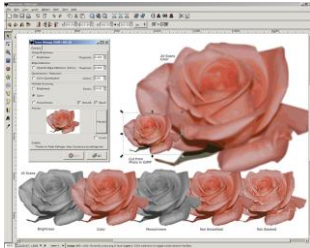 - Adobe Photoshop, GIMP, Inkscape

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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
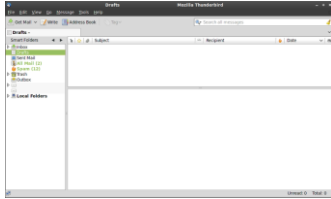 - Pinnacle Studio
  - OpenShot

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Communications Software

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

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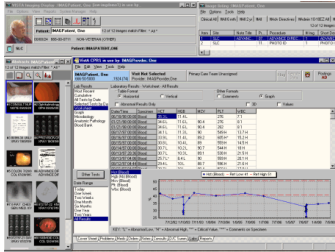Version 1.0/Fall 2010   16

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/usen/gehchome/
- The Veteran Administration (VA) VistA (Veterans Health Information Systems and Technology Architecture) - http://www.ehealth.va.gov/EHEALTH/CPRS_demo.asp
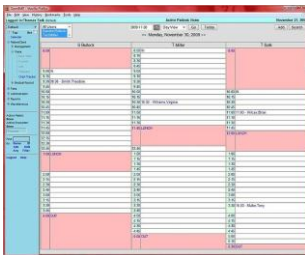
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Medical Office Management Systems
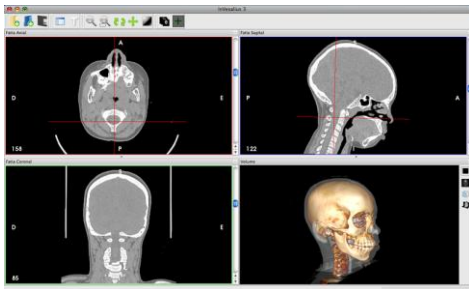
OpenEMR

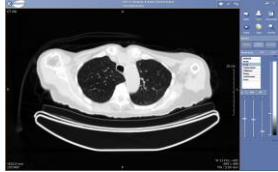Health IT Workforce Curriculum
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Medical Imaging

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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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