Microsoft Office 2007

Introduction to Computer Essentials

Objectives

• Explain the five parts of an information system: people, procedures, software, hardware, and data.

• Distinguish between system and application software.

• Discuss the three kinds of system software programs.

• Distinguish between basic and specialized application software.

• Identify the four types of computers and the four type of microcomputers.
Objectives (continued)

- Describe the different types of computer hardware including the system unit, input, output, storage, and communication devices.

- Define data and describe document, worksheet, database, and presentation files.

- Explain computer connectivity, the wireless revolution, and the Internet.

Introduction

- Computer competency refers to acquiring computer-related skills

- Microcomputers are common tools in all areas of life

- New forms of learning have developed

- New ways to communicate and reach out to people are available
Five Parts of an Information System

1. People
2. Procedures
3. Software
4. Hardware
5. Data

People

- Most important part of any system
- Contact is ...
  - Direct
  - Indirect
- Computer uses
  - Business & Entertainment
  - Education & Medicine
  - Security & Control
  - Government
  - Research
People

• Most important part of any system
• Contact is …
  – Direct
  – Indirect
• Computer uses
  – Business & Entertainment
  – Education & Medicine
  – Security & Control
  – Government
  – Research

Software

• AKA Programs

• Two major kinds of software
  – System Software
  – Application Software
System Software

• A collection of programs-not a single program
• Enables the application software to interact with the hardware
• “Background software” that helps the computer manage its own resources

• Examples:
  • Windows XP, Vista, CE
  • Linux
  • Unix
  • Mac OS
  • Symbian
  • Palm OS

Bell Labs (1969) By Ken Thompson, Dennis Ritchie and Douglas McIlroy

By Linus Torvalds (1991)

By Linus Torvalds (1991)
System Software

Software Development Tools

Application Software

• “End-user” software

• Two major categories:
  – Basic Application or General purpose
    (Word, Excel, PowerPoint, Access, Visio, Outlook, Photoshop, …)
  – Specialized applications
    (TurboTax, eBay, Amazon.com, Expedia, BMV, College Transcripts, Payroll, Personnel, …)
Application Software

- “End-user” software / Specialized applications

**APPLICATION PRODUCTS**

- Customer Relationship Management
- Financial Accounting
- Human Resources
- Supply Chain
- Public Sector Applications
- Banking Applications
- Retail Applications
- Telecom Applications
- Higher Education Applications
- Other Industries

**Application Software**

- “End-user” software / Specialized applications

**BY INDUSTRY**

- Aerospace and Defense
- Automotive
- Chemicals
- Communications
- Consumer Goods
- Education and Research
- Engineering and Construction
- Financial Services
- Healthcare
- Aerospace
- Defense
- Distribution
- OEM: Consumer Electronics
- Outsourced Manufacturing Services
- Semiconductors
- Software
- Industrial Manufacturing
- Oil and Gas
- Professional Services
- Public Sector
- Retail
- Travel and Transportation
- Utilities
- Aerospace
- Defense
- Distribution
- OEM: Consumer Electronics
- Outsourced Manufacturing Services
- Semiconductors
- Software
- Industrial Manufacturing
- Oil and Gas
- Professional Services
- Public Sector
- Retail
- Travel and Transportation
- Utilities
Types of Computers

- Supercomputers
- Mainframe computers
- Minicomputers
- Microcomputers


Weather Forecasting and Climate Change Modeling, Danish Meteorological Institute

Aerodynamics of Hummingbirds – AHPCRC

Fluid Flow Simulation Using ISLB - ORNL

Fine Tuning Golf Club Performance Using LS DYNA - PING

Numerical Weather Production in Rugged Regions - University of Montana

Plant Genomics Research – Ohio Supercomputer Center
Types of Computers

• Mainframes

**MAINFRAMES:**
Relatively big computers used typically by large organizations for critical data driven applications such as:
- banking,
- census,
- industry and consumer statistics,
- ERP, and
- financial transaction processing
- Example: IBM – System Z.

Types of Computers

• Mini-computers

**MINICOMPUTER** is an obsolete designation for the family of mid-range multi-user computers that is in between multi-user mainframe computers and the single-user systems microcomputers.

Modern terms for minicomputer-type machines include:
- Midrange systems (IBM),
- Workstations (Sun Microsystems), and
- Blade servers.
Four Types of Microcomputers

- Desktop
- Notebook or Laptop
- Tablet PC
- Handheld

Desktop Computers

- Are small enough to fit on top of or alongside a desk yet are too big to carry around
Notebook or Laptop Computers

- **Notebook computers**, also known as **laptop computers**, are portable, lightweight, and fit into most briefcases.

PC Tablet

- Is a type of notebook computer that accepts your handwriting. This input is digitized and converted to standard text that can be further processed by programs such as a word processor.
Handheld

- Are the smallest and are also known as palm computers. These systems typically combine pen input, writing recognition, personal organizational tools, and communications capabilities.

- Personal digital assistants (PDA’s)

Microcomputer Hardware

- Four basic categories of equipment:
  - System Unit
  - Input/Output
  - Secondary Storage
  - Communication
System Unit

- Four important components-
  - Microprocessor
  - Memory (RAM)
  - Bus
  - Controls

System Unit

- Microprocessor
  Electronic device that can execute computer code.
System Unit

- **Main Memory (RAM)**
  - Fast, volatile, *expensive* memory that stores code and relatively small portions of data.
  - Usually expressed in GigaBytes

Input/Output

- Common *input devices* are the *keyboard* and the *mouse*

- Common *output devices* are *printers* and *monitors*
Secondary Storage

• Unlike main memory, secondary storage holds (large portions of) data and programs even if electrical power is not available.

• The most important types of secondary media are: flash drives, floppy (?), hard, and optical disks (CDs, DVDs).

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<th>Name</th>
<th>Value</th>
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<tbody>
<tr>
<td>kilobyte</td>
<td>$1024^{10} = 1.024 \cdot 10^{10}$</td>
</tr>
<tr>
<td>megabyte</td>
<td>$1024^{20} = 1.049 \cdot 10^{20}$</td>
</tr>
<tr>
<td>gigabyte</td>
<td>$1024^{30} = 1.074 \cdot 10^{30}$</td>
</tr>
<tr>
<td>terabyte</td>
<td>$1024^{40} = 1.100 \cdot 10^{40}$</td>
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<tr>
<td>petabyte</td>
<td>$1024^{50} = 1.126 \cdot 10^{50}$</td>
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<td>exabyte</td>
<td>$1024^{60} = 1.153 \cdot 10^{60}$</td>
</tr>
<tr>
<td>zettabyte</td>
<td>$1024^{70} = 1.181 \cdot 10^{70}$</td>
</tr>
<tr>
<td>yottabyte</td>
<td>$1024^{80} = 1.209 \cdot 10^{80}$</td>
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</table>
### Secondary Storage – an analogy

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<tr>
<th>Kilobyte</th>
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</tr>
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<tbody>
<tr>
<td>It is like having ...</td>
<td>Cost of a low-end HD TV set</td>
</tr>
<tr>
<td></td>
<td>1 million USD</td>
</tr>
</tbody>
</table>

<table>
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<tr>
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<th>1024 Kilobytes</th>
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<tbody>
<tr>
<td>It is like having ...</td>
<td>Annual salary of a not too famous pro. baseball player</td>
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<tr>
<td></td>
<td>1 million USD</td>
</tr>
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<table>
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<th>1024 Megabytes</th>
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<tbody>
<tr>
<td>It is like having ...</td>
<td>Personal fortune of Bill Gates (12B)</td>
</tr>
<tr>
<td></td>
<td>1000 million USD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terabyte</th>
<th>1024 Gigabytes</th>
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</thead>
<tbody>
<tr>
<td>It is like having ...</td>
<td>Size of the USA National Debt</td>
</tr>
<tr>
<td></td>
<td>1 trillion USD</td>
</tr>
</tbody>
</table>

### Communications

- Communication Devices enable microcomputers the ability to communicate with other computer systems across the globe
Communications

- The modem is the most widely used communication device
- Modems modify telephone communications into a form that can be processed by a computer
- Modems also modify computer output into a form that can be transmitted across standard telephone lines

Data

- Raw, unprocessed facts
- Processing creates information
- Stored electronically in files
  - Document Files
  - Worksheet Files
  - Database Files
  - Presentation Files
  - Video / Sound
Document Files

- Created by word processors to save documents such as memos, term papers, and letters

Worksheet Files

- Created by electronic spreadsheets to analyze things like budgets and to predict sales
Database Files

• Typically created by database management programs to contain highly structured and organized data.

Presentation Files

• Created by presentation graphics programs to save presentation materials. For example, a file might contain audience handouts, speaker notes, and electronic slides.
Connectivity, the Wireless Revolution, and the Internet

- **Connectivity**
  - Sharing of information
  - Wireless communication is becoming popular

- **Computer networks**
  - Connected communication system of computers
  - Largest network is the Internet

### World Internet Users - November 2007

- **Asia**: 462
- **Europe**: 346
- **North America**: 237
- **Latin Am / Caribbean**: 127
- **Africa**: 68
- **Middle East**: 34
- **Oceania / Australia**: 9

World Total: 1,292

Source: www.internetworldstats.com
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Discussion Questions (Page 1 of 2)

• Explain the five parts of an information system. What part do people play in this system?

• What is system software? What kinds of programs are included in system software?

• Define and compare basic and specialized application software. Describe some different types of basic applications. Describe some types of specialized applications.

Discussion Questions (Page 2 of 2)

• Describe the different types of computers. What is the most common type? What are the types of microcomputers?

• What is connectivity? How are the wireless revolution and connectivity related? What is a computer network? What is the Internet? What is the Web?