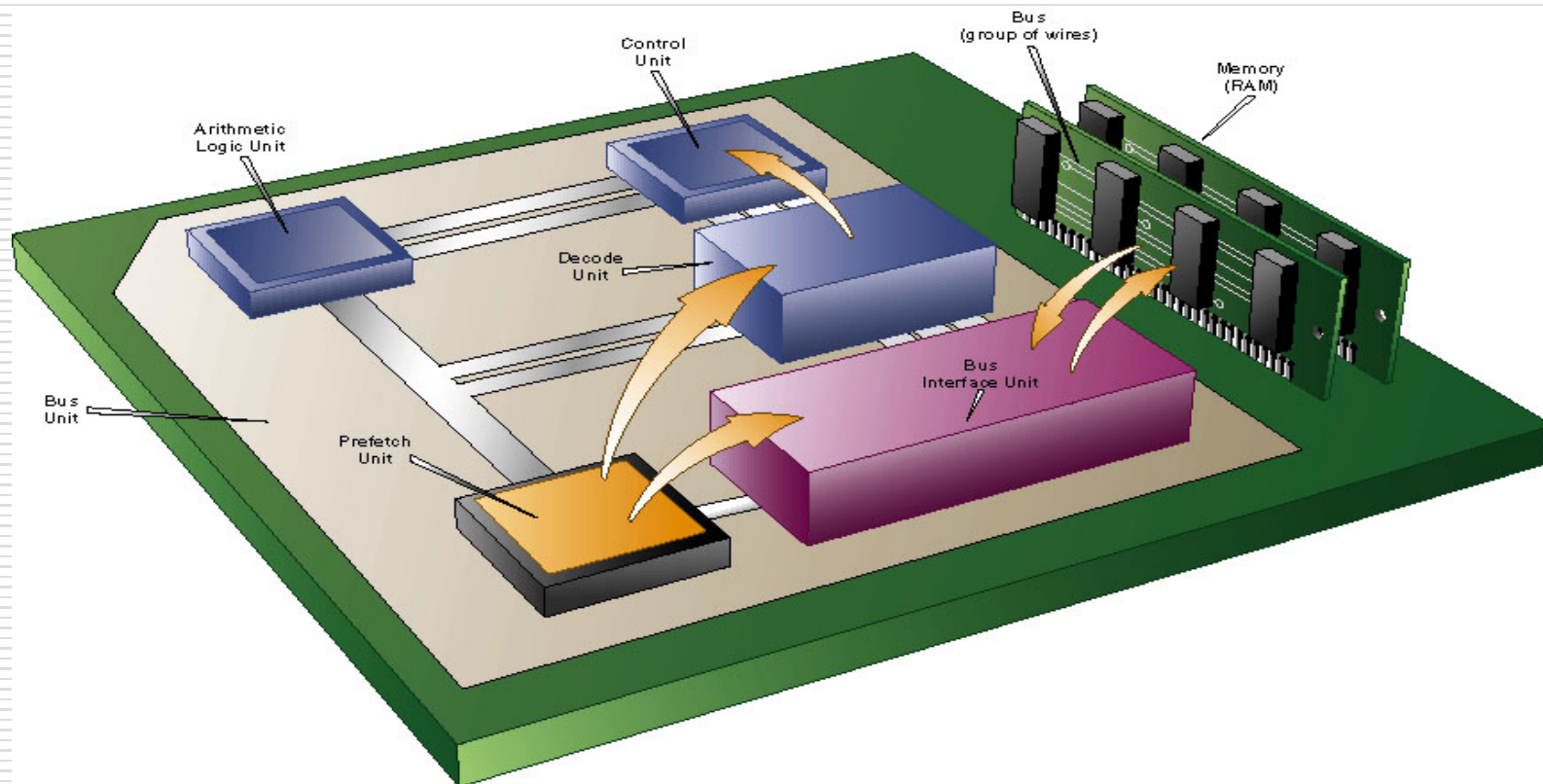


# Buses, Ports, and Peripherals

- ✓ Information travels between components on the motherboard through groups of wires called **system buses**, or just **buses**.



# Buses, Ports, and Peripherals

## ✓ Buses

- Typically have 32 or 64 wires
- Connect to storage devices in bays
- Connect to expansion slots
- Connect to external buses and ports

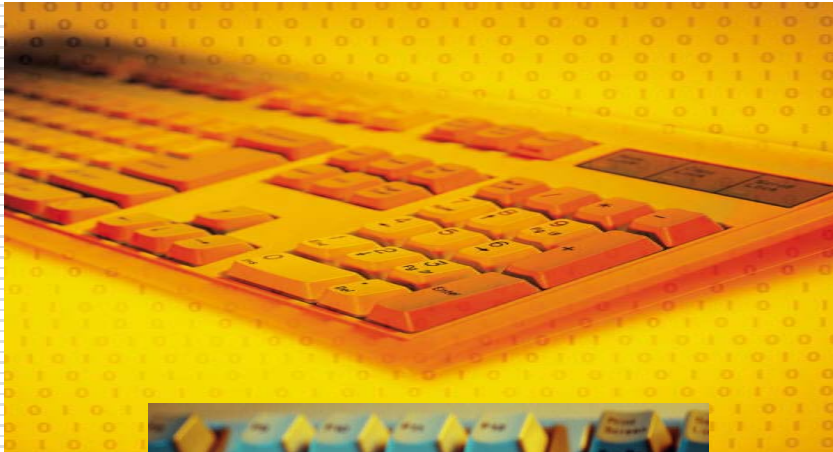
## ✓ Slots and ports

- Make it easy to add external devices, called **peripherals**.



# Input: From Person to Processor

## □ Keyboard



# Input: From Person to Processor

## □ Pointing Devices

Touch Screen



Graphics tablet



# Input: From Person to Processor

## □ Reading Tools

Pen Scanner



OMR



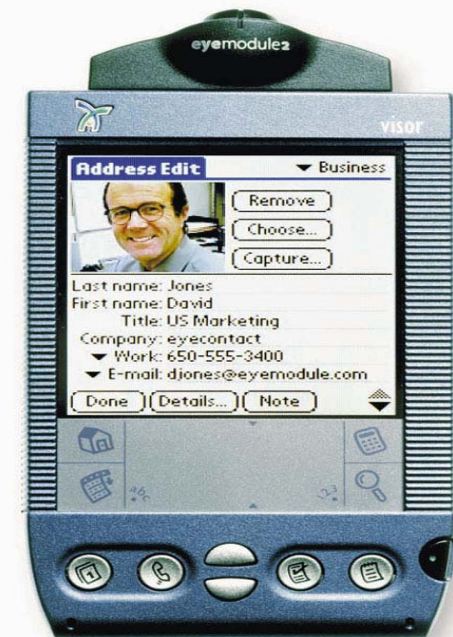
Barcode Reader



Handwriting Recognition SW

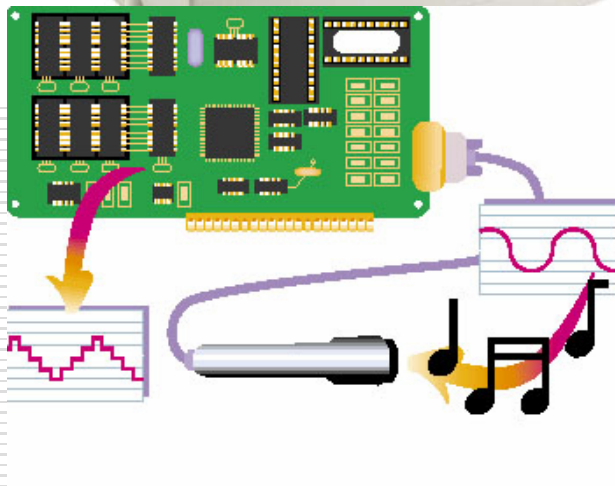


PDA



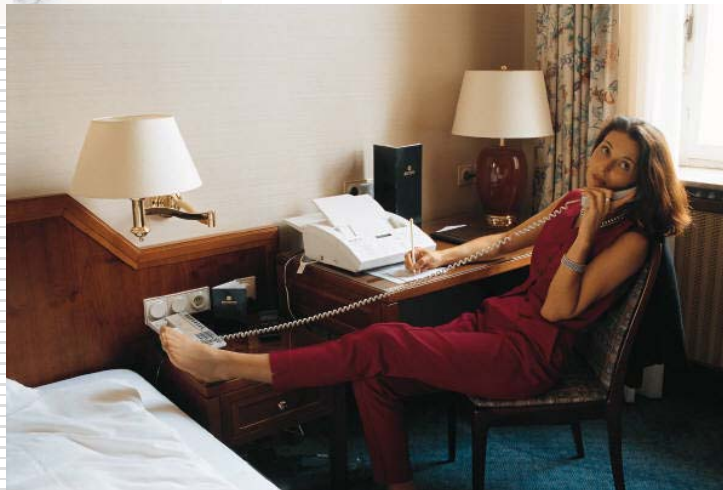
# Input: From Person to Processor

- Others

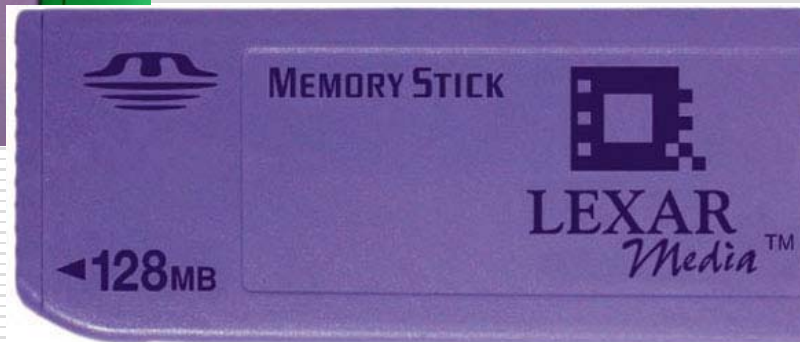




# Output: From Pulses to People



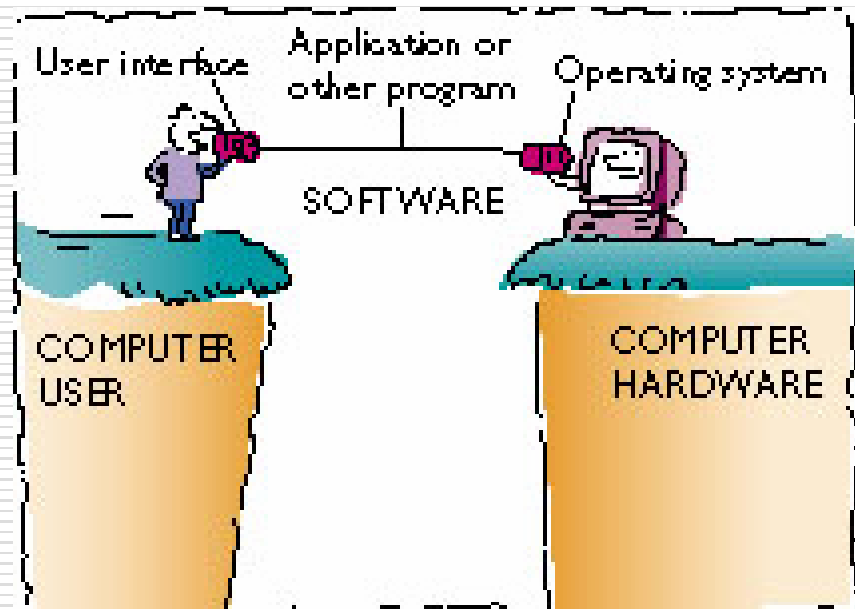
# Storage Devices: Input Meets Output





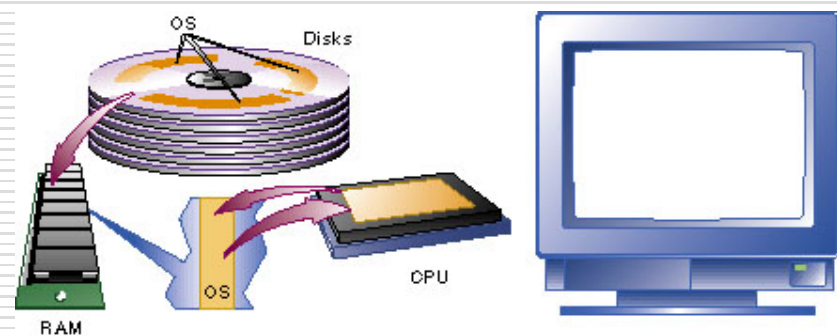
# Software: The Topology

- System Software
  - Operating System
  - Utility
  - Device Driver
- Compiler & Software Development Tools
- Application Software



# System Software: Operating System

- Supports multitasking
- Manages virtual memory
- Maintains file system
- Responsible for authentication and authorization
- DOS, Windows, Mac OS, Unix, Linux



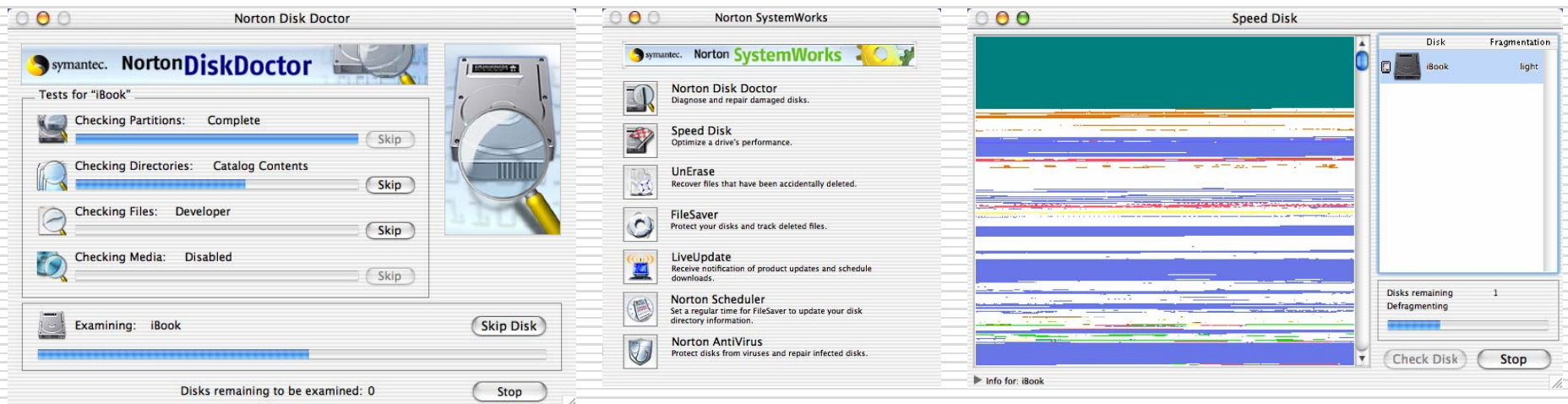
# System Software: Utility Programs

- Serve as tools for doing system maintenance and repairs that aren't automatically handled by the operating system
- Make it easier for users to:
  - Copy files between storage devices
  - Repair damaged data files
  - Translate files so that different programs can read them
  - Guard against viruses and other potentially harmful programs (as described in the chapter on computer security and risks)
  - Compress files so they take up less disk space
  - Perform other important, if unexciting, tasks



# System software: Utility Programs

- Symantec Norton Utilities: recovering damaged files, repairing damaged disks, and improving disk performance.



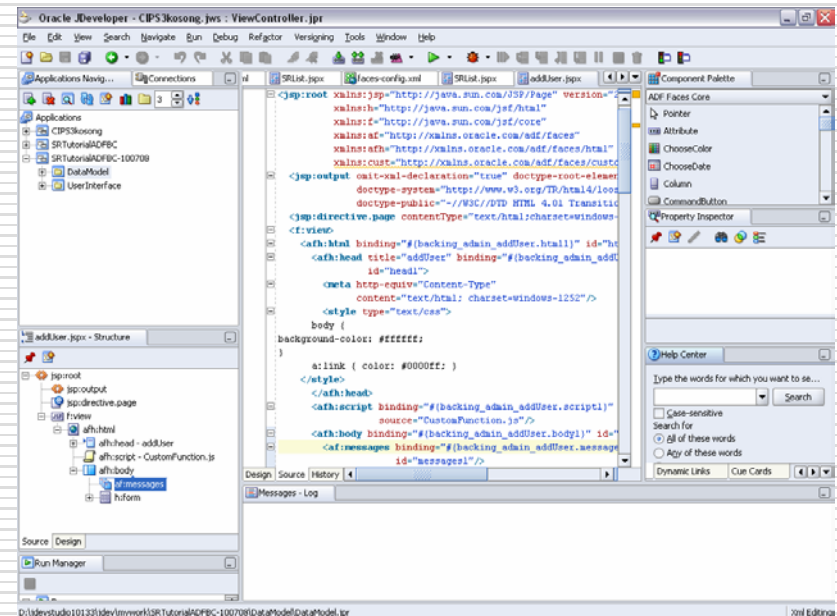
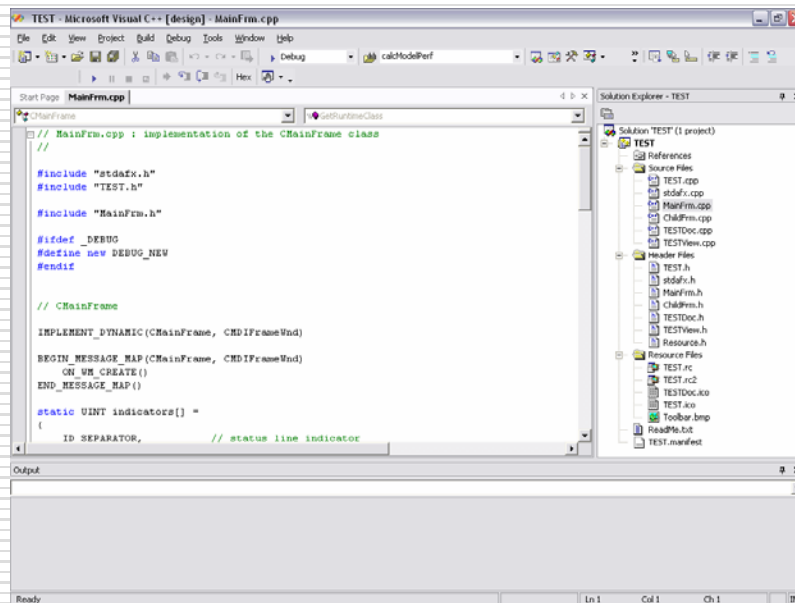
# Language & Compiler

## □ The Language of Computers

- Machine Language: numeric codes that represent data (& instructions)
- Low-level language
  - Assembly
- High-level language: falls between machine language and natural human language
  - Pascal, C, C++, Java, C#, Fortran, Basic, Ada, Prolog, LISP, Python, Perl
  - Compilers translate high level language into machine language.

# Software Development Tools

- Environment for building a program: editor, compiler, library
- MS Visual Studio, JDeveloper, Eclipse, Gambas, etc





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# End User Applications

- ❑ Word processing and desktop publishing
- ❑ Spreadsheets and other number-crunching applications
- ❑ Databases
- ❑ Computer graphics and digital image processing
- ❑ Digital audio, digital video, and multimedia
- ❑ Entertainment
- ❑ Customized problem-solving (MIS, ERP, CRM)
- ❑ Artificial intelligence