

Chapter INT 1

INTRODUCTION TO THE WORLD OF COMPUTERS

Computers have an impact on all of our lives today. Unlike the past, you don't have to have a computer science degree to use one. Because of advances in computers, most people can afford one or have access to one and they can use them to some degree. As college graduates, you will be expected to know more about computers and be able to use them more effectively than the average person.

Four Basic Computer Terms

Computer system operations can be divided into four areas. There are three main processes that a computer goes through and in this order.

- (1) Input is what is supplied to a computer process.*
- (2) Processing takes the input and converts it t*
- (3) Output.*

Storage is any area that holds data going to or coming from the computer.

The author gives an analogy between a computer system and a stereo system.

Computer System

- Computer
 - Executes instructions and communicates with
- Peripherals
 - Devices that perform the I/O (input/output).

A computer system consists of a computer and its peripherals.

The computer executes instructions that tell it what to do. It also communicates with peripherals that perform the I/O or input/output.

Typical Microcomputer System

If you look at a typical microcomputer system, the actual computer is in the system unit. A system also contains a variety of peripherals and storage medium.

Some of the devices here have been designated as input or output. The mouse, for example, is an input device. But, it isn't always that simple.

Take the printer. Is that an input or output device? What about when the printer runs out of paper or has a jam, doesn't it let you know that something is wrong?

What about the indicator lights on a keyboard? Are they output?

Some of their names can be confusing. The 3.5" diskette is also called a floppy disk, but if you hold one, it isn't floppy. Then there is a hard disk. Why is hard? When we get to the chapter on storage we will see why.

Basic Parts of the Computer

- CPU
- Memory

At a minimum a computer consists of the CPU and memory.

The CPU or central processing unit executes program instructions and works with data. The instructions and data are stored in memory.

Data, Information, and Programs

- Data
 - Raw
 - Unorganized facts
 - Information
 - Data in meaningful form
- Programs
 - Instructions: Machine Language
 - Programming Language
 - Converted to machine language

The CPU uses two items, data and programs.

Data is raw, unorganized facts and it can exist in many forms.

Information is data that has been processed into a meaningful form. For example, the phone book is name, address, and phone number data that has been organized alphabetically. Your test scores are raw data. When I summarized them by grade, I turned that data into information.

Programs are sets of instructions that tell the computer what to do. The language of these instructions is machine language and it varies with the CPU type. Higher level programming languages such as Basic and Java are converted to machine language before they are used.

Computer Storage

- Primary (Internal, Main)
 - Memory
- Secondary (External)
 - Peripherals

A CPU accesses data and instructions from memory which is sometimes called internal storage, main storage, or main memory.

It inputs and outputs data and instructions to and from memory using secondary or external storage which is your peripherals.

Hardware and Software

- Hardware
 - CPU
 - Peripheral Devices
- Software
 - Systems Software
 - Applications Software

Hardware refers to the actual machinery that makes up a computer system. Software refers to the programmed instructions that direct the operation of the hardware.

The basic operation of a computer system is controlled by the systems software which is the operating system and related programs. It controls the running of the applications software.

Windows 2000 Professional is the systems software that we are running at Clemson. Examples of applications software are Netscape Navigator and Microsoft Word.

Organizing Data and Programs

- Documents
- Folders
- Fields
- Records
- Files
- Databases

There are many ways to organize data on a computer system. Related documents (or files) are stored in a folder.

A field is a group of characters that represents one type of data.

Related fields are stored in a record.

Related records are stored in a file.

Related files may makeup a database.

Microcomputers

- Micros
 - Micro computer chip

Computers come in a variety of classifications although these classes are somewhat fuzzy and overlap each other.

Microcomputers are based on a microcomputer chip.

Microcomputers

- Sizes
 - Desktop or Tower
 - Portable
 - Laptop, Notebook, Sub notebook, & Palmtop
- Microcomputers come in a variety of sizes and capabilities.*

Microcomputers

- PC Compatible or Macintosh
- Network
 - Diskless

*The most popular micros are either PC Compatible or Macintosh.
Network computers are designed to run only on a network and are diskless.*

Other Computers

- Midrange or Minicomputer
 - Multi-user
- Mainframe
 - Developed batch/production capability
- Supercomputer
 - Super Large, Super Fast, Super Expensive

*Midrange or minis are medium sized and are multi-user.
Mainframes are also multi-user but have an advanced batch and production capability.
Supercomputers are very large, fast, and expensive.*

Computers and Society

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Benefits <ul style="list-style-type: none"> — Speed — Accuracy — Consistency | <ul style="list-style-type: none"> • Problems <ul style="list-style-type: none"> — Health Concerns — Privacy — Workforce Displacement |
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*Computers have brought many benefits and problems to society.
They are able to do work tasks quickly, accurately, and consistently. They don't get board doing the same thing over and over.
There are health concerns about screen radiation and repetitive motion injuries.
Access to unauthorized information is always a worry.
Many times, the introduction of automation causes a displacement in the workforce and it sometimes takes a while for it to adjust.*

Homework

Use the Internet to find out:
What type of mainframe computer does Clemson have?

End of Chapter INT1

Key Terms

Applications software. Programs that help with the type of work that people acquire a computer system to do. See systems software.
Central processing unit (CPU). The piece of equipment, also known as the computer, that interprets and executes program instructions and communicates with peripheral devices.
Computer. See central processing unit.

Computer system. A collection of elements that includes the computer and components that contribute to making it a useful tool. Includes the computer, its peripheral equipment, documentation, and storage media.

CPU. See central processing unit.

Data. A collection of raw, unorganized facts.

Database. A collection of related files.

Document. Any single piece of work that's created with software and, then, given a name by which it may be accessed.

External storage. See secondary storage.

Field. A collection of related characters.

File. A collection of related records.

Folder. A container for documents.

Hardware. Physical equipment in a computing environment, such as a computer and its peripheral devices.

Information. Data that have been processed into a meaningful form.

I/O. Input/Output.

Input. What is supplied to a computer process.

Input device. Equipment used to supply materials going to the computer.

Internal storage. See primary storage.

Machine-readable. Any form that represents data so that computer equipment can read them.

Mainframe. A large, transaction processing or batch processing oriented computer.

Memory. See primary storage.

Microcomputer. A term that refers to either a microcomputer system or the microprocessor (CPU) chip within a microcomputer system.

Midrange computer. An intermediate-sized and medium-priced computer.

Output. The results of a computer process.

Output device. Equipment used to accept materials coming from the computer.

PC. See personal computer.

PC compatible. A personal computer based on Intel microprocessors or compatible chips whose design is a descendent of the original IBM PC.

Peripheral equipment. The devices that work with the computer and perform the I/O.

Personal computer (PC). A microcomputer system designed to be used by one person at a time.

Primary storage. Also known as memory, this section of the computer system temporarily holds data and program instructions awaiting processing, intermediate results, and processed output.

Processing. The conversion of input to output.

Productivity software. Computer programs, such as word processors and spreadsheets, designed to make workers more productive at their jobs.

Program. A set of instructions that causes the computer system to perform specific actions.

Programmer. A person who writes computer programs.

Programming language. A set of rules or a language used to write computer programs.

Record. A collection of related fields.

Secondary storage. Storage on media such as disk and tape that supplements memory. Also called external storage.

Software. Computer programs.

Storage media. Objects that store computer-processed materials.

Storage. An area that holds materials going to or coming from a computer.

Supercomputer. The fastest most expensive type of computer.

Systems software. Background programs, such as the operating system, that enable applications program to run on a computer system's hardware.