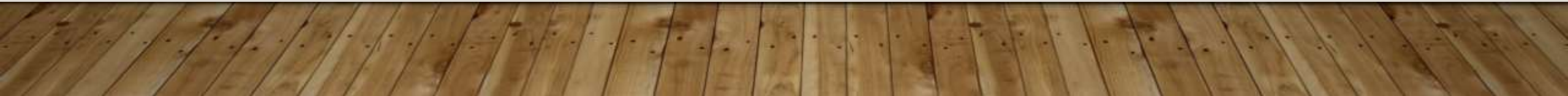


1

INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY

WEEK 2 : TYPES OF COMPUTERS

LECTURE 04



2

COMPUTERS TO FIT EVERY NEED

- Six basic categories of computers
 - Embedded computers
 - Mobile devices
 - Personal computers
 - Midrange servers
 - Mainframe computers
 - Supercomputers

EMBEDDED COMPUTERS

- Embedded computer: Embedded into a product and designed to perform specific tasks or functions for that product
- Cannot be used as general-purpose computers
- Often embedded into:
 - Household appliances
 - Thermostats
 - Sewing machines
 - A/V equipment: data projectors, wireless microphones, powered speakers
 - Cars: ignition, security and audio systems.



MOBILE DEVICES

- Mobile device: A very small device with some type of built-in computing or Internet capability
- Typically based on cellular phones
- Examples:
 - Smart phones
 - Smart watches
 - Handheld gaming devices
 - Portable digital media players



PERSONAL COMPUTERS/DESKTOP PCS

- Personal computer: a computer system designed to be used by one person at a time
 - Also called a microcomputer
 - Can be desktop or portable computers
- Desktop PCs: fit on or next to a desk
 - Can use tower case, desktop case, or all-in-one
 - Can be PC-compatible or Macintosh
 - Not designed to be portable

FIGURE 1-15
Desktop PCs.



PORTABLE PCS

- Notebook (laptop) computers
 - Typically use clamshell design
- Tablet PCs
 - Can be slate
 - tablets or
 - convertible

✓ **FIGURE 1-16**
Notebook and
tablet PCs.



NOTEBOOK COMPUTER



SLATE TABLET PC



CONVERTIBLE TABLET PC

PORTABLE PCS

- Handheld computers
 - Size of a paperback book or pocket calculator
 - Some include phone capabilities
 - Ultra Mobile Personal Computer (UMPC): Fully-functioning handheld



SMART PHONE CAPABILITIES
Some handheld computers can also perform the functions of a smart phone.



SLIDING KEYBOARDS
UMPCs typically have a sliding keyboard for easier input.



FIGURE 1-17
Handheld computers.

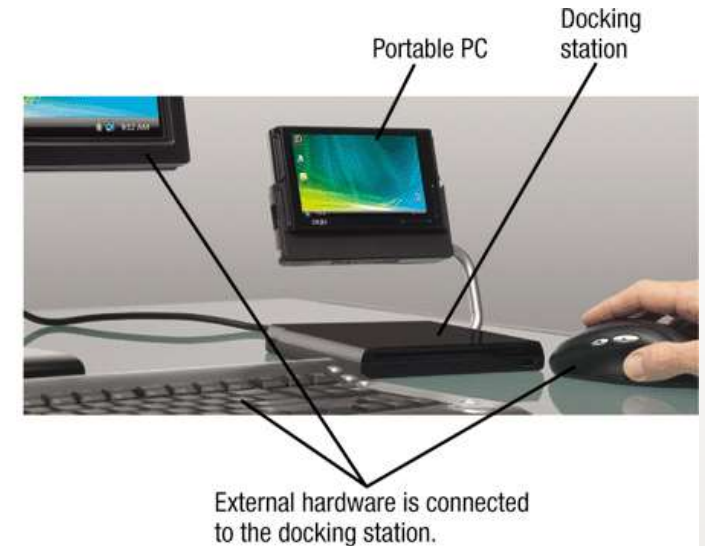
PORTABLE PCS

- Most include wireless networking capabilities
- Can synch (share information) with a desktop computer as needed
- Can use a docking station or notebook stand as needed



SYNCHING A HANDHELD AND NOTEBOOK PC

The photos stored on the handheld computer are being transferred (via Bluetooth wireless technology) to the notebook computer.



DOCKING STATIONS

Once a portable PC is connected to a docking station, the monitor and other hardware connected to the docking station can be used.

FIGURE 1-18
Synching and docking a handheld PC.

THIN CLIENTS AND INTERNET APPLIANCES

- Thin client or network computer (NC): PC designed to access a network for processing and data storage
 - Lower cost and easier maintenance
 - Limited or no local storage
 - Not able to function as a computer if network is down
- Internet appliance: Specialized network computer designed for Internet access and/or e-mail exchange
 - Often set-top boxes
 - Can include Internet-enabled gaming consoles

THIN CLIENTS AND INTERNET APPLIANCES



THIN CLIENT



SET-TOP BOX INTERNET APPLIANCE



PORTABLE INTERNET APPLIANCE

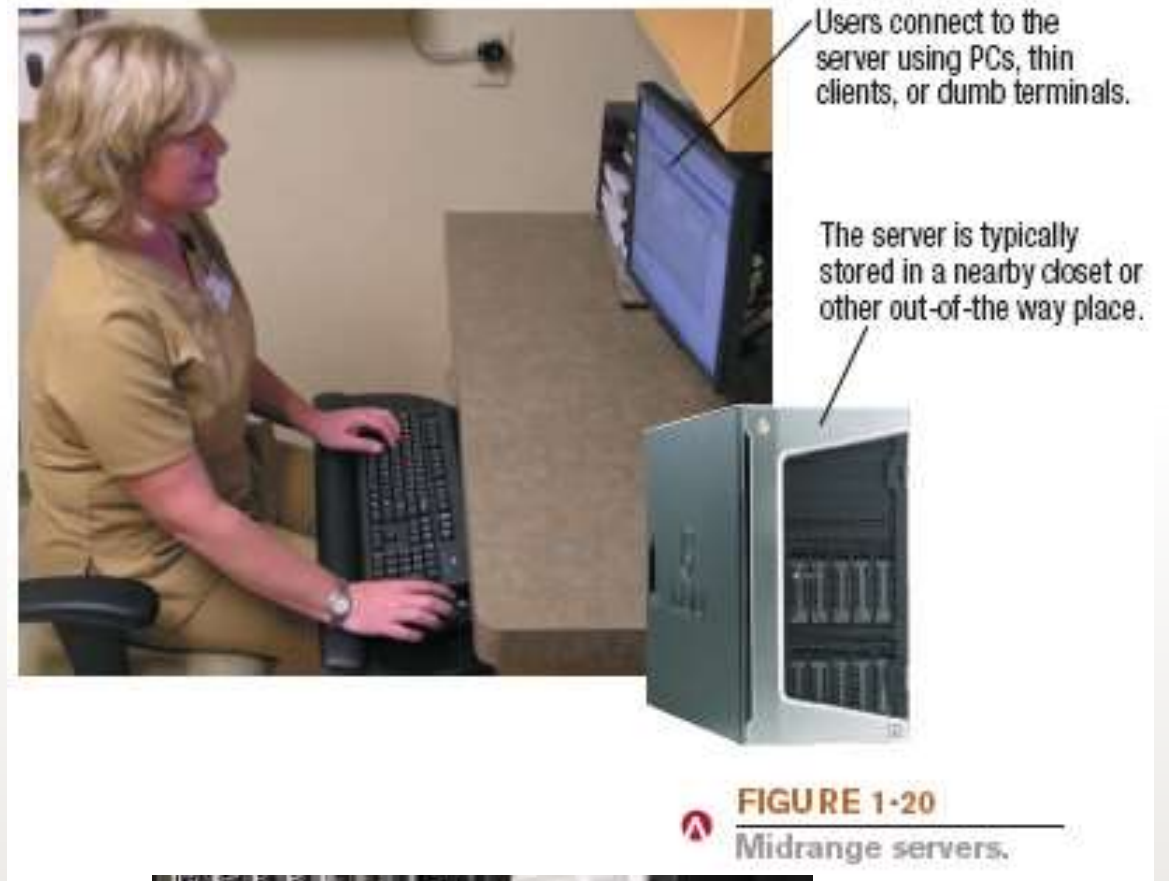


INTERNET-ENABLED GAMING CONSOLE

FIGURE 1-19
Thin clients and Internet appliances.

MIDRANGE SERVERS

- Midrange server: A medium-sized computer used to host programs and data for a small network
 - Users connect via a network with a computer, thin client, or dumb terminal
 - May consist of a collection of individual circuit boards called blades (blade servers)
 - Medical and dental offices, school, labs, home and small business.



MAINFRAME COMPUTERS

- Mainframe computer: Powerful computer used by several large organizations to manage large amounts of centralized data
 - Standard choice for large organizations, hospitals, universities, large businesses, banks, government offices
 - Located in climate-controlled data centers and connected to the rest of the company computers via a network
 - bulk data processing for tasks such as censuses, industry and consumer statistics, enterprise resource planning, and large-scale transaction processing.
 - Larger, more expensive, and more powerful than midrange servers
 - Usually operate 24 hours a day
 - Also called high-end servers or enterprise-class servers

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MAINFRAME COMPUTERS



SUPERCOMPUTERS

- Supercomputer: Fastest, most expensive, most powerful type of computer
 - Generally run one program at a time, as fast as possible
 - Commonly built by connecting hundreds of smaller computers, supercomputing cluster
 - Used for space exploration, missile guidance, satellites, weather forecast, oil exploration, scientific research, complex Web sites, decision support systems, 3D applications, etc.
- Grid computing: Using the unused processing power of a large number of computers to work together on a single task

SUPERCOMPUTERS

FIGURE 1-22
The Blue Gene/L supercomputer.
Supercomputers are used for specialized situations in which immense processing speed is required.



BLUE GENE/L SUPERCOMPUTER
This supercomputer is installed at Lawrence Livermore National Laboratory.



BLUE GENE/L CIRCUIT BOARDS
Each rack holds several circuit boards; each circuit board contains four processors.

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