

Introduction To Computing



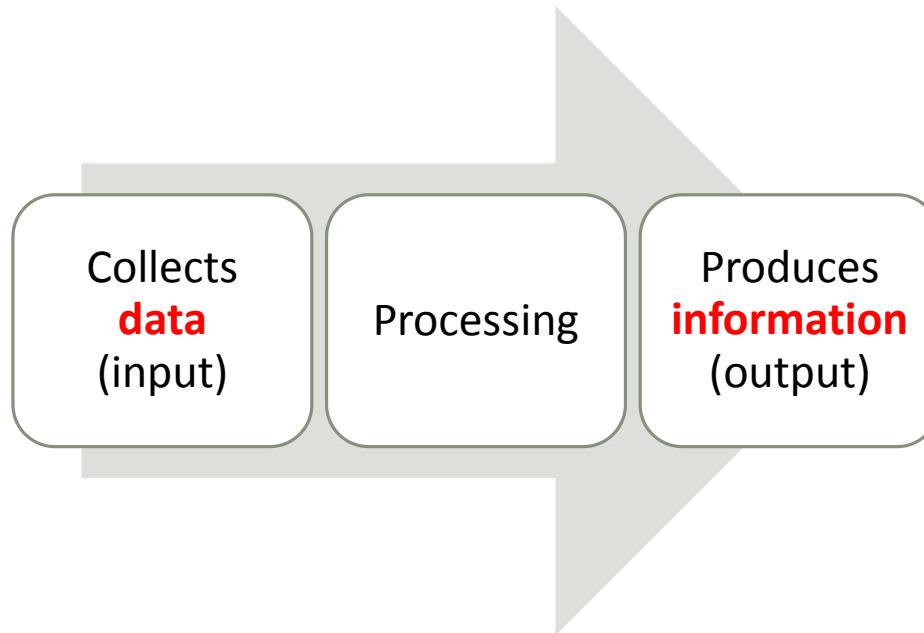
A World of Computers

Computers are everywhere



What Is a Computer?

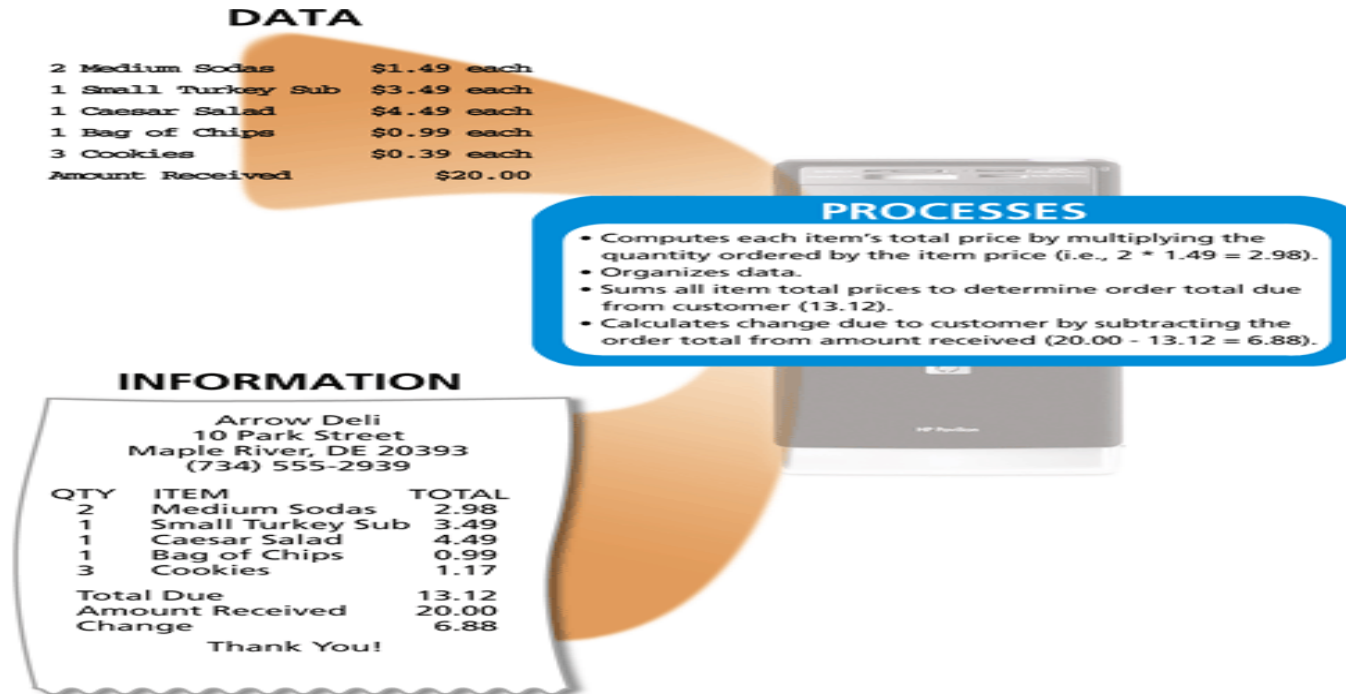
A **computer** is an electronic device, operating under the control of instructions stored in its own memory



Information Processing Cycle



What is a Computer?



Examples:

- Google
- Traffic light
- Camera
- TV remote control



The Components of a computer

Input Device

- Allows you to enter data and instructions into a computer

Output Device

- Hardware component that conveys information to one or more people

System Unit

- Case that contains the electronic components of the computer that are used to process data

Storage Device

- Holds data, instructions, and information for future use

Communications Device

- Enables a computer to send and receive data, instructions, and information to and from one or more computers or mobile devices



The Components of a Computer



The Components of a Computer

What is an **input device**?

- **Hardware** used to enter **data** and instructions into a computer e.g, keyboard, mouse, microphone, scanner and web cam etc.



The Components of a Computer

What is an **output device**?

- Hardware that conveys information to one or more people e.g. printer, monitor and speakers etc.



The Components of a Computer

What is the **system unit**?

- Case containing Electronic components used to process data.



The Components of a Computer

What are two main components on the **motherboard**?

Central Processing Unit (CPU)

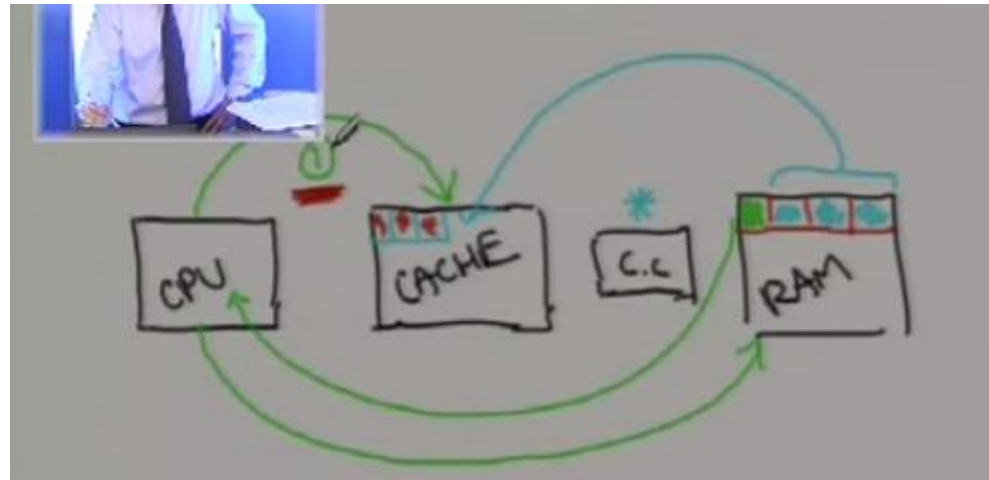
Also called a **processor**.

The electronic component that interprets and carries out the basic instructions that operate the computer.

Memory

Consists of electronic components that store instructions waiting to be executed and data needed by those instructions.





The Components of a Computer

What is storage?

- **Holds** data, instructions, and information for future use

Storage media

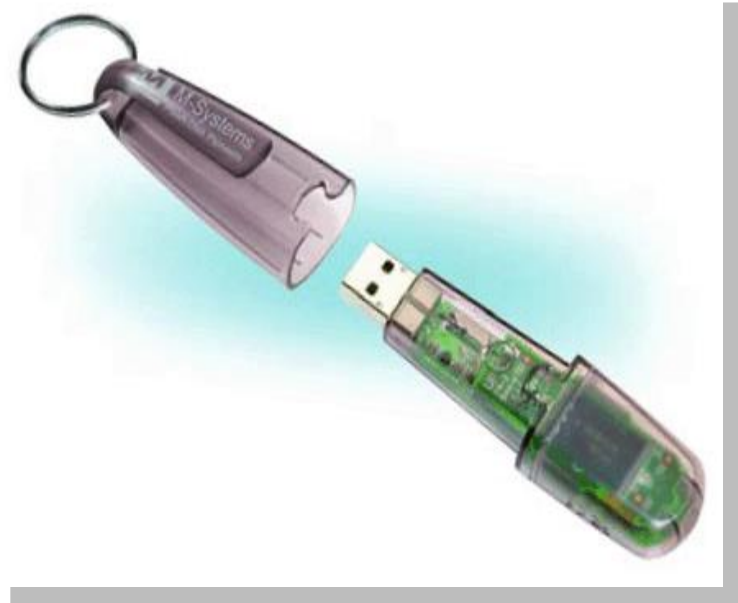
Physical material on which data, instructions, and information are stored e.g. USB flash drive, hard disks, optical discs and memory cards..



The Components of a Computer

What is a USB flash drive?

- Provides much greater storage capacity than a floppy disk
- Portable storage device small and lightweight enough to be transported on a keychain or in a pocket.



The Components of a Computer

What is a hard disk?

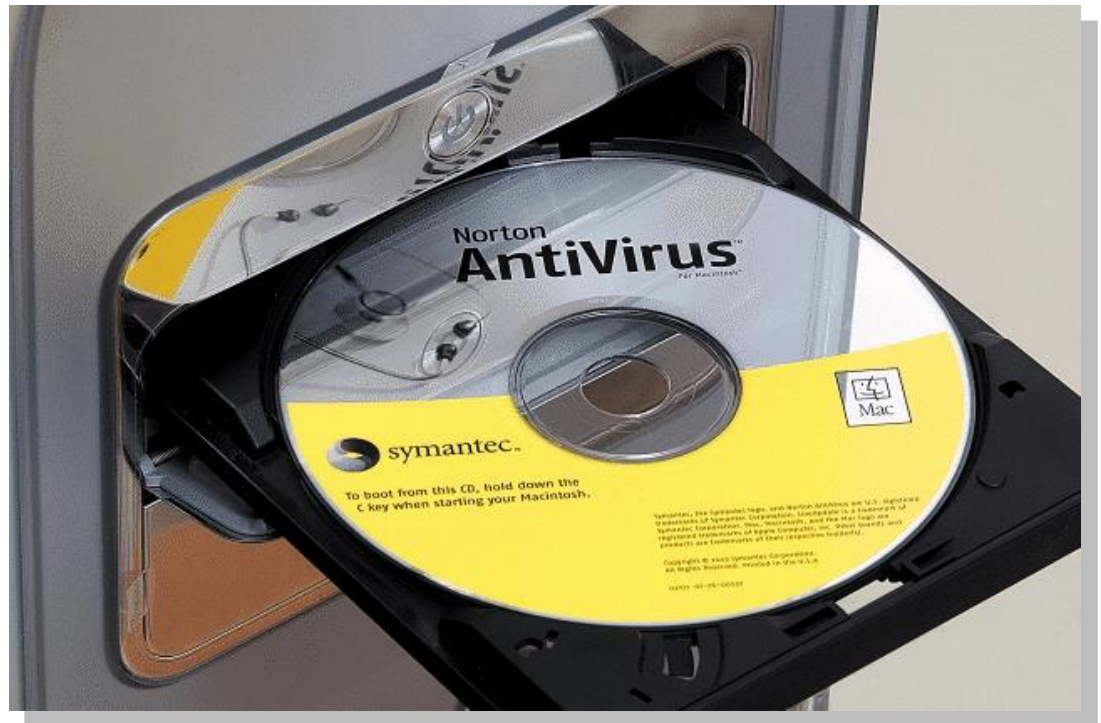
- Provides greater storage capacity than a floppy disk or USB flash drive
- Most are housed inside of the system unit



The Components of a Computer

What is a optical disc?

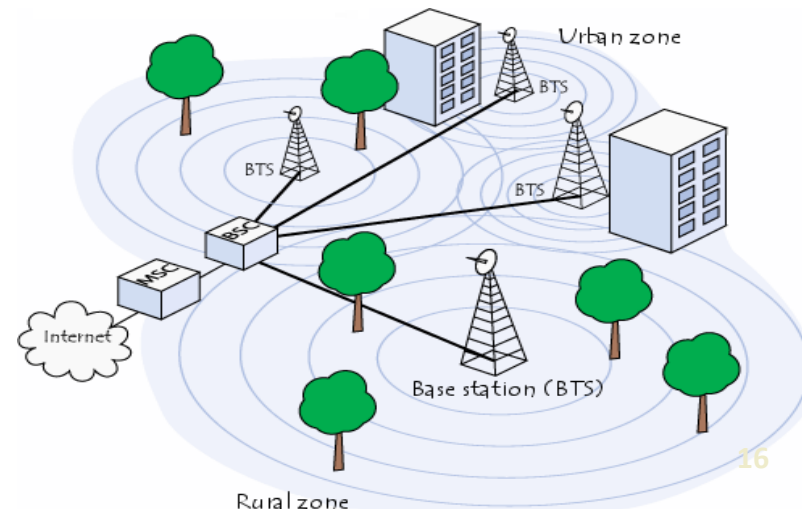
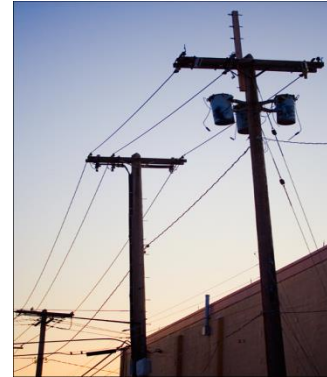
- Flat, round, portable metal disc e.g. CDs, DVDs.



The Components of a Computer

What is a **communications device**?

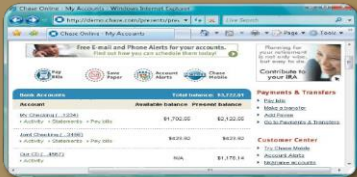
- Hardware component that **enables** a computer to send and receive data, instructions and information
- **Occurs** over cables, telephone lines, cellular networks, satellites, and other **transmission media**



Computer Applications in Society



Education



Finance



Government



Health Care



Computer Applications in Society



Science



Publishing



Travel

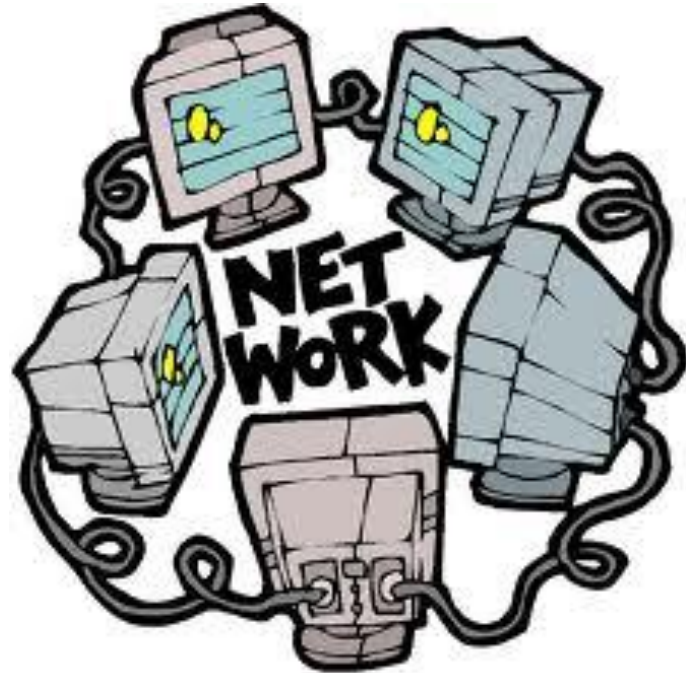


Manufacturing



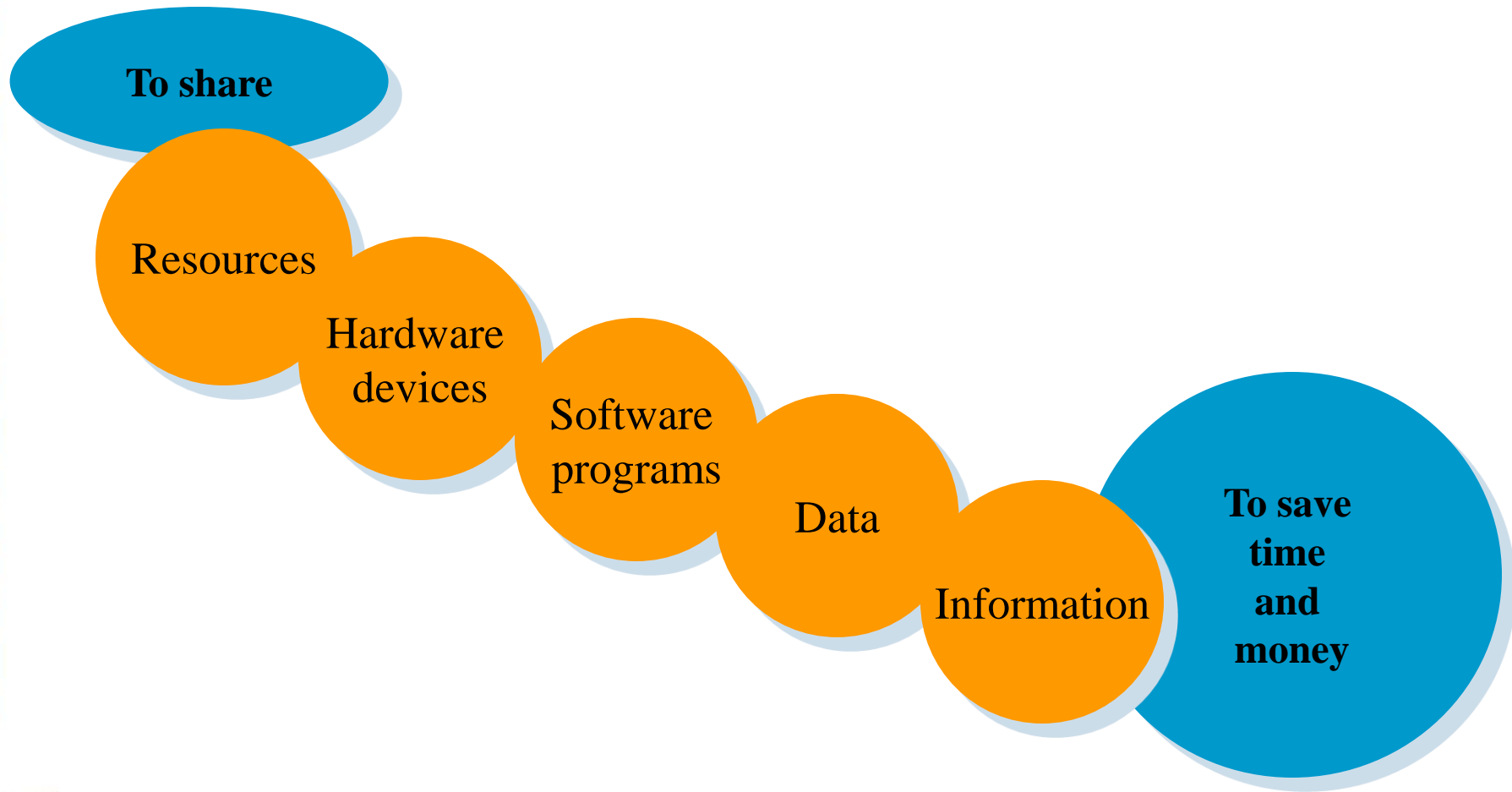
Networks and the Internet

A **network** is a collection of computers and devices connected together through transmission media.



Networks and the Internet

What are the reasons to network?



What is a server?

Networks and the Internet

- A server manages the resources on a network
- Clients access the resources on the server



Networks and the Internet

What is the **Internet**?

- Worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals



Networks and the Internet

What is the **Web**?

- **Billions of documents, called **Web pages**, available to anyone connected to the Internet**

A **Web site** is a collection of related Web pages

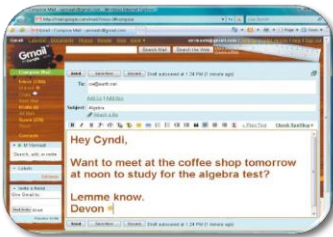
A **Web page** contains text, graphics, sound, video, and links to other Web pages

You can share information by creating Web pages or posting photos on a **photo sharing community**



Networks and the Internet

People use the Internet for a variety of reasons:



Communicate



**Research and
Access Information**



Shop



Bank and Invest



Online Trading



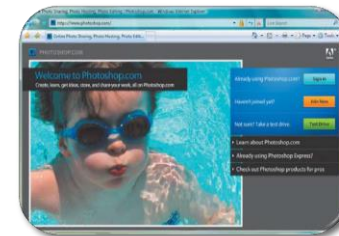
Entertainment



Download Music



Share Videos



Web Application



Computer Software

Software, also called a **program**, consists of series of instructions that tells the computer what tasks to perform and how to perform them



System Software

- Operating system
- Utility program



Application Software



Computer Software

What is **system software**?

- **Programs that *control* or *maintain* the operations of the computer and its devices**

Operating System (OS)

is a set of programs that coordinates all activities among computer hardware devices and allows users to run application software

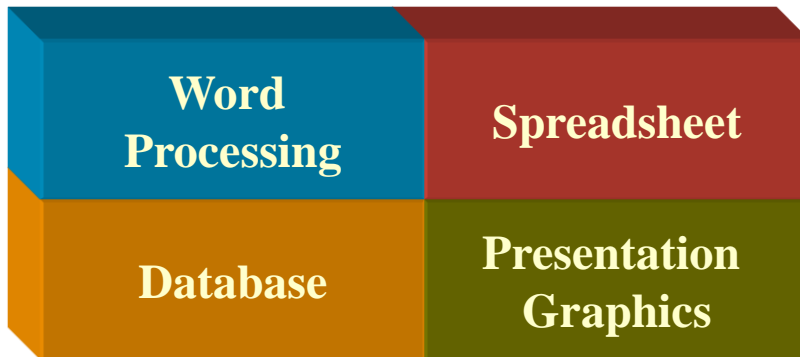
Utility Programs allow the user to perform **maintenance-type** tasks usually related to managing a computer, its devices or its programs



Computer Software

What is **application software**?

- Programs that perform specific tasks for users



Computer Software

A programmer develops software or writes the instructions that direct the computer to process data into information

```
Public Class frmPayrollInformation

    Private Sub btnCalculatePay_Click(ByVal sender As System.Object, ByVal e As System.
EventArgs) Handles btnCalculatePay.Click
        'This procedure executes when the user clicks the
        'Calculate Pay button. It calculates regular
        'and overtime pay and displays it in the window.

        ' Declare variables
        Dim strHoursWorked As String
        Dim strHourlyRate As String
        Dim decHoursWorked As Decimal
        Dim decHourlyRate As Decimal
        Dim decRegularPay As Decimal
        Dim decOvertimeHours As Decimal
        Dim decOvertimePay As Decimal
        Dim decTotalPay As Decimal

        ' Calculate and display payroll information
        strHoursWorked = Me.txtHoursWorked.Text
        strHourlyRate = Me.txtHourlyRate.Text
        decHoursWorked = Convert.ToDecimal(strHoursWorked)
        decHourlyRate = Convert.ToDecimal(strHourlyRate)

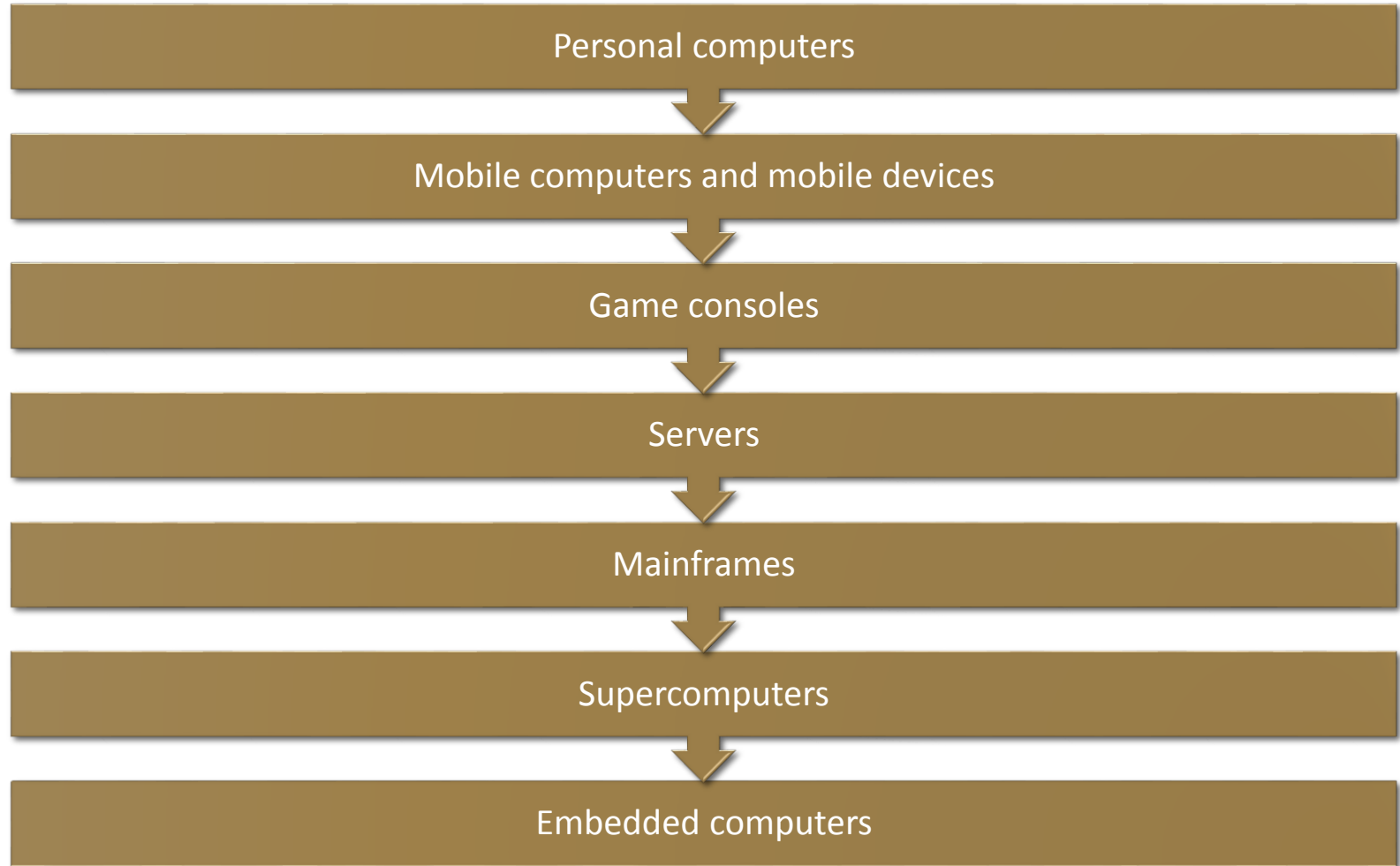
        If decHoursWorked > 40 Then
            decRegularPay = 40 * decHourlyRate
            Me.txtRegularPay.Text = decRegularPay.ToString("C")
            decOvertimeHours = decHoursWorked - 40
            decOvertimePay = (1.5 * decOvertimeHours) * decHourlyRate
            Me.txtOvertimePay.Text = decOvertimePay.ToString("C")
            decTotalPay = decRegularPay + decOvertimePay
            Me.txtTotalPay.Text = decTotalPay.ToString("C")
        Else
            decRegularPay = decHoursWorked * decHourlyRate
            Me.txtRegularPay.Text = decRegularPay.ToString("C")
            Me.txtOvertimePay.Text = "$0.00"
            Me.txtTotalPay.Text = decRegularPay.ToString("C")
        End If
    End Sub
End Class
```

The screenshot shows a Windows application window titled "Payroll Information". It contains several text boxes for input and output, and a button labeled "Calculate Pay". The input fields are: "Employee Name" with the value "Robert Terrell", "Hours Worked" with the value "42", and "Hourly Rate" with the value "18.00". The output fields are: "Regular Pay" with the value "\$720.00", "Overtime Pay" with the value "\$54.00", and "Total Pay" with the value "\$774.00". A mouse cursor is pointing at the "Calculate Pay" button.

Field	Value
Employee Name	Robert Terrell
Hours Worked	42
Hourly Rate	18.00
Regular Pay	\$720.00
Overtime Pay	\$54.00
Total Pay	\$774.00



Categories of Computers



Personal Computers

A **personal computer** can perform all of its input, processing, output, and storage activities by itself

Two popular architectures are the PC and the Apple



Mobile Computers and Mobile Devices

Mobile Computer

Personal computer you can carry from place to place

Examples include **notebook computers, laptop computers, and Tablet PCs**

Mobile Device

Computing device small enough to hold in your hand

Examples include **smart phones, PDAs, handheld computers, portable media players, and digital cameras**



Mobile Computers and Mobile Devices



Notebook computer



Tablet PC



Smart phone



PDA



Mobile Computers and Mobile Devices



Handheld computer



Portable media player



Digital camera



Game Consoles

A **game console** is a mobile computing device designed for single-player or multiplayer video games



Servers

- ❑ A **server** controls access to the hardware, software, and other resources on a network
- ❑ Provides a centralized storage area for programs, data, and information



Mainframes

A **mainframe** is a large, expensive, powerful computer that can handle hundreds or thousands of connected users simultaneously



Supercomputers

- ❑ A **supercomputer** is the fastest, most powerful computer
- ❑ Fastest supercomputers are capable of processing more than one million instructions in a single second



Embedded Computers

An **embedded computer** is a special-purpose computer that functions as a component in a larger product



Elements of an Information System

Hardware

Software

Data

People



Elements of an Information System

How the Elements of an Information System in an Enterprise Might Interact

Step 1

IT staff (people) develop processes (procedures) for recording checks (data) received from customers.



Step 2

Employees (people) in the accounts receivable department use a program (software) to enter the checks (data) in the computer.



Step 3

The computer (hardware) performs calculations required to process the accounts receivable and stores the results on storage media such as a hard disk (hardware).



Step 4

Customer statements, the information, print on a corporate printer (hardware).



Words you need to know

Instruction

Execute

Recourse

Memory

Provide

Individual

Device

Capacity

Maintain

Collect

Portal

Coordinate

Process

Lightweight

Run

Component

Transport

Architecture

Collect

Chain

Embedded

Hold

Metal

Interact

Convey

Enable

Element

Interpret

Occur

Function

Carry

Cellular

Capable

Consist

Share

Simultaneously

Allow

Expensive

Handle

Interact

Enterprise

