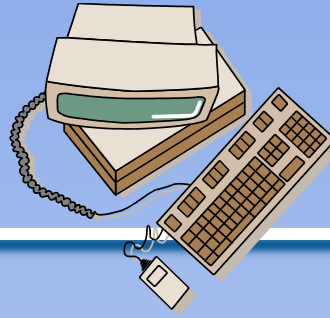


# IT

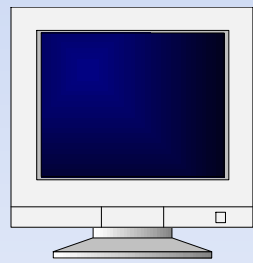
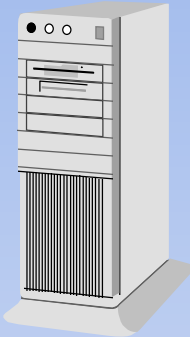
---

## Hardware & Software

# Hardware

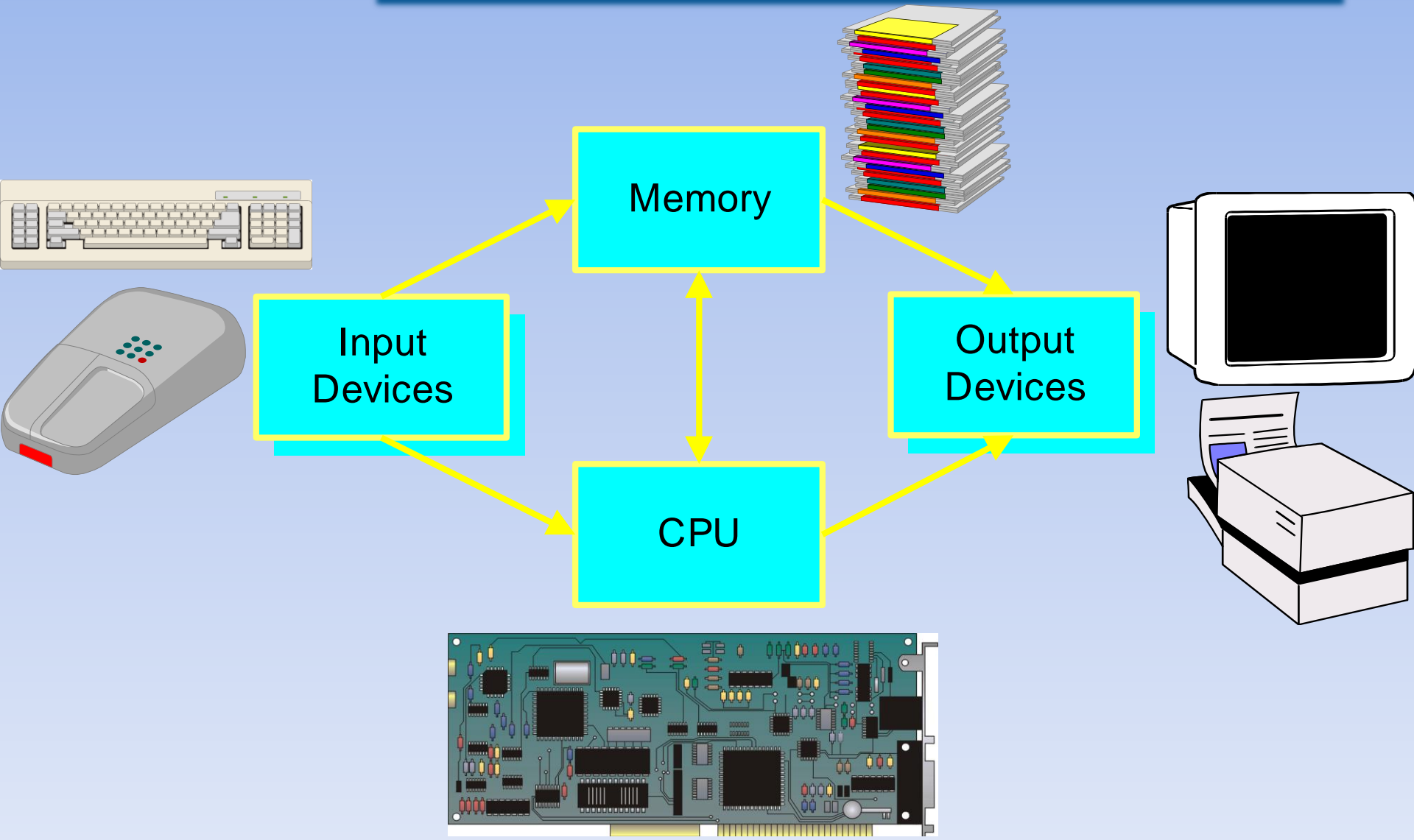


- Four components of a computer system:
  - CPU - central processing unit
    - Makes decisions, performs computations, and delegates input/output requests
  - Memory: Disk Drives, CD drives, USB flash drives.
    - Stores information
  - Input devices: Keyboard, Mouse,
    - Gets information from the user to the computer
  - Output devices: monitor
    - Sends information from computer to the user



# Hardware

---



```
graph TD; A[Software] --> B[System Software]; A --> C[Application Software]
```

Software

System  
Software

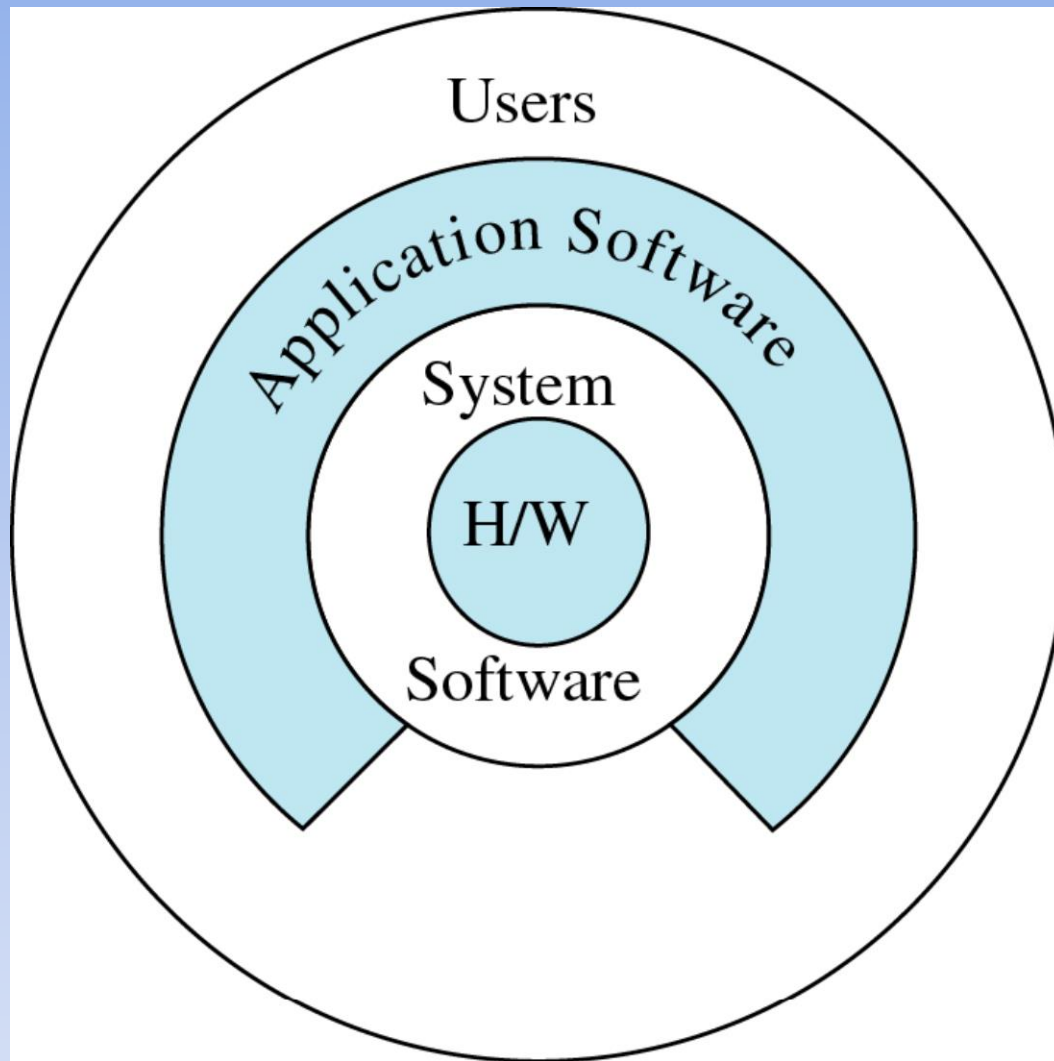
Application  
Software

# Software

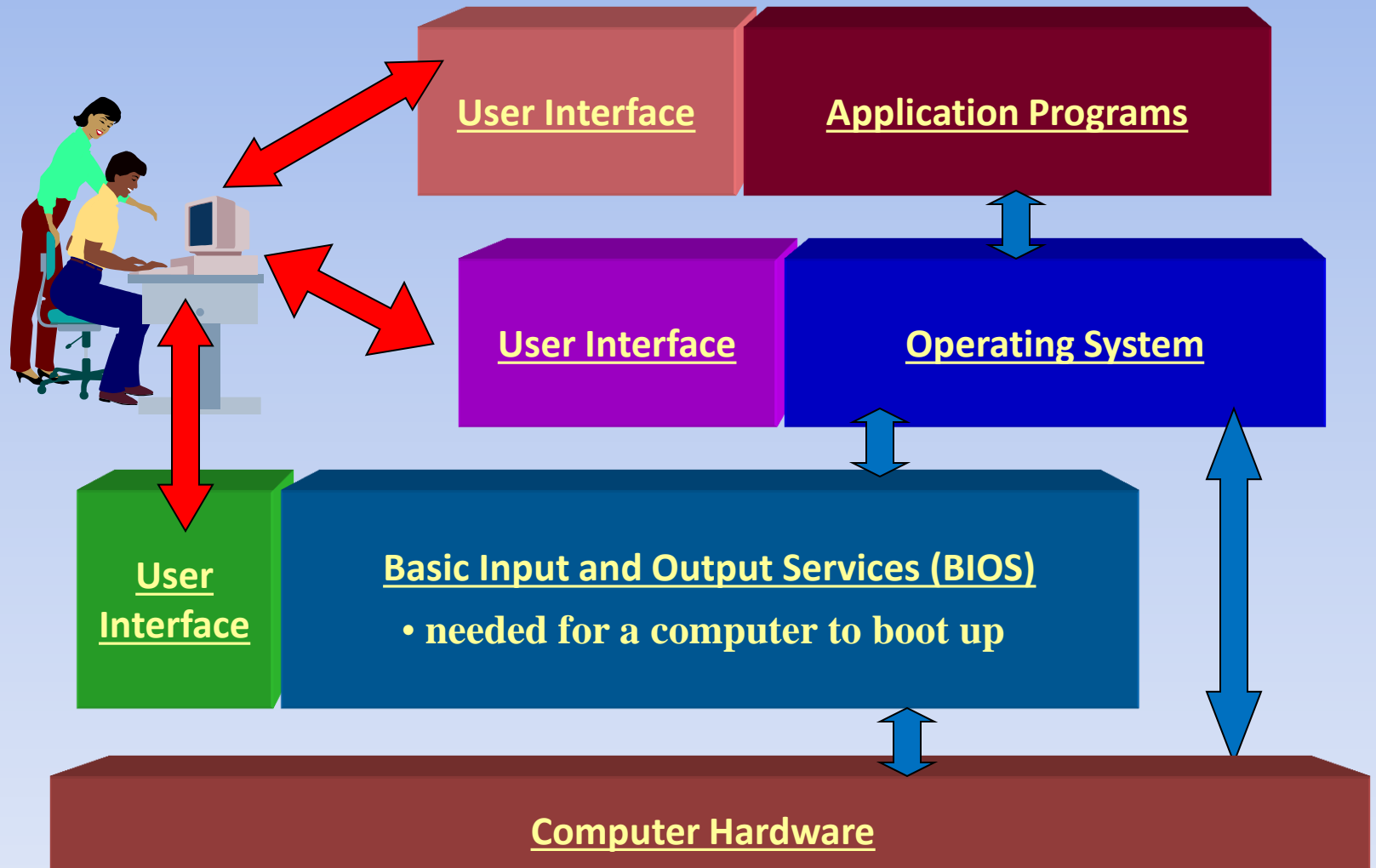
---

- Application software
  - Easy-to-use programs designed to perform specific tasks
- System software
  - Such as an Operating Systems:  
O.S is a system software that manages computer hardware and software resources, and provides common services for computer programs.





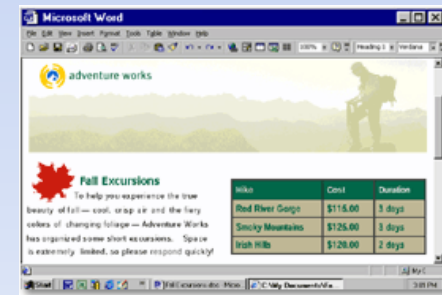
# Computer Software Relationships



# Application Software

---

- Application software makes computer popular and easy to use
- Common application software:
  - Microsoft Word, WordPerfect
  - PowerPoint
  - Netscape, Internet Explorer
  - PhotoShop, Photo-Paint
  - Quick Time
  - Dreamweaver

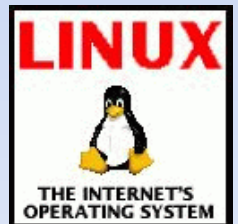




# Operating System

---

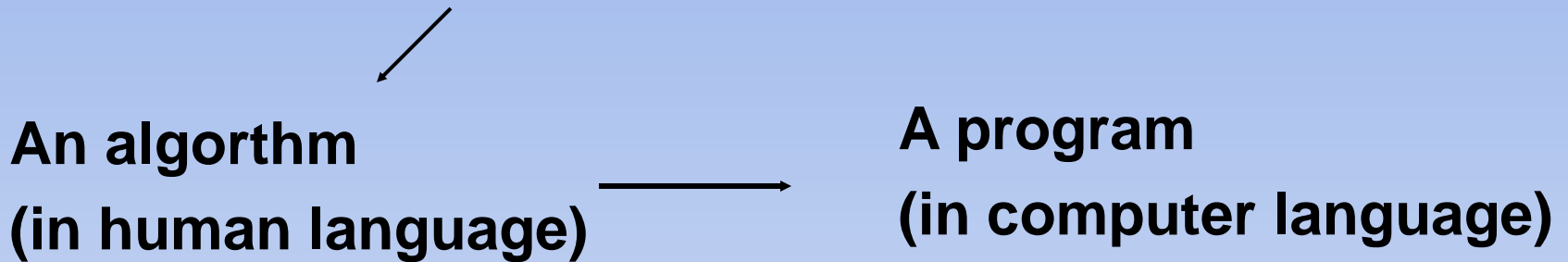
- Controls and manages the computing resources
- Examples
  - Windows, Linux, MSDOS,
- Important services that an operating system provides:
  - Security: prevent unauthorized users from accessing the system
  - Commands to manipulate the file system
  - Input and output on a variety of devices
  - Window management



# What is a (programming) language?

---

A sequence of instructions



- A program needs to be written in a language
- There are many programming languages
  - Low-level, understandable by a computer
  - High-level, understandable by human
- C++ is a *high level programming language*

# Levels of programming language

---

- Machine binary language: unintelligible (غير مفهوم)
- Low-level assembly language
  - Mnemonic (تذكيرية) names for machine operations
  - Explicit (واضح او صريح) manipulation of memory addresses
  - Machine-dependent
- High-level language
  - Readable
  - Machine-independent

# An example:

## Machine binary language

```
00001001001011100110011001101001011011000110010100001001001000
0101011100100110010100110001001011100110001100100010000010100:
0110001101101111011011010111000001101001011011000110010101100:
00110110010101100011011101000110100101101111011011100000100100
01110100001000100000101000001001001011100110000101101100011010
10100000100100101110011001101101100011011101100010011000010:
0110111000001010000010010010111001110100011110010111000001100:
1001011011100010110000100011011001100111010101101110011000110:
00001001001011100111000001110010011011110110001100001001001100
1001011011100011101000001010000010010010000100100011010100000:
01010101010001010010001100100000001100000000101000001001011100
01010111001101110000001011000010110100110001001100100011100000
0000101000001001001000010010001101010000010100100100111101001:
00110010000000110001000010100000100101101101011011110111011001
0011000000001010000010010111001101110100001000000010010101101:
0110011100000010110100110010001100000101110100001010000010010:
0010110000100101011011110011000000001010000010010111001101110:
1100010110110010010101100110011100000010110100110010001101000:
00100000010110110010010101100110011100000010110100110010001100
0000000010100000100101101100011001000010000001011011001001010:
01011101001011000010010101101111001100010000101000001001011000
1111001100000010110000100101011011110011000100101100001001010:
0111010000100000001001010110111100110000001011000101101100100:
10000101110100001010000010010110110101101111011101100010000000
00001010000010010110001000100000001011100100110001001100001100
00000000101000101110010011000100110000110001001110100000101000
0000100101110010011001010111001101110100011011110111001001100:
0110011001010011000100111010000010100000100100101110011100110:
0110110101100001011010010110111000101100001011100100110001001100010010110110
11010110000101101001011011100000101000001001001110010110010001100101011011100111010000001001
001000100100011101000011010000110011101000100000001010001110100111001010100101001001000000011
0010001011100011100000101110001100010010001000001010
```

main:

```
!#PROLOGUE# 0
save %sp,-128,%sp

!#PROLOGUE# 1
mov 1,%o0
st %o0,[%fp-20]
mov 2,%o0
st %o0,[%fp-24]
ld [%fp-20],%o0
ld [%fp-24],%o1
add %o0,%o1,%o0
st %o0,[%fp-28]
mov 0,%i0
nop
```

## High-level

```
int main()
{
    int x, y, z;

    x = 1;
    y = 2;
    z = x+y;

    return 0;
}
```

# How to translate?

---

**A program written in high-level programming language  
(for example, C++ program)**



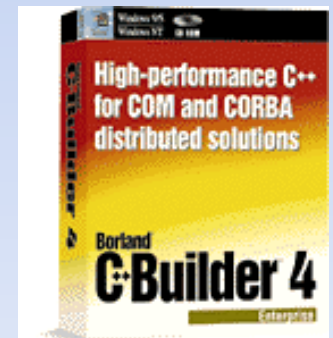
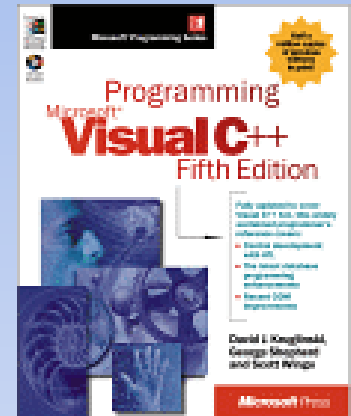
**COMPILER (for example, Visual C++)**

**A low-level (machine language) program that is  
understandable by a computer (for example, a PC)**

# Translation System

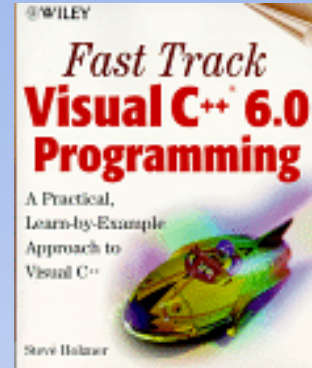
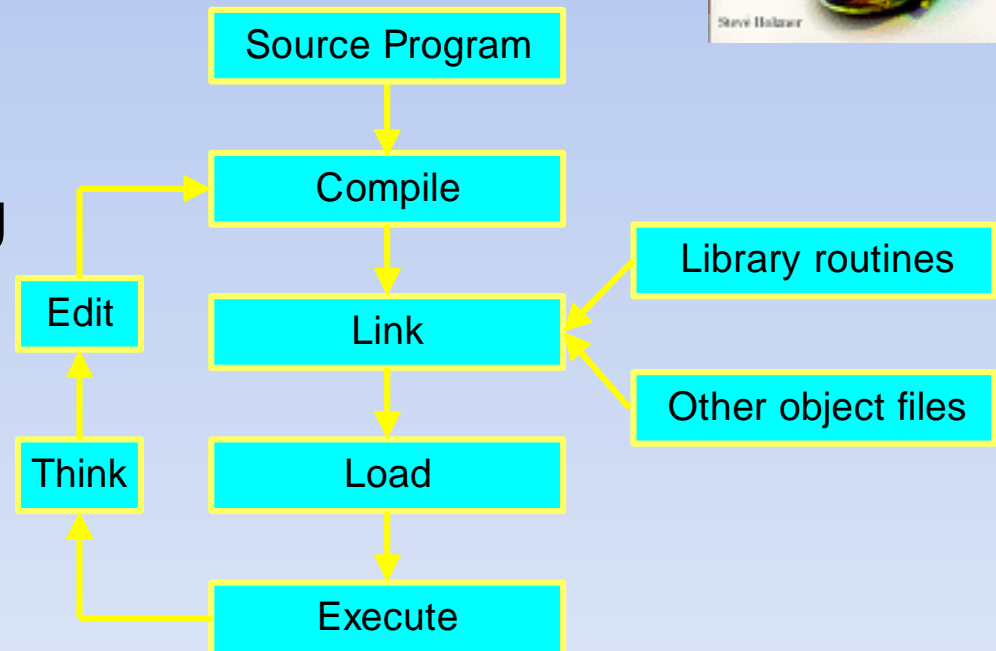
---

- Set of programs used to develop software
- Types of translators:
  - Compiler
  - Linker
- Examples
  - Microsoft Visual C++



# Software Development

- Major activities
  - Editing (writing the program)
  - Compiling (creates .obj file)
  - Linking with compiled files (creates .exe file)
    - Object files
    - Library modules
  - Loading and executing
  - Testing the program



# Integrated Development Environments

---

- Combine all of the capabilities that a programmer would want while developing software (VC++ 2008, Eclipse)
  - Editor
  - Compiler
  - Linker
  - Loader
  - Debugger
  - Viewer





# Windows 7 Desktop

---

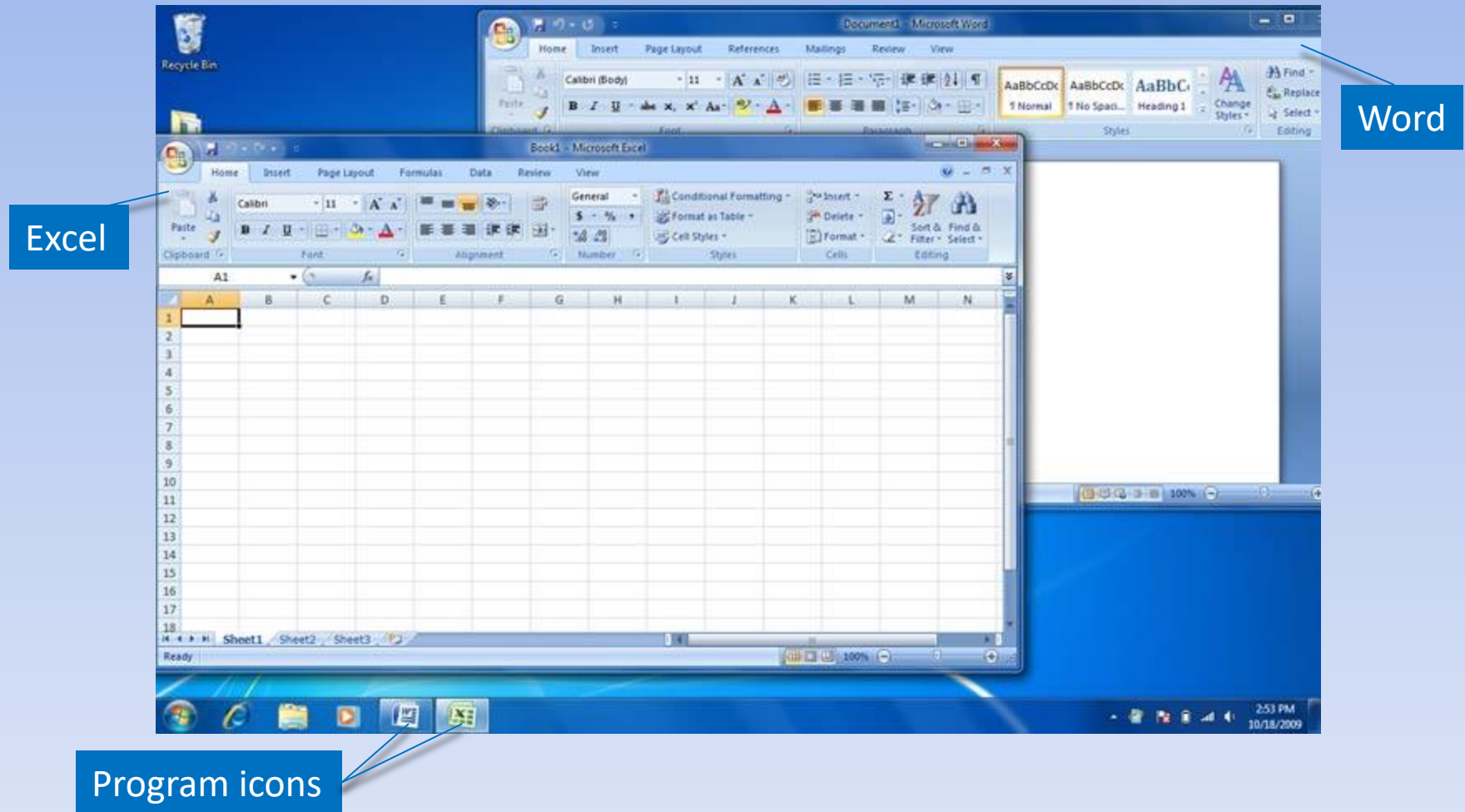
- Operating system
- Desktop
- Taskbar
- Window
- Icon



# Adding Gadgets



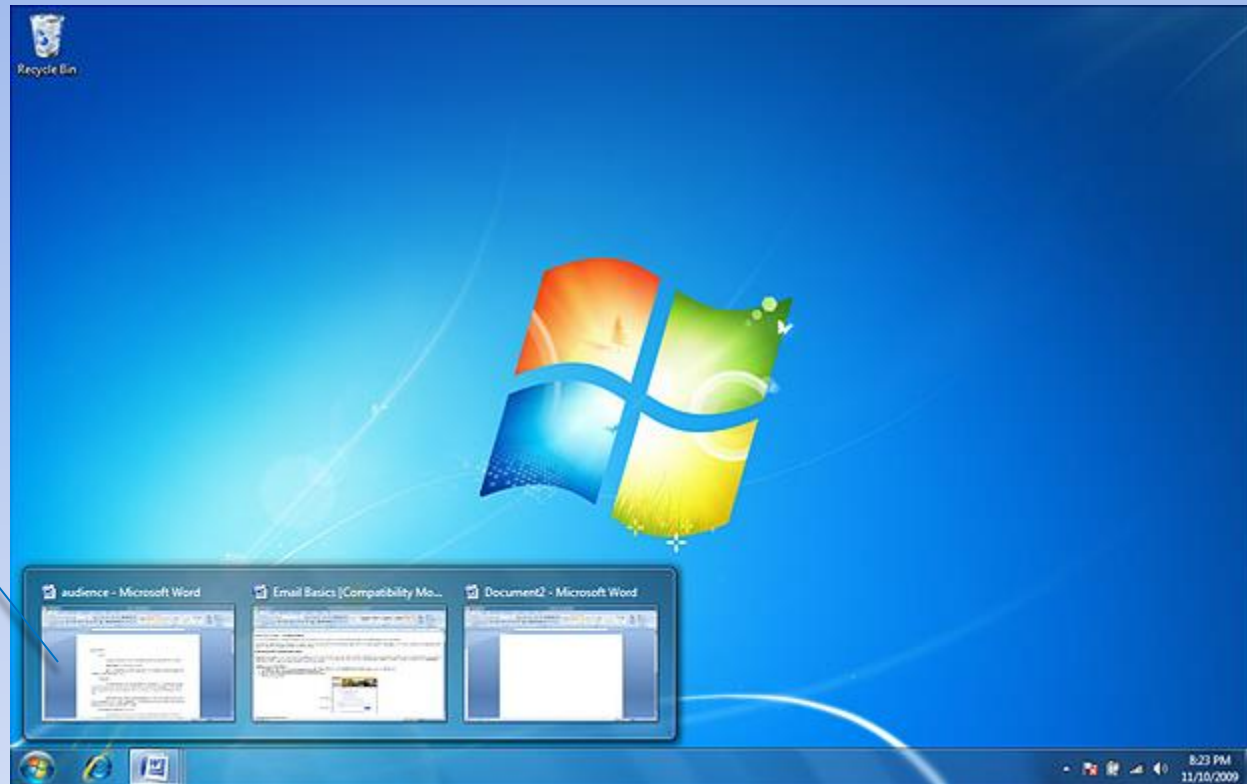
# The Taskbar



# Aero Peek

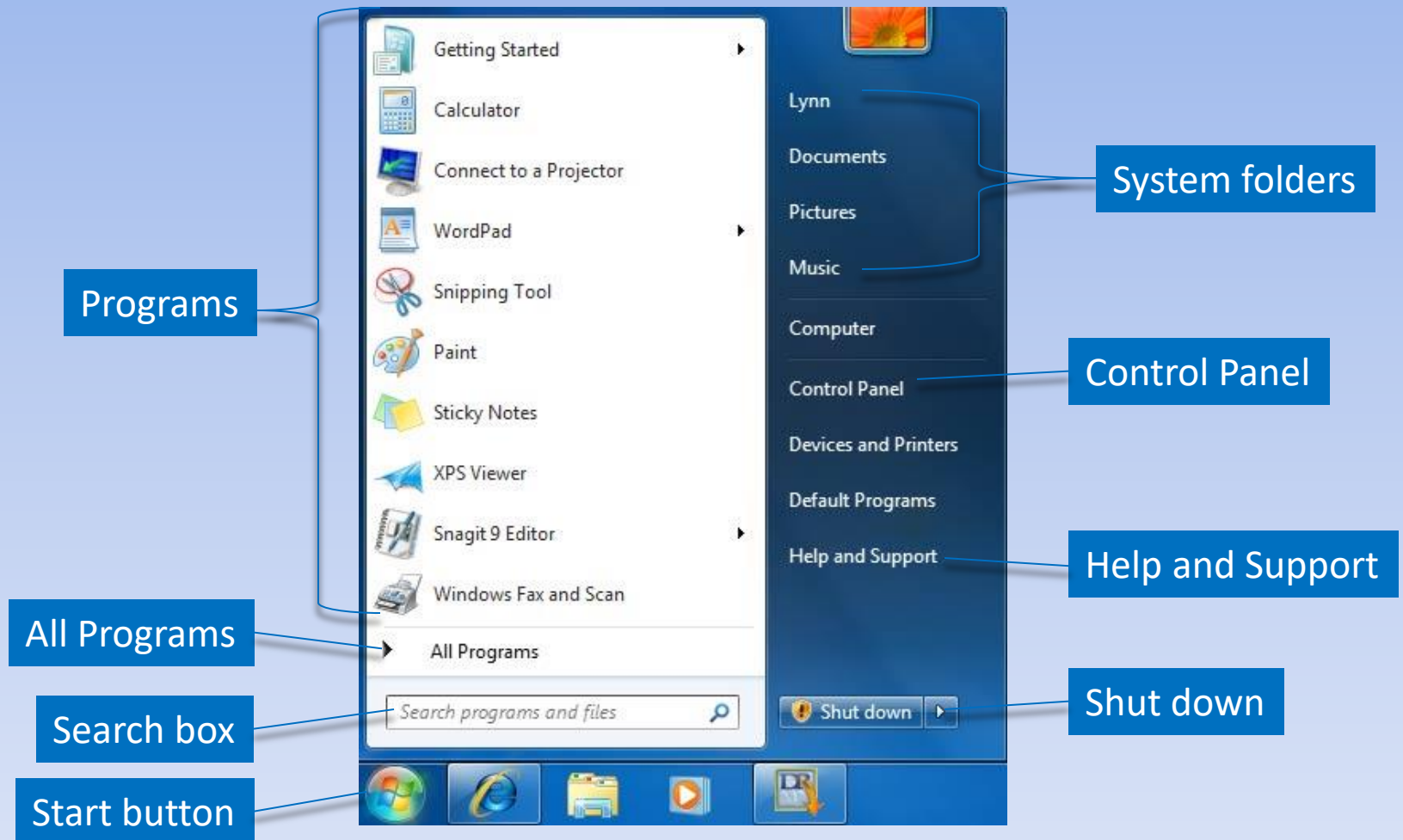
---

Preview

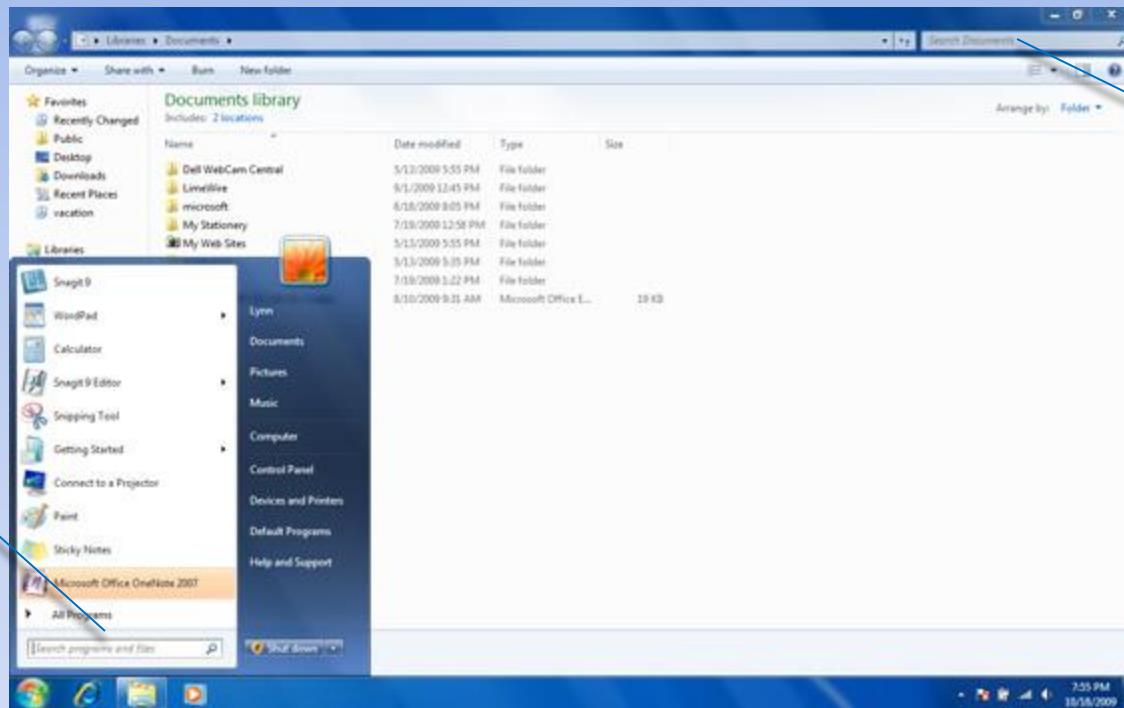


Program icon with three Word documents shown

# The Start Menu



# Windows Search



# Security Settings and Software

---

- Action Center
- Windows Defender
- User Account Control
- Windows Update
- Windows Firewall
- Parental Controls