Program Development Process Walkthrough with Figures
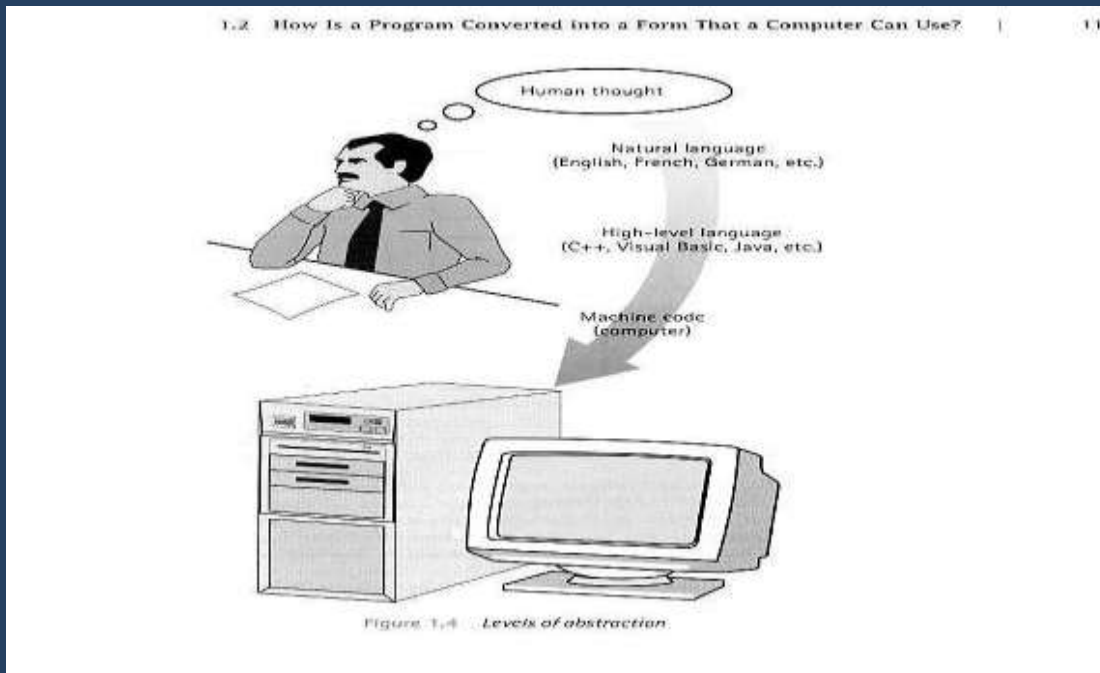
"Programming and Problems Solving with C++" - Dale and Weems reference text

Human thought

Natural language
(English, French, German, etc.)

High-level language
(C++, Visual Basic, Java, etc.)

Machine code
(computer)

Figure 1.4 *Levels of abstraction*

Levels of abstraction

Chapter 1: Overview of Programming and Problem Solving

| SOURCE CODE (C++)	COMPUTER EXECUTES TRANSLATOR CODE (COMPILER)	OBJECT CODE (MACHINE LANGUAGE VERSION OF SOURCE CODE)	COMPUTER EXECUTES OBJECT CODE
	Windows PC C++ compiler	Windows PC machine language	Windows PC computer
C++ Code	UNIX workstation C++ compiler	UNIX workstation machine language	UNIX workstation computer
	Macintosh C++ compiler	Macintosh machine language	Macintosh computer
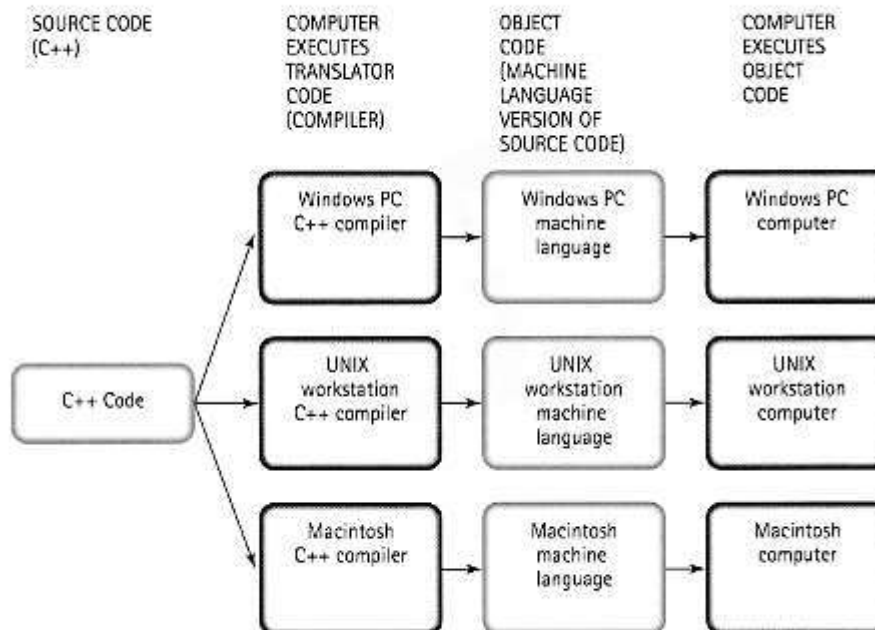
Figure 1.5 *High-level programming languages allow programs to be compiled on different systems.*

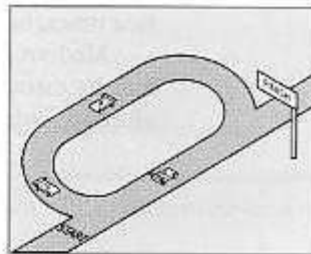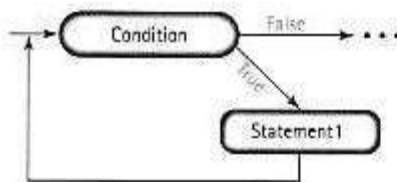**Programming languages and Operating System platforms**

SEQUENCE

Statement → Statement → Statement → ...
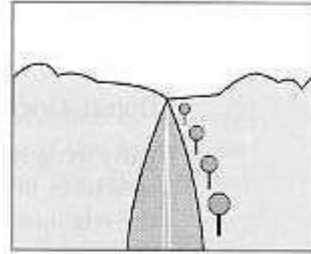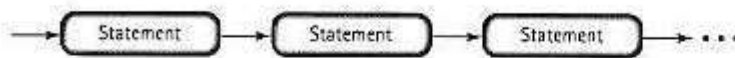
SELECTION   (also called *branch* or *decision*)
IF condition THEN statement1 ELSE statement2

Condition →(True) Statement1
Condition →(False) Statement2 → ...
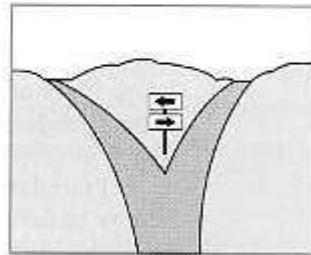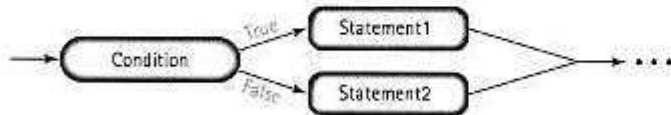
LOOP   (also called *repetition* or *iteration*)
WHILE condition DO statement1

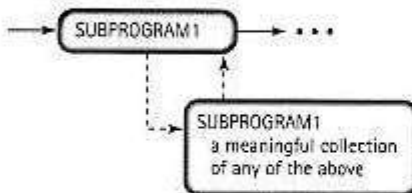Condition →(False) ...
Condition →(True) Statement1

SUBPROGRAM   (also called *procedure, function, method,* or *subroutine*)

SUBPROGRAM1 → ...

SUBPROGRAM1
a meaningful collection
of any of the above

EVENT → EVENTHANDLER
a subprogram executed
when an event occurs
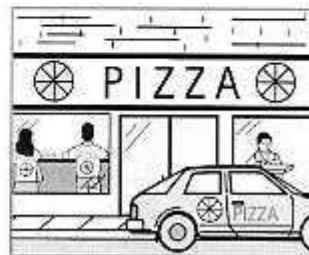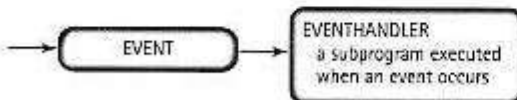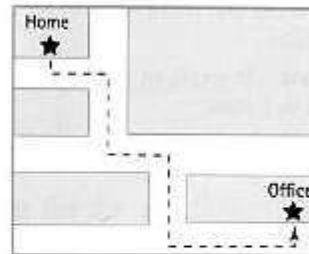
Figure 1.9   *Basic control structures of programming languages*

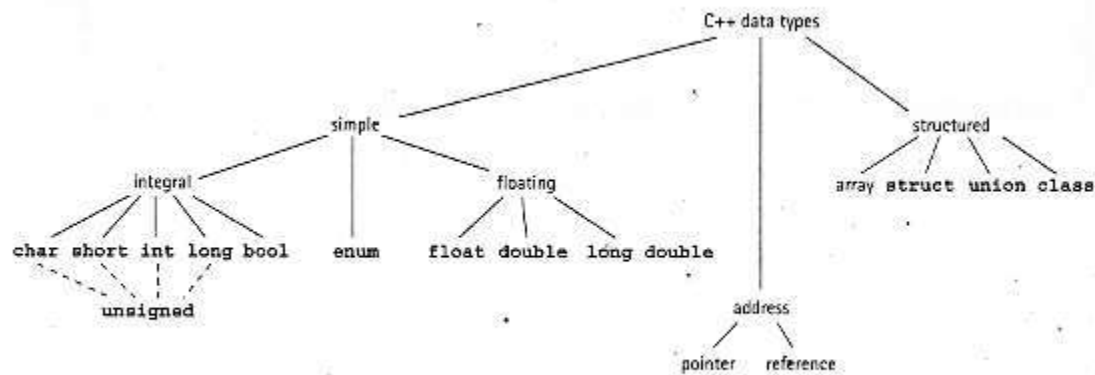A visual look at control structures – "logic routines"

FIGURE 3.1 C++ Data Types

A Visual look at C++ Data Types

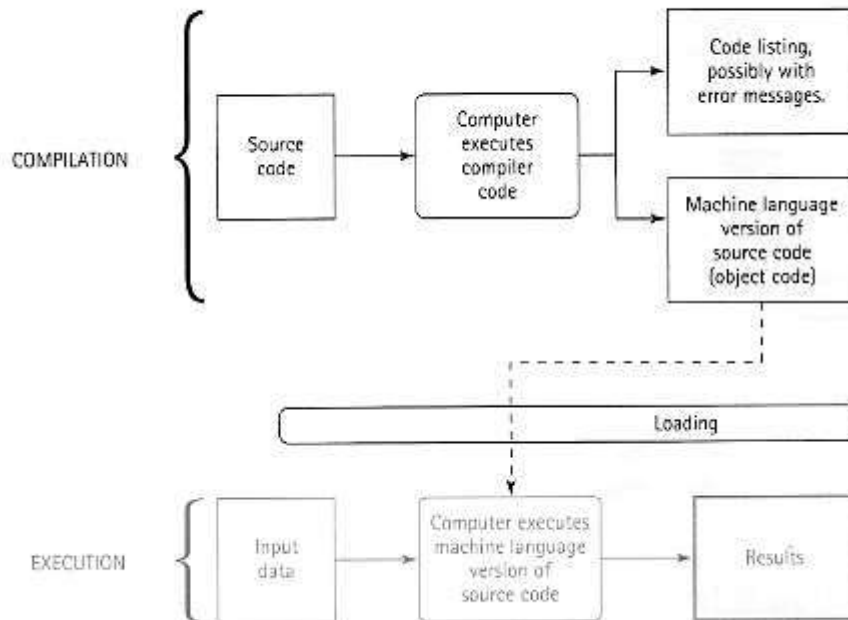Chapter 1: Overview of Programming and Problem Solving

Figure 1.7   *Compilation/Execution*

The Compilation, Debugging, Execution Process – a place where you will spend most of your time

Figure 1.18 Mental block

The Far Side Cartoon ….MENTAL BLOCK