Chapter 2

MAKING AND USING OBJECTS

***Listing 2-1. More Examples of Declarations and Definitions***

**//: C02:Declare.cpp**

**// Demonstrates more Declarations & Definitions extern inti; // Declaration without definition**

**extern float f(float); // Function declaration**

**float b; // Declaration & definition**

**float f(float a) { // Definition**

**return a + 1.0;**

**}**

**int i; // Definition**

**int h(int x) { // Declaration & definition**

**return x + 1;**

**}**

**int main() {**

**b = 1.0;**

**i = 2;**

**f(b);**

**h(i);**

**} ///:~**

***Listing 2-2. Hello, World!***

**//: C02:Hello.cpp**

**// Saying Hello with C++**

**#include <iostream> // Stream declarations**

**using namespace std;**

**int main() {**

**cout << "Hello, World! I am "**

**<< 8 << " Today!" << endl;**

**} ///:~**

***Listing 2-3. Another Use of iostream***

**//: C02:Stream2.cpp**

**// Demonstrates more streams features**

**#include <iostream>**

**using namespace std;**

**int main() {**

**// Specifying formats with manipulators:**

**cout << "a number in decimal: "**

**<< dec << 15 << endl;**

**cout << "in octal: " << oct << 15 << endl;**

**cout << "in hex: " << hex << 15 << endl;**

**cout << "a floating-point number: "**

**<< 3.14159 << endl;**

**cout << "non-printing char (escape): "**

**<< char(27) << endl;**

**} ///:~**

***Listing 2-4. Character Array Concatenation***

**//: C02:Concat.cpp**

**// Demonstrates special use of Character array Concatenation**

**// in case of coding with width restrictions**

**#include <iostream>**

**using namespace std;**

**int main() {**

**cout << "This is far too long to put on a "**

**"single line but it can be broken up with "**

**"no ill effects\as long as there is no "**

**"punctuation separating adjacent character "**

**"arrays.\n";**

**} ///:~**

***Listing 2-5. Reading Input***

**//: C02:Numconv.cpp**

**// Converts decimal to octal and hex**

**// Demonstrates use of *cin* operator**

**#include <iostream>**

**using namespace std;**

**int main() {**

**int number;**

**cout << "Enter a decimal number: ";**

**cin >> number;**

**cout << "value in octal = 0"**

**<< oct << number << endl;**

**cout << "value in hex = 0x"**

**<< hex << number << endl;**

**} ///:~**

***Listing 2-6. Calling Other Programs***

**//: C02:CallHello.cpp**

**// Call another program**

**#include <cstdlib> // Declare "system()"**

**using namespace std;**

**int main() {**

**system("Hello");**

**} ///:~**

***Listing 2-7. Using Strings***

**//: C02:HelloStrings.cpp**

**// Demonstrates the basics of the C++ string class**

**#include <string>**

**#include <iostream>**

**using namespace std;**

**int main() {**

**string s1, s2; // Empty strings**

**string s3 = "Hello, World."; // Initialized**

**string s4("I am"); // Also initialized**

**s2 = "Today"; // Assigning to a string**

**s1 = s3 + " " + s4; // Combining strings**

**s1 += " 8 "; // Appending to a string**

**cout << s1 + s2 + "!" << endl;**

**} ///:~**

***Listing 2-8. Copy One file to another, a Line at a time***

**//: C02:Scopy.cpp**

**// Demonstrates use of the getline() function**

**#include <string>**

**#include <fstream>**

**using namespace std;**

**int main() {**

**ifstream in("Scopy.cpp"); // Open for reading**

**ofstream out("Scopy2.cpp"); // Open for writing**

**string s;**

**while(getline(in, s)) // Discards newline char**

**out << s << "\n"; // ... must add it back**

**} ///:~*Listing 2-9. Reading an Entire File into a Single String***

**//: C02:FillString.cpp**

**// Demonstrates use of *fstream***

**#include <string>**

**#include <iostream>**

**#include <fstream>**

**using namespace std;**

**int main() {**

**ifstream in("FillString.cpp");**

**string s, line;**

**while(getline(in, line))**

**s += line + "\n";**

**cout << s;**

**} ///:~**

***Listing 2-10. Using a Vector*//: C02:Fillvector.cpp**

**// Demonstrates copying an entire file into a vector of string**

**#include <string>**

**#include <iostream>**

**#include <fstream>**

**#include <vector>**

**using namespace std;**

**int main() {**

**vector <string> v;**

**ifstream in("Fillvector.cpp");**

**string line;**

**while(getline(in, line))**

**v.push\_back(line); // Add the line to the end**

**// Add line numbers:**

**for(int i = 0; i < v.size(); i++)**

**cout << i << ": " << v[i] << endl;**

**} ///:~**

***Listing 2-11.*  *Breaking a File into Whitespace-separated Words***

**//: C02:GetWords.cpp**

**// Modifies program in *Listing 2-10***

**#include <string>**

**#include <iostream>**

**#include <fstream>**

**#include <vector>**

**using namespace std;**

**int main() {**

**vector<string> words;**

**ifstream in("GetWords.cpp");**

**string word;**

**while(in >> word)**

**words.push\_back(word);**

**for(int i = 0; i < words.size(); i++)**

**cout << words[i] << endl;**

**} ///:~**

***Listing 2-12. Using a Vector with Any Type***

**//: C02:Intvector.cpp**

**// Demonstrates creation of a vector that holds integers**

**#include <iostream>**

**#include <vector>**

**using namespace std;**

**int main() {**

**vector<int> v;**

**for(int i = 0; i< 10; i++)**

**v.push\_back(i);**

**for(int i = 0; i< v.size(); i++)**

**cout << v[i] << ", ";**

**cout << endl;**

**for(int i = 0; i < v.size(); i++)**

**v[i] = v[i] \* 10; // Assignment**

**for(int i = 0; i < v.size(); i++)**

**cout << v[i] << ", ";**

**cout << endl;**

## } ///:~