**Supporting File for Lab No. 7**

**LAB 7.1 Relational Operators and the if Statement**

The code follows:

// This program tests whether or not an initialized value

// is equal to a value input by the user

// PLACE YOUR NAME HERE

#include <iostream> using namespace std;

int main( )

{

int num1, // num1 is not initialized

num2 = 5; // num2 has been initialized to 5

cout << "Please enter an integer" << endl; cin >> num1;

cout << "num1 = " << num1 << " and num2 = " << num2 << endl; if (num1 = num2)

cout << "Hey, that’s a coincidence!" << endl;

if (num1 != num2)

cout << "The values are not the same" << endl;

return 0;

}

*Exercise 1:* Run the program several times using a different input each time. Does the program do what you expect? Is so, explain what it is doing. If not, locate the error and fix it.

*Exercise 2:* Modify the program so that the user inputs both values to be tested for equality. Make sure you have a prompt for each input. Test the program with pairs of values that are the same and that are different.

*Exercise 3:* Modify the program so that when the numbers are the same it prints the following lines:

**The values are the same.**

**Hey that’s a coincidence!**

*Exercise 4:* Modify the revised Exercise 3 program by replacing the two if statements with a single if/else statement. Run the program again to test the results.

**LAB 7.2 if/else if Statements**

The code follows:

// This program prints "You Pass" if a student's average is

// 60 or higher and prints "You Fail" otherwise

**// PLACE YOUR NAME HERE**

#include <iostream> using namespace std;

int main()

{

float average; // holds the grade average cout << "Input your average:" << endl;

cin >> average;

if (average > 60)

cout << "You Pass" << endl;

if (average < 60)

cout << "You Fail" << endl;

return 0;

}

*Exercise 1:* Run the program three times using 80, 55 and 60 for the average.

What happens when you input 60 as the average? Modify the first if statement so that the program will also print “You Pass” if the average equals 60.

*Exercise 2:* Modify the program so that it uses an if/else statement rather than two if statements.

*Exercise 3:* Modify the program from Exercise 2 to allow the following cate- gories: Invalid data (data above 100), ‘A’ category (90–100), ‘B’ category (80–89), “You Pass” category (60–79), “You Fail” category (0–59).

What will happen to your program if you enter a negative value such as -12?

**Lab 7.3 Logical Operators**

The code is as follows:

// This program illustrates the use of logical operators

**// PLACE YOUR NAME HERE**

#include <iostream> using namespace std;

int main()

{

char year; float gpa;

cout << "What year student are you ?" << endl;

cout << "Enter 1 (freshman), 2 (sophomore), 3 (junior), or 4 (senior)"

<< endl << endl; cin >> year;

cout << "Now enter your GPA" << endl; cin >> gpa;

if (gpa >= 2.0 && year == '4')

cout << "It is time to graduate soon" << endl;

else if (year != '4'|| gpa <2.0)

cout << "You need more schooling" << endl;

return 0;

}

*Exercise 1:* How could you rewrite gpa >= 2.0 in the first if statement using the NOT operator?

*Exercise 2:* Could you replace year !='4' in the else if statement with

year < 4 or year <= 3? Why or why not?