LAB # 7
Conditional Statements

Objective:

- To work with relational operators
- To work with conditional statements
- To learn and use nested if statements
- To learn and use logical operators

Theory:

Relational Operators:

An expression of the form num1 > num2 is called a relational expression. Note that it does not assert that num1 is greater than num2. Some of the relational operators are:

> Greater than
< Less than
> = Greater than or equal to
< = Less than or equal to
= = Equal to
! = Not equal to

The if Statement:

Sometimes we may only want a portion of code executed under certain conditions. To do so, we use conditional statements. For example, if you are writing a payroll program to compute wages, then the program should only compute overtime pay if the employee worked more than 40 hours in a given week. Otherwise, when the program is executed the overtime portion of the code should be bypassed.

If you want to conditionally execute several statements using if, the fol- lowing syntax is required:

```
if (average >= 60)        // note the use of a relational operator
cout << "You Pass" << endl;
if (average < 60)
cout << "You Fail" << endl;
```

The if/else Statement:

In Sample Program above, we used two if statements. A more elegant approach would be to use the if/else statement as follows:

```
if (average >= 60)
cout << "You Pass" << endl;
else
cout << "You Fail" << endl;
```

The if/else if Statement

The if/else statement works well if there are only two possible paths to follow. We could code this using the if/else if statement as follows:

```
if (bonus < 1000)
cout << "Another vacation eating hot dogs on the lawn" << endl;
else if (bonus < 10000)
cout << "Off to Disney World!" << endl;
else if (bonus == 10000)
cout << "Lets go to Hawaii!" << endl;
```

The Trailing else:

Sometimes it is advantageous to add a final or trailing else at the end of a chain of if/else if statements to handle "all other cases."

Nested if Statements:

When a condition occurs only if the other condition occurs, then Nested If condition is used.

Logical Operators:

The syntax used by C++ for logical operators is the following:

AND &&

OR ||

NOT !

Lab Task:

Do task 7.1, 7.2 and 7.3 given in file attached on LMS and attach your source code and output window with this file. And write your observation with lab task.

Post Lab:

Task 1: In lab task 7.3, If you replace

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

with

```
if ( gpa >= 2.0 || year == '4')
```

and replace

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

with

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

which students will graduate and which will not graduate according to this new program? Does this handle all cases (i.e., all combinations of `year` and `gpa`)?

Task 2: Replace `else if ( year != '4'|| gpa < 2.0)` with the single word `else`?

Learning Outcomes:

Upon successful completion of the lab, students will be able to:

LO1: To work with conditional statements using if, elseif, else.