

If-Else If-Else Lab

1. Create a program that asks the user when their birthday is (month and day as integers). Print a message to the user specifying whether their birthday has passed for the year, has yet to come for the year, or is today. For each case, print their age as well.
2. You are writing a program to help people choose an outdoor hobby. Ask the user what kind of weather they prefer: hot, mild, or cold. The user should be able to answer either with a word, or just the first letter (h, m, or c).
 - If they choose hot weather, ask the user if they like the water. If they say yes, tell the user they should take up swimming. If they say no, tell them they should take up beach volleyball.
 - If the user originally chose mild weather, ask the user if they like to run. If they say yes, tell them they should take up soccer. If they say no, tell them to take up golf.
 - If the user originally chose cold weather, ask them if they are afraid of heights. If they say yes, tell them to take up ice-skating. If they say no, tell them to take up downhill skiing.

For each of the secondary yes/no questions, the user should be able to type in the entire word or just the first letter (y/n).
3. Write a program to determine whether or not a year is a leap year. A leap year is any year that is divisible by 4, unless the year is also divisible by 100. If the year is divisible by 100, it must also be divisible by 400 to be a leap year. In other words, 1900 was not a leap year, but 2000 was.

Hint: The % operator calculates remainders. Use it just like +, -, *, or /, in that asking C++ to calculate $x \% y$ gives you back the remainder when x is divided by y . For instance, $11 \% 3$ gives you back 2 (because when you divide 8 by 3, you get 3 with a remainder of 2). The remainder operator can be used to test for divisibility. Figure out how.

4. Create a program that will compute the area of various shapes. The user will enter what shape they want to compute the area of, choosing between circle, square, and triangle. Use an if-else if-else statement to accomplish this. Print an error message if the user enters an invalid shape name. Hint: Your if-else if-else will need four parts: an if, two else ifs, and an else.

Note that C++ has no ** operator for exponentiation like Python does. Instead, there is a `pow(a, b)` function that returns the value of a raised to the power of b . This function always returns a floating-point value. To use this function, put `#include <cmath>` at the top of your program. Here's an example:

```
#include <iostream>
#include <cmath>

using namespace std;

int main()
{
    int a, b;
    cout << "Enter two integers: ";
    cin >> a >> b;
    cout << pow(a, b) << endl;
    return 0;
}
```