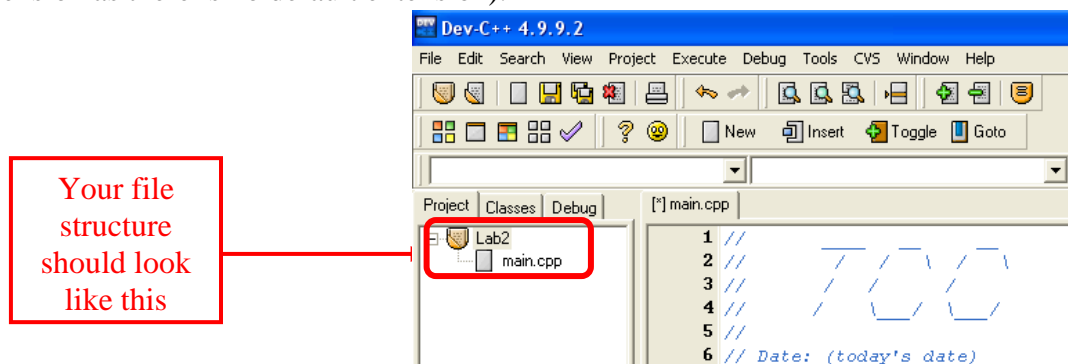


## Lab Assignment #1 – Creating a Banner and Analyzing a Cone

Recall that lab assignments must be completed during the class period and must be demonstrated to the instructor. Let the instructor know when you are ready to demonstrate your final program.

1. Launch the DevC++ compiler.
2. Create a New Project, select Empty Project, and then enter the name Lab1. Save it in a new folder on your desktop (or on a flash drive) named Lab1.
3. Right-click on the project and select Add File. Save the file as main.cpp (be sure to type the extension as there is no default extension).



4. Type in the program shown on the following page. Add instructions to prompt the user to enter to enter the radius and height of a right circular cone. Calculate the volume and lateral surface area of the cone using the following relationships and print the results. Additionally, print the volume using 4 digits after the decimal point and the lateral surface area with 2 digits after the decimal point. Show trailing zeros.

$$\text{Volume} = \frac{\pi \cdot r^2 \cdot h}{3} \quad \text{Lateral surface area} = \pi \cdot r \cdot \sqrt{r^2 + h^2}$$

5. Build and run the program. The inputs and outputs should be clearly understood and neatly arranged.
6. Demonstrate the program to the instructor.
7. Save the program. Also save the main.cpp file on the desktop as template.cpp. Modify template.cpp to remove everything between the braces of main except return 0 and resave the program.
8. Copy the Lab1 folder and template.cpp to your personal memory storage device. Once you are sure that it has been copied to your memory storage device, delete it from the desktop. Use a similar method working with folders on the desktop for all future projects.

## C++ program for Lab1 (main.cpp)

```
//
//      /-----/ \-----/
//      / / \ / \ / \
//      / / \ / \ / \
//
// Date: (today's date)
// Name: (your name)
// Project: Lab1
// Input: The radius and height of a right circular cone
// Output: The volume and lateral surface area of the cone
// Description: Sample program to get familiar with the Dev++
// compiler and simple input/output.
//*****

#include <iostream>      //header containing cout and cin
#include <cmath>         //header containing math functions

using namespace std; //introduces namespace std needed to use cout and cin

int main ( void )
{
    [Add instructions to declare variables, read inputs, calculate outputs,
    and print the results as described earlier.]
    system("pause");
    return 0;
}
```

## Template for future C++ programs (template.cpp)

```
//
//      /-----/ \-----/
//      / / \ / \ / \
//      / / \ / \ / \
//
// Date:
// Name:
// Project:
// Inputs:
// Outputs:
// Description:
//*****

#include <iostream>      //header containing cout and cin

using namespace std; //introduces namespace std needed to use cout and cin

int main ( void )
{
    return 0;
}
```