Activity No. 6.2	
Built-in Functions	
Course Code: CPE007	**Program:** Computer Engineering
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6. Output

Code 1:

- Screenshot of Code(Readable):

```cpp
#include <iostream>
#include <cmath>
#include <iomanip>

using namespace std;

// compute the volume of a cube
double volumeOfCube(double s) {
    return s * s * s;
}

// compute the hypotenuse of a right triangle
double hypotenuse(double side1, double side2) {
    return sqrt((side1 * side1) + (side2 * side2));
}

// Fahrenheit to Celsius
double celsius(double fahrenheitTemp) {
    return (5.0 / 9.0) * (fahrenheitTemp - 32);
}

// Celsius to Fahrenheit
double fahrenheit(double celsiusTemp) {
    return (9.0 / 5.0 * celsiusTemp) + 32;
}

int main() {
    cout << fixed << setprecision(2);

    // ------------------------------------------------------------------------ //

    // Volume of cube

    double side;
    cout << "Input the length of a side of a cube: ";
    cin >> side;
    cout << "Volume of cube: " << volumeOfCube(side) << endl << endl;

    // ------------------------------------------------------------------------ //

    // Hypotenuse calculations

    double a, b;
    cout << "Enter the opposite side of the triangle: ";
    cin >> a;
    cout << "Enter the adjacent side of the triangle: ";
    cin >> b;
    cout << "Length of hypotenuse: " << hypotenuse(a, b) << endl << endl;

    // Celsius to Fahrenheit chart
    cout << "Celsius to Fahrenheit Chart" << endl;
    cout << "Celsius" << setw(15) << "Fahrenheit" << endl;
    for (int c = 0; c <= 100; c += 10) {
        cout << setw(6) << c << setw(15) << fahrenheit(c) << endl;
    }

    cout << endl;

    // ------------------------------------------------------------------------ //

    // Fahrenheit to Celsius chart

    cout << "Fahrenheit to Celsius Chart" << endl;
    cout << "Fahrenheit" << setw(15) << "Celsius" << endl;
    for (int f = 32; f <= 212; f += 18) {
        cout << setw(6) << f << setw(15) << celsius(f) << endl;
    }

    return 0;
}
```

- Output of Code(label and compile ALL possible outputs):

```
Input the length of a side of a cube: 5
Volume of cube: 125.00

Enter the opposite side of the triangle: 15
Enter the adjacent side of the triangle: 10
Length of hypotenuse: 18.03

Celsius to Fahrenheit Chart
Celsius     Fahrenheit
     0          32.00
    10          50.00
    20          68.00
    30          86.00
    40         104.00
    50         122.00
    60         140.00
    70         158.00
    80         176.00
    90         194.00
   100         212.00

Fahrenheit to Celsius Chart
Fahrenheit        Celsius
    32           0.00
    50          10.00
    68          20.00
    86          30.00
   104          40.00
   122          50.00
   140          60.00
   158          70.00
   176          80.00
   194          90.00
   212         100.00

--------------------------------
Process exited after 7.037 seconds with return value 0
Press any key to continue . . .
```

- This code starts off by declaring the preprocessor libraries **cmath** and **iomanip** for the calculations of the hypotenuse and for the fixed, setprecision, and setw commands, next the code declares and defines each functions and the calculations they do starting from the volume of a cube, hypotenuse of a right triangle, and the calculations for celsius to fahrenheit and vice versa. then inside the main function it starts off by telling the compiler to have a fixed output of 2 decimal points by using the "**fixed**" and "**setprecision(2)**" command, afterwards it asks for the user to input the length of a side of a cube and then outputs the volume by calling the function "**volumeOfCube**", afterwards it declares 2 new double variables "**a**" and "**b**". It then asks the user for the lengths of both the opposite and the adjacent of the right triangle and then sets the inputted values to variables a and b respectively, with that it calls the function hypotenuse and calculates the hypotenuse using the 2 values of a and b. The last calculation in the main function prints out the chart for the fahrenheit and celsius and vice versa, this part of the main function uses setw to set the width of the field for the next output of the cout command.
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7. Supplementary Activity

8. Conclusion

This activity felt natural to do due to the experience I've had in using functions for our main project and I felt that I have done normally for this activity. The activity also showed me how to use math library functions that can be found in the standard library of which I failed to use in the creation of functions. It also deepened my knowledge in making modular functions for a program to run more efficiently.