Activity No. 6.1	
Hands-on Activity 6.2: Hands-on Activity 6.1: Built-in Functions	
Course Code: CPE007	Program: Computer Engineering
Course Title: Programming Logic and Design	Date Performed: October 29, 2025
Section: CPE11S1	Date Submitted: October 30, 2025
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6. Output	

1.

WHAT.cpp

```cpp
#include <iostream>
using namespace std;

double volume(double s);
double volume(double s) {
    return s * s * s;
}
int main() {
    double side;
    cout << "Enter the side length of the cube: ";
    cin >> side;
    double vol = volume(side);
    cout << "The volume of the cube is: " << vol << endl;
    return 0;
}
```

```
C:\Dev-Cpp\WHAT.exe
Enter the side length of the cube: 13
The volume of the cube is: 2197

--------------------------------
Process exited after 2.735 seconds with return value 0
Press any key to continue . . .
```

2.

WHAT.cpp | DO YOU MEAN.cpp

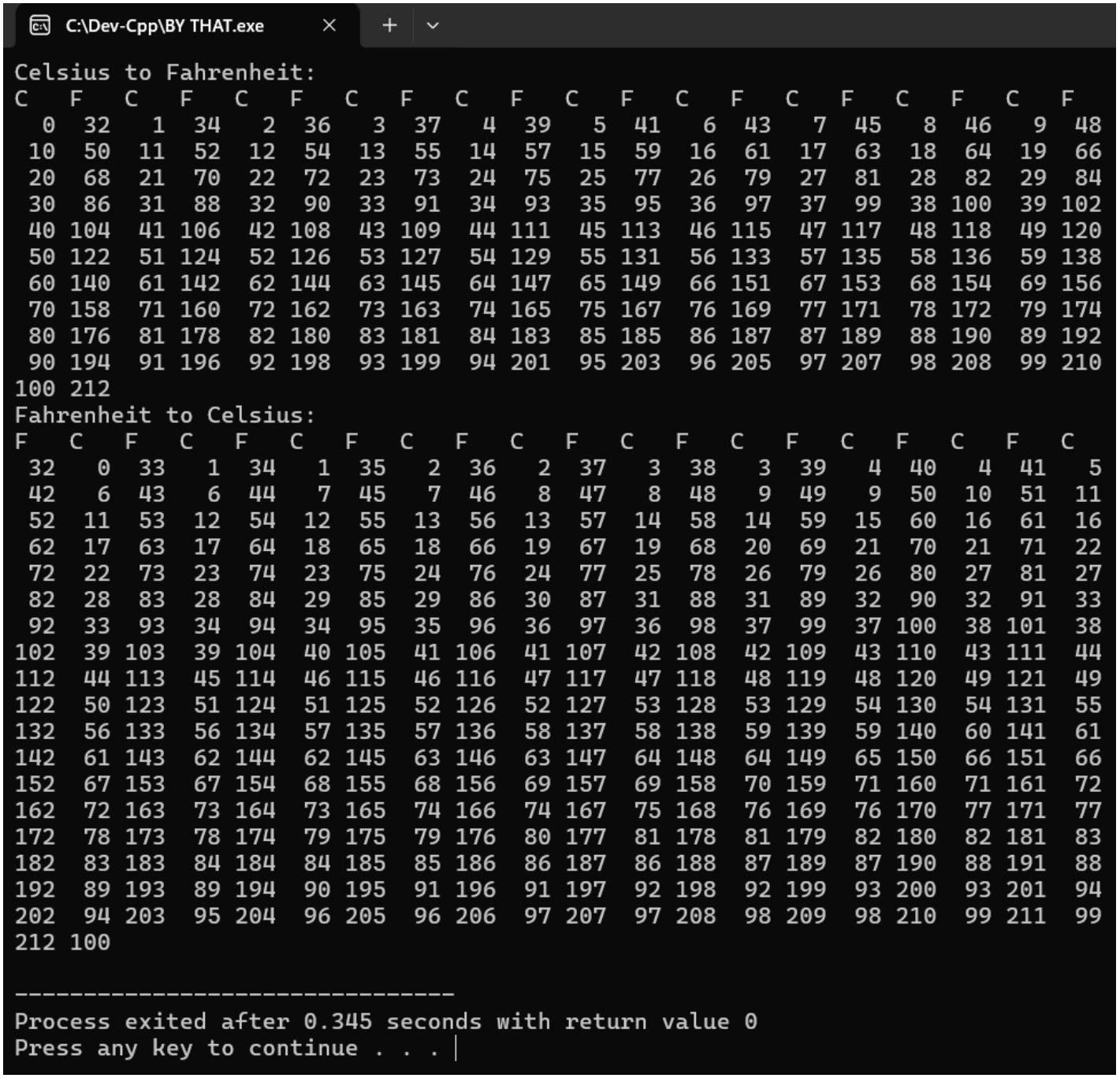
```cpp
#include <iostream>
#include <cmath>
using namespace std;

double hypotenuse(double a, double b);
double hypotenuse(double a, double b) {
    return sqrt(a * a + b * b);
}

int main() {
    double side1, side2;

    side1 = 3.0;
    side2 = 4.0;
    cout << "Triangle 1: sides " << side1 << " and " << side2
         << ", hypotenuse: " << hypotenuse(side1, side2) << endl;

    side1 = 5.0;
    side2 = 12.0;
    cout << "Triangle 2: sides " << side1 << " and " << side2
         << ", hypotenuse: " << hypotenuse(side1, side2) << endl;

    side1 = 8.0;
    side2 = 15.0;
    cout << "Triangle 3: sides " << side1 << " and " << side2
         << ", hypotenuse: " << hypotenuse(side1, side2) << endl;

    return 0;
}
```

```
C:\Dev-Cpp\DO YOU MEAN.e:
Triangle 1: sides 3 and 4, hypotenuse: 5
Triangle 2: sides 5 and 12, hypotenuse: 13
Triangle 3: sides 8 and 15, hypotenuse: 17

--------------------------------
Process exited after 0.3152 seconds with return value 0
Press any key to continue . . .
```

3.

WHAT.cpp | DO YOU MEAN.cpp | BY THAT.cpp

```cpp
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;

int celsius(int f);
int fahrenheit(int c);

int celsius(int f) {
    return round((f - 32) * 5.0 / 9.0);
}

int fahrenheit(int c) {
    return round((c * 9.0 / 5.0) + 32);
}

int main() {
    cout << "Celsius to Fahrenheit:" << endl;
    cout << "C   F   C   F   C   F   C   F   C   F   C   F   C   F   C   F   C   F" << endl;
    int count = 0;
    for (int c = 0; c <= 100; c++) {
        cout << setw(3) << c << setw(4) << fahrenheit(c) << " ";
        count++;
        if (count % 10 == 0) cout << endl;
    }
    cout << endl;

    cout << "Fahrenheit to Celsius:" << endl;
    cout << "F   C   F   C   F   C   F   C   F   C   F   C   F   C   F   C   F   C" << endl;
    count = 0;
    for (int f = 32; f <= 212; f++) {
        cout << setw(3) << f << setw(4) << celsius(f) << " ";
        count++;
        if (count % 10 == 0) cout << endl;
    }
    cout << endl;

    return 0;
}
```



7. Supplementary Activity

Analysis:

1. For this program, I made a function called volume(double s) and I declared it at the top so the program knows it exists. This function returns s * s * s, which is the formula for the volume of a cube. In the main part, I declared a variable named side to store the value that the user will input. After the user types the side length, I called the volume function and stored its result in another variable named vol. Then the program displays the volume that was calculated. So basically, the program asks for the cube's side, calculates side³ using the function I made, and shows the answer. When I tried it with the side length of 13, the output was: 13 The volume of the cube is: 2197.

2. For this program, I created a function called hypotenuse(double a, double b) and declared it at the top so the program knows it will be used. This function returns sqrt(a * a + b * b), which follows the Pythagorean Theorem for finding the hypotenuse of a right triangle. In the main part of the program, I declared two variables named side1 and side2, and I assigned different values to them three times to represent three different triangles. For each pair of side lengths, I called the hypotenuse function to compute and show the length of the hypotenuse. So basically, I just changed the side values for each triangle and used the same function to calculate their hypotenuses. When the program ran, the output was: Triangle 1 with sides 3 and 4 had a hypotenuse of 5, Triangle 2 with sides 5 and 12 had a hypotenuse of 13, and Triangle 3 with sides 8 and 15 had a hypotenuse of 17.

3. For this program, I created two functions: celsius(int f) and fahrenheit(int c), and I declared them at the top so that the program knows they will be used. The celsius function converts a Fahrenheit value into Celsius using the conversion formula, and the Fahrenheit function converts a Celsius value into Fahrenheit. Both conversions use round to make sure the results are whole numbers. In the main part of the program, I used two loops to generate conversion tables. The first loop goes from 0 to 100 to convert Celsius values to Fahrenheit, and the second loop goes from 32 to 212 to convert Fahrenheit values to Celsius. I also used a counter to help format the output into neat columns. So in the end, the program prints two organized tables: one showing Celsius to Fahrenheit conversions and another showing Fahrenheit to Celsius conversions.

8. Conclusion

In this activity, I made programs that each had their own task. One part was about finding the volume of a cube, another part focused on solving the hypotenuse of a triangle, and the last part was about converting temperatures between Celsius and Fahrenheit. I made sure that each part worked correctly by checking if the answers matched the formulas. Sometimes I needed to look at the numbers again to make sure the calculation was right, but once everything worked, it was nice to see the correct results show up. Overall, this activity helped me organize my code better and understand how breaking a program into clear steps makes it easier to read, use, and understand.