HOA 6.2	
Built-in Functions	
Course Code: CPE 007	**Program:** Computer Engineering
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Name(s): Cenar, Marqui Joshua	**Instructor: Engr. Jimlord M. Quejado**

6. Output

1.
CODE:

CMakeLists.txt main.cpp

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

double volume(double s) {
    return s * s * s;
}

int main() {
    double side;
    cout << "length of the cube: ";
    cin >> side;

    cout << "The volume of the cube is: " << volume(side) << endl;
    return 0;
}
```

OUTPUT:

```
length of the cube: 12
The volume of the cube is: 1728

Process finished with exit code 0
```

2.

CODE:

CMakeLists.txt main.cpp

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


double hypotenuse(double a, double b) {
    return sqrt(pow(a, lcpp_y: 2) + pow(b, lcpp_y: 2));
}

int main() {
    double side1, side2;
    cout << "side 1: ";
    cin >> side1;
    cout << "side 2: ";
    cin >> side2;

    cout << "The hypotenuse is: " << hypotenuse(a: side1, b: side2) << endl;
    return 0;
}
```

OUTPUT:

```
side 1: 720
side 2: 412
The hypotenuse is: 829.544

Process finished with exit code 0
```

3.
CODE:

CMakeLists.txt main.cpp

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


int celsius(int f) {
    return (f - 32) * 5 / 9;
}


int fahrenheit(int c) {
    return (c * 9 / 5) + 32;
}

int main() {
    cout << "Celsius to Fahrenheit:" << endl;
    cout << "Celsius\tFahrenheit" << endl;
    for (int c = 0; c <= 100; c += 10) {
        cout << c << "\t" << fahrenheit(c) << endl;
    }

    cout << "\nFahrenheit to Celsius:" << endl;
    cout << "Fahrenheit\tCelsius" << endl;
    for (int f = 32; f <= 212; f += 20) {
        cout << f << "\t\t" << celsius(f) << endl;
    }

    return 0;
}
```

OUTPUT:

```
Celsius to Fahrenheit:
Celsius Fahrenheit
0       32
10      50
20      68
30      86
40      104
50      122
60      140
70      158
80      176
90      194
100     212

Fahrenheit to Celsius:
Fahrenheit  Celsius
32      0
52      11
72      22
92      33
112     44
132     55
152     66
172     77
192     88
212     100

Process finished with exit code 0
```

7. Supplementary Activity

1. In this program I used a function named volume() that calculates the volume of a cube using the formula V = s × s × s. The user enters the side length, and the function returns the computed value. It uses basic input/output commands and a simple formula.

2. This program calculates the hypotenuse of a right triangle using the Pythagorean theorem. It uses the math functions sqrt() and pow() from the <cmath> library. The program uses user inputs on two sides, and the program returns the hypotenuse.

3. In this program I initialized two functions celsius() and fahrenheit(), which convert temperature values between Celsius and Fahrenheit. I also used for-loops to help display conversion charts in a clean table format. The formulas used are C = (F - 32) × 5/9 and F = (C × 9/5) + 32.

8. Conclusion

In this activity, I learned how to create and use functions to solve different types of problems such as finding the volume of a cube, calculating the hypotenuse of a triangle, and converting temperatures between Celsius and Fahrenheit. I understood that using functions makes a program more organized, easier to read, and helps avoid repeating the same code. While making these codes it helped me practice using functions and mathematical equations to make a program using them like sqrt() and pow() to solve the given value that the user will input. Overall, I think I did well in understanding how each function works and how to apply them in real-world examples. However, I still need to improve my coding

speed and accuracy when typing commands, as well as my understanding of how to use more advanced math and logic functions in future programs to become more familiar with those kind of functions.