Quiz 5.1 – Functions in C++	
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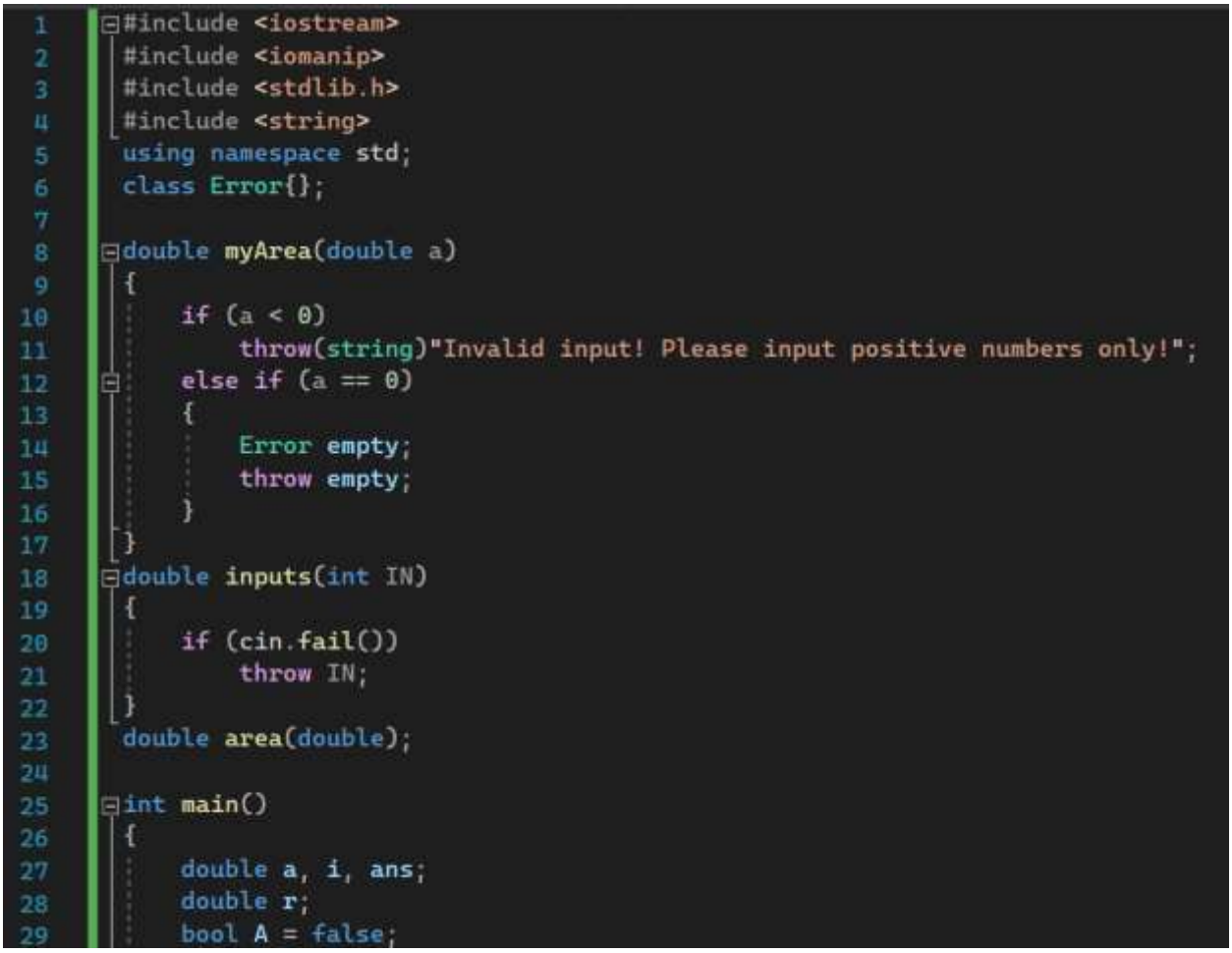
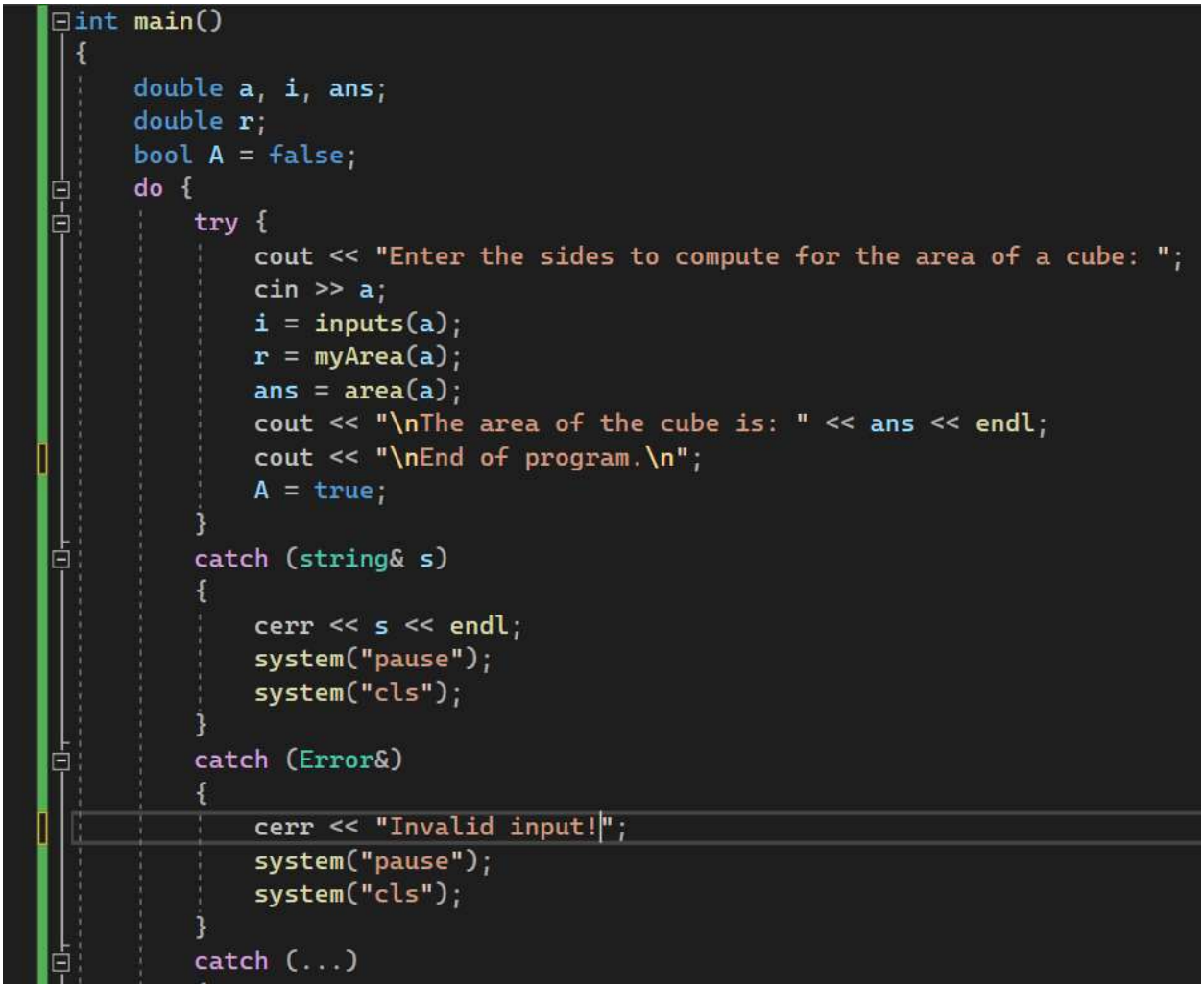
1. Create a program that defines a function to compute for the area of a cube. The formula of the area of the cube is given as A = s * s * s.



```
#include <iostream>
#include <iomanip>
#include <stdlib.h>
#include <string>
using namespace std;
class Error{};

double myArea(double a)
{
    if (a < 0)
        throw(string)"Invalid input! Please input positive numbers only!";
    else if (a == 0)
    {
        Error empty;
        throw empty;
    }
}
double inputs(int IN)
{
    if (cin.fail())
        throw IN;
}
double area(double);

int main()
{
    double a, i, ans;
    double r;
    bool A = false;
```



```
int main()
{
    double a, i, ans;
    double r;
    bool A = false;
    do {
        try {
            cout << "Enter the sides to compute for the area of a cube: ";
            cin >> a;
            i = inputs(a);
            r = myArea(a);
            ans = area(a);
            cout << "\nThe area of the cube is: " << ans << endl;
            cout << "\nEnd of program.\n";
            A = true;
        }
        catch (string& s)
        {
            cerr << s << endl;
            system("pause");
            system("cls");
        }
        catch (Error&)
        {
            cerr << "Invalid input!";
            system("pause");
            system("cls");
        }
        catch (...)
```

```
        }
        catch (string& s)
        {
            cerr << s << endl;
            system("pause");
            system("cls");
        }
        catch (Error&)
        {
            cerr << "Invalid input!";
            system("pause");
            system("cls");
        }
        catch (...)
        {
            cerr << "Please input an integer only!";
            system("pause");
            system("cls");
        }
    } while (!A);
}
double area(double s)
{
    double areas;
    areas = s * s * s;
    return areas;
}
```

```
Enter the sides to compute for the area of a cube: 8

The area of the cube is: 512

End of program.
```

```
Enter the sides to compute for the area of a cube: -8
Invalid input! Please input positive numbers only!
Press any key to continue . . .
```

```
Enter the sides to compute for the area of a cube: skz
Please input an integer only!
Press any key to continue . . .
```

2. Define a function hypotenuse that calculates the length of the hypotenuse of a right triangle when the other two sides are given. Use this function in a program to determine the length of the hypotenuse for each of the following triangles. The function takes two arguments of type double and return the hypotenuse as a double.

```cpp
#include <iostream>
#include <cmath>
#include <iomanip>
#include <stdlib.h>
#include <string>
using namespace std;
class Error{};

double hypno(double a, double b)
{
    if (b < 0)
        throw(string)"Invalid input! Please input positive numbers only!";
    else if (a < 0)
    {
        Error empty;
        throw empty;
    }
}
double inputs(int IN)
{
    if (cin.fail())
        throw IN;
}
double hypotenuse(double, double);

int main()
{
    double b = 18.03, p = 10.03, ans,i;
    double r;
```

```cpp
int main()
{
    double b = 18.03, p = 10.03, ans,i;
    double r;
    bool hyp = false;
    do {
        try {
            cout << "Enter the base and perpendicular of the triangle: \n" << fixed << setprecision(2);
            cout << "Base: ";
            cin >> b;
            i = inputs(b);
            cout << "Perpendicular: ";
            cin >> p;
            i = inputs(p);
            r = hypno(b, p);
            ans = hypotenuse(b, p);
            cout << "\nThe hypotenuse of the triangle is: " << ans << endl;
            cout << "\n\nEnd of program.";
            hyp = true;
        }
        catch (string& s)
        {
            cerr << s << endl;
            system("pause");
            system("cls");
        }
        catch (Error&)
        {
```

```
        }
        catch (string& s)
        {
            cerr << s << endl;
            system("pause");
            system("cls");
        }
        catch (Error&)
        {
            cerr << "Invalid input! Please input positive numbers only";
            system("pause");
            system("cls");
        }
        catch (...)
        {
            cerr << "Please input an integer only!";
            system("pause");
            system("cls");
        }
    } while (!hyp);
}
double hypotenuse(double s1, double s2)
{
    double h;
    h = sqrt(s1 * s1 + s2 * s2);
    return h;
}
```

```
Enter the base and perpendicular of the triangle:
Base: 18.03
Perpendicular: 10.03

The hypotenuse of the triangle is: 20.63


End of program.
```

Conclusions:

The first activity requires creating a program that will compute for a cube using a function and the given formula. I've included the error handling or exemptions incase that the user input unnecessary value in the program. I've done the same to the second activity which is calculating the hypotenuse. It's pretty much the same, but in the second activity, I used the cmath library to use the "sqrt" or square root to compute for the hypotenuse. By doing these activities, I've learned how to use functions properly and how to call them out because there were times where I couldn't call out my functions.

I affirm that I will not give or receive any unauthorized help in this activity/exam and all work will be my own.