GE211
C++ Programming

Lab #2

Objectives

- More about math functions.
- Learn about Simple `if` and `if-else` statement.
- Simple loop mechanism.

Exercise 1

Write a C++ program to evaluate the function written below:

$$y = \begin{cases} x^2 - \sqrt{x} & x \geq 0 \\ 1 - e^x & -10 < x < 0 \\ |x + 5| & x \leq -10 \end{cases}$$

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

int main()
{
    double x, y;
    cout << "Enter the value of x: ";
    cin >> x;

    if (x >= 0)
        y = x * x + sqrt(x);
    else if (x > - 10 && x < 0)
        y = 1 - exp(x);
    else
        y = fabs(x + 5);

    cout << "y = " << y << endl;

    return 0;
}
```

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

int main()
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    double x, y;
    cout << "Enter the value of x: ";
    cin >> x;

    if (x >= 0)
        y = x * x + sqrt(x);
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        y = 1 - exp(x);
    else
        y = fabs(x + 5);

    cout << "y = " << y << endl;

    return 0;
}
```

Exercise 2

Write a program to read and average 6 integers using `while` loop and print the result.

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

int main()
{
    int x, count = 0, sum = 0;
    double average;

    cout << "Enter six grades:" << endl;

    while(count < 6)
    {
        cin >> x;
        sum = sum + x;
        count++;
    }
    average = sum / 6.0;
    cout << "The Average is " << average << endl;

    return 0;
}
```

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

int main()
{
    int x, count = 0, sum = 0;
    double average;

    cout << "Enter six grades:" << endl;

    while(count < 6)
    {
      cin >> x;
      sum = sum + x;
      count++;
    }
    average = sum / 6.0;
    cout << "The Average is " << average << endl;

    return 0;
}
```

PostLab 2

Q1: Determine the value of each of the following arithmetic expressions. (when embedded in a small C++ program)

Arithmetic Expressions	Answer	Arithmetic Expressions	Answer
sqrt(16.0)		pow(2,3)	
sqrt(16)		abs(-3)	
pow(2.0,3.0)		fabs(-3.5)	
ceil(5.1)		floor(5.8)	
(7+sqrt(4.0))/3.0		pow(3.0,2)/2	

PostLab 2

Q2: Modify Exercise 2 that allow user to read and average **N** integers and print the result.

Q3: Change Exercise 2 to work with a `do while` loop instead of `while` loop.