COSC 120 Lab 3 Report
Charles Reigle

Lab 3.1

Source Code

```
// Charles Reigle

#include <iostream>
#include <iomanip>
using namespace std;

int main()
{
    int quantity;       // contains the amount of items purchased
    float itemPrice;    // contains the price of each item
    float totalBill;    // contains the total bill.

    cout << setprecision(2) << fixed << showpoint;  // formatted output
    cout << "Please input the number of items bought" << endl;

    cin >> quantity;

    cout << "Please input the price of each item" << endl;
    cin >> itemPrice;

    totalBill = quantity * itemPrice;

    cout << "The total bill is $" << totalBill;

    return 0;
}
```

Output

```
Please input the number of items bought
22
Please input the price of each item
10.98
The total bill is $241.56
Process returned 0 (0x0)   execution time : 2.903 s
Press any key to continue.
```

Exercise 2:

```
Please input the number of items bought
22
Please input the price of each item
10.98
The total bill is $2.4e+02
Process returned 0 (0x0)   execution time : 2.826 s
Press any key to continue.
```

Answers

Exercise 2: The fixed attribute makes sure that all values are printed in numerical value, and not scientific notation.

Exercise 3: setprecision() sets how many decimal points will be displayed behind a number, even if the number is a whole number.

Lab 3.2

Source Code

```
1  // This program will bring in two prices and two quantities of items
2  // from the keyboard and print those numbers in a formatted chart.
3
4  // Charles Reigle
5
6  #include <iostream>
7  #include <iomanip>
8
9  using namespace std;
10
11 int main()
12 {
13     float price1, price2;       // The price of 2 items
14     int quantity1, quantity2;   // The quantity of 2 items
15
16     cout << setprecision(2) << fixed << showpoint;
17     cout << "Please input the price and quantity of the first item" << endl;
18
19     cin >> price1 >> quantity1;
20
21     cout << "Please input the price and quantity of the second item" << endl;
22
23     cin >> price2 >> quantity2;
24
25     cout << setw(15) << "PRICE" << setw(12) << "QUANTITY\n\n";
26
27
28     cout << setw(15) << price1 << setw(10) << quantity1 << endl;
29
30     cout << setw(15) << price2 << setw(10) << quantity2 <<endl;
31     return 0;
32 }
33
```

Output

```
Please input the price and quantity of the first item
1.95 8
Please input the price and quantity of the second item
10.89 9
         PRICE  QUANTITY

          1.95         8
         10.89         9

Process returned 0 (0x0)   execution time : 15.704 s
Press any key to continue.
```

Lab 3.3

Source Code

```
1   // This program will input the value of two sides of a right triangle and then
2   // determine the size of the hypotenuse.
3
4   // Charles Reigle
5
6   #include <iostream>
7   #include <cmath>    // needed for math functions like sqrt()
8   using namespace std;
9
10  int main()
11  {
12      float a, b; // the smaller two sides of the triangle
13      float hyp;  // the hypotenuse calculated by the program
14
15      cout << "Please input the value of the two sides" << endl;
16      cin >> a >> b;
17
18      hyp = sqrt(pow(a, 2) + pow(b, 2));
19
20      cout << "The sides of the right triangle are " << a << " and " << b << endl;
21
22      cout << "The hypotenuse is " << hyp << endl;
23
24      return 0;
25  }
26
```

Exercise 2:

```cpp
// This program will input the value of two sides of a right triangle and then
// determine the size of the hypotenuse.

// Charles Reigle

#include <iostream>
#include <cmath>    // needed for math functions like sqrt()
#include <iomanip>
using namespace std;

int main()
{
    float a, b; // the smaller two sides of the triangle
    float hyp;  // the hypotenuse calculated by the program

    cout << "Please input the value of the two sides" << endl;
    cin >> a >> b;

    hyp = sqrt(pow(a, 2) + pow(b, 2));

    cout << "The sides of the right triangle are " << a << " and " << b << endl;

    cout << setprecision(3) << "The hypotenuse is " << hyp << endl;

    return 0;
}
```

Output

```
Please input the value of the two sides
9 3
The sides of the right triangle are 9 and 3
The hypotenuse is 9.48683

Process returned 0 (0x0)   execution time : 2.698 s
Press any key to continue.
```

Exercise 2:

```
Please input the value of the two sides
9 3
The sides of the right triangle are 9 and 3
The hypotenuse is 9.49

Process returned 0 (0x0)   execution time : 1.839 s
Press any key to continue.
```

Lab 3.4

Source Code

Exercise 2:

```
1   // This program will determine the batting average of a player.
2   // The number of hits and at bats are set internally in the program.
3
4   // Charles Reigle
5
6   #include <iostream>
7   using namespace std;
8
9   const float AT_BAT = 421;
10  const float HITS = 123;
11
12  int main()
13  {
14      float batAvg;
15
16      batAvg = HITS / AT_BAT;                              // an assignment statement
17      cout << "The batting average is " << batAvg << endl;     // output the result
18
19      return 0;
20  }
21
```

Exercise 3:

```
1   // This program will determine the batting average of a player.
2   // The number of hits and at bats are set internally in the program.
3
4   // Charles Reigle
5
6   #include <iostream>
7   using namespace std;
8
9   const int AT_BAT = 421;
10  const int HITS = 123;
11
12  int main()
13  {
14      float batAvg;
15
16      batAvg = (float) HITS / AT_BAT;                          // an assignment statement
17      cout << "The batting average is " << batAvg << endl;     // output the result
18
19      return 0;
20  }
21
```

Output

Exercise 1:

```
The batting average is 0
```

Exercise 2:

```
The batting average is 0.292162
```

Exercise 3:

```
The batting average is 0.292162
```

Lab 3.5 (Option 1)

Source Code

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

using namespace std;

int main()
{
    double first, second, third;

    double avg;

    cout << "Please input the first grade" << endl;

    cin >> first;

    cout << "Please input the second grade" << endl;

    cin >> second;

    cout << "Please input the third grade" << endl;

    cin >> third;

    avg = (first + second + third) / 3;

    cout << setprecision(4) << "The average of the three grades is " << avg << endl;

}
```

Output

```
Please input the first grade
97
Please input the second grade
98.3
Please input the third grade
95
The average of the three grades is 96.77

Process returned 0 (0x0)   execution time : 16.632 s
Press any key to continue.
```