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Lab 3

Lab 3.1

Source Code:

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

int main()
{
   string itemname;
         int        quantity;
         float itemPrice;
         float totalBill;
         cout << setprecision(2) << fixed << showpoint;

         cout << "Please input the name of the item purchased: " << endl;
         getline(cin, itemname);

         cout << "Please input the number of items bought" << endl;
   cin >> quantity;
```

```
    cout << "Please input the item's price: " << endl;
    cin >> itemPrice;

    totalBill = (itemPrice * quantity);
    cout << "The item you purchased is: " << itemname << endl;
    cout << "The total bill is: $" << totalBill << endl;

        return 0;
}
```

Output:

```
Please input the name of the item purchased:
Chocolate Milk
Please input the number of items bought
14
Please input the item's price:
13.37
The item you purchased is: Chocolate Milk
The total bill is: $187.18
```

Question Answer:

This program used cin and cout to assign values into the variables quantity, itemPrice, itemname and totalBill. The operation setprecision was used to format output to display only two floating point numbers after the decimal, to use the format money uses. The setprecision was set to two, and if it is changed, the output will be formatted with the amount of floating point numbers that is in the value of the setprecision function.

Lab 3.2

Source Code:

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

int main()
{
	float price1, price2;
	int	quantity1, quantity2;

	cout << setprecision(2) << fixed << showpoint;

	cout << "Please input the price and quantity of the first item" << endl;
	cin >> price1 >> quantity1;

   cout << "Please input the price and quantity of the second item" << endl;
   cin >> price2 >> quantity2;

	cout << setw(15) << "PRICE" << setw(12) << "QUANTITY\n\n";

   cout << "The first price is " << price1 << " and the quantity is " << quantity1 << endl;
   cout << "The second price is " << price2 << " and the quantity is " << quantity2 << endl;

	return 0;
}
```

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

The first price is 1.95 and the quantity is 8

The second price is 10.89 and the quantity is 9

Question Answer:

This program used cin and cout to assign value into four variables. cout was then used in order to output the values in formatted output. cin was used to store the input into the variables. cin can assign values to multiple variables as long as the user puts a space between each one during execution.

Lab 3.3

Source Code:

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

int main()
```

```
{
        float a, b;
        float hyp;

   cout << setprecision(2) << fixed << showpoint;

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

   hyp = sqrt((a*a) + (b*b));

        cout << "The sides of the right triangle are " << a << " and " << b << endl;
        cout << "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 9.00 and 3.00
The hypotenuse is 9.49
```

Question Answer:

This program used the cmath library which allowed us to use the sqrt() function. The values of the two sides of a triangle were assigned to a and b and the hypotenuse was calculated using sqrt() function. The value of the hypotenuse was output and the decimal point was limited to two floating point numbers by using setprecision from the iomanip library.

Lab 3.4

Source Code:

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

const int AT_BAT = 421;
const int HITS = 123;

int main()
{
	double batAvg;

	batAvg = double(HITS) / double(AT_BAT);
	cout << "The batting average is " << batAvg << endl;

	return 0;
}
```

Output:

```
The batting average is 0.292162
```

Question Answer:

This program calculates a batting average using two constants. The first output of the program is 0. Changing the data type of batAvg alone does not solve the problem of outputting 0. By type casting the data type for HITS and AT_BAT to double, the output is in the form of a double.

Lab 3.5.1

Source Code:

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

int main()
{
   double grade1;
   double grade2;
   double grade3;
   double avg;
   cout << setprecision(2) << fixed;
   cout << "Please input the first grade" << endl;
   cin >> grade1;
   cout << endl;

   cout << "Please input the second grade" << endl;
   cin >> grade2;
   cout << endl;

   cout << "Please enter the third grade" << endl;
```

```
    cin >> grade3;
    cout << endl;

    avg = (grade1 + grade2 + grade3) / 3;
    cout << "The average of the three grades is " << avg << endl;

    return 0;
}
```

Output:

```
Please input the first grade
97

Please input the second grade
98.3

Please enter the third grade
95

The average of the three grades is 96.77
```

Lab 3.5.2

Source Code:

```
#include <iostream>
#include <iomanip>
```

```
using namespace std;

int main()
{
   int ac;
   int mo;
   int fc;

   cout << "Please input the amount of American Colonial chairs sold" << endl;
   cin >> ac;
   cout << endl;

   cout << "Please input the amount of Modern chairs sold" << endl;
   cin >> mo;
   cout << endl;

   cout << "Please input the amount of French Classical chairs sold" << endl;
   cin >> fc;
   cout << endl;

   cout << setprecision(2) << fixed;
   double salesac = ac * 85.00;
   double salesmo = mo * 57.50;
   double salesfc = fc * 127.75;
   double totalsales = salesac + salesmo + salesfc;

   cout << "Total American Colonial sales: $" << salesac << endl;
   cout << "Total Modern sales: $" << salesmo << endl;
   cout << "Total French Classical sales: $" << salesfc << endl;
```

```
    cout << "Total sales: $" << totalsales << endl;

    return 0;
}
```

Output:

```
Please input the amount of American Colonial chairs sold
20

Please input the amount of Modern chairs sold
15

Please input the amount of French Classical chairs sold
5

Total American Colonial sales: $1700.00
Total Modern sales: $862.50
Total French Classical sales: $638.75
Total sales: $3201.25
```

Lab 3.5.3

Source Code:

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

```
int main()
{
   double sales;
   double state;
   double local;

   cout << "Please input total sales for the month" << endl;
   cin >> sales;
   cout << endl;

   cout << "Input state tax in decimal form (.02 for 2%)" << endl;
   cin >> state;
   cout <<endl;

   cout << "Input local tax in decimal form (.02 for 2%)" << endl;
   cin >> local;
   cout << endl;

   double statetax = sales * state;
   double localtax = sales * local;

   cout << "Total sales for the month: $" << sales << endl;
   cout << "State tax for the month is: $" << statetax << endl;
   cout << "The local tax for the month is: $" << localtax << endl;

   return 0;
}
```

Output:

Please input total sales for the month

1080

Input state tax in decimal form (.02 for 2%)

.06

Input local tax in decimal form (.02 for 2%)

.02

Total sales for the month: $1080

State tax for the month is: $64.8

The local tax for the month is: $21.6

Question Answer:

Each program was created from scratch and uses cin and cout as well as formatted output to complete the programs.