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Lab 6.1

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Lab 6.1.1

Source Code:

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

void writeProverb();

int main()
{
   writeProverb();
        return 0;
}

//*****************************************************************
//      writeProverb
//
//      task:     This function prints a proverb
//      data in:  none
//      data out: no actual parameter altered
//
//*****************************************************************
```

```
void writeProverb()

{

   cout << "Now is the time for all good men to come to the aid of their party" << endl;

}
```

Output:

Now is the time for all good men to come to the aid of their party

Question Answer:

Exercise 1 wanted to create the writeProverb function after the main function. Then the task was to fill in the code inside the main function to call the writeProverb function and output the proverb in the console.

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Lab 6.1.2

Source Code:

```
#include <iostream>

#include <string>

using namespace std;


void writeProverb(string choice);


int main()

{

        string word;


        cout << "Given the phrase:" << endl;

        cout << "Now is the time for all good men to come to the aid of their ___"

                << endl;


   cout << "Enter the last word of the proverb." << endl;
```

```
        writeProverb(word);
        cout << endl;

        return 0;
}

//      ********************************************************************************
//      writeProverb
//
//      task:       This function prints a proverb. The function takes a number
//              from the call. If that number is a 1 it prints "Now is the time
//              for all good men to come to the aid of their party."
//              Otherwise, it prints "Now is the time for all good men
//              to come to the aid of their country."
//      data in:  code for ending word of proverb (integer)
//      data out: no actual parameter altered
//
//      ********************************************************************************

void writeProverb(string wordchoice)
{
   cin >> wordchoice;
   cout << "Now is the time for all good men to come to the aid of their " << wordchoice;
}
```

Output:

1

Now is the time for all good men to come to the aid of their party

2

Now is the time for all good men to come to the aid of their country

3.97

Now is the time for all good men to come to the aid of their country

3

Now is the time for all good men to come to the aid of their invalid. Enter 1 or 2 next time

Given the phrase:

Now is the time for all good men to come to the aid of their ___

Enter the last word of the proverb.

nation

Now is the time for all good men to come to the aid of their nation

Question Answer:

Exercise 1 wanted us to fill in the prototype parameters, fill in the block of code inside the function after the main function, and fill in the code inside the main function to call the writeProverb function. The code in the writeProverb function was only an if/else statement that assigned party to 1 and country to anything else.

Exercise 2 wanted to change the if/else statement in the writeProverb function to an if/else if statement that had conditions to be true if number == 1 or number == 2. Else, the function outputs “invalid”.

Exercise 3 wanted to change the function to allow the user to input their own word into the function instead of having to input a 1 or 2 to get a predefined word. The function was changed to have a string parameter instead of an int.

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Lab 6.1.3

Source Code:

```
#include <iostream>

#include <iomanip>

using namespace std;
```

```
void printDescription();
void computePaycheck(float, int, float&, float&);

int main()
{
	float payRate;
	float grossPay;
	float netPay;
	int hours;

	cout << setprecision(2) << fixed;
	cout << "Welcome to the Pay Roll Program" << endl;

	printDescription();

	cout << "Please input the pay per hour" << endl;
	cin >> payRate;

	cout << endl << "Please input the number of hours worked" << endl;
	cin >> hours;

	cout << endl << endl;

	computePaycheck(payRate, hours, grossPay, netPay);

	cout << "We hope you enjoyed this program" << endl;

	return 0;
}
```

```
//      ************************************************************************
//      printDescription
//
//      task:       This function prints a program description
//      data in:  none
//      data out: no actual parameter altered
//
//      ************************************************************************

void printDescription()
{
        cout << "*********************************************" << endl << endl;
        cout << "This program takes two numbers (payRate & hours)" << endl;
        cout << "and multiplies them to get gross pay " << endl;
        cout << "it then calculates net pay by subtracting 15%" << endl;
        cout << "*********************************************" << endl << endl;
}

//      ************************************************************************
//      computePaycheck
//
//      task:       This function takes rate and time and multiples them to
//                  get gross pay and then finds net pay by subtracting 15%.
//      data in:  pay rate and time in hours worked
//      data out: the gross and net pay
//
//      ************************************************************************
```

```
void computePaycheck(float rate, int time, float& gross, float& net)
{
   float temp;
   gross = rate * time;
   temp = gross * 0.15;
         net = gross - temp;
         cout << "The gross pay is $" << gross << endl;
         cout << "The net pay is $" << net << endl;
}
```

Output:

```
Welcome to the Pay Roll Program
**********************************************

This program takes two numbers (payRate & hours)
and multiplies them to get gross pay
it then calculates net pay by subtracting 15%
**********************************************

Please input the pay per hour
9.50

Please input the number of hours worked
40



The gross pay is $380.00
The net pay is $323.00
We hope you enjoyed this program
```

Question Answer:

Exercise 1 wanted us to fill in the code in the main function and the computePaycheck function to output the net oay and gross pay.

Exercise 2 wanted to compile and run the program with 9.50 being the hourly pay and 40 being the hours worked.

Exercise 3 wanted to know if gross and net were pass by value or pass by reference. They are both pass by reference.

Exercise 4 wanted to change the function computePaycheck to print the values of gross and net pay, instead of having the main function contain the statements to print them.

Exercise 5 wanted to run the program again and input the values from exercise 2.

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Lab 6.1.4.1

Source Code:

```
#include <iostream>

using namespace std;


void numswap(int&, int&);


int main()

{

   int num1;

   int num2;


   cout << "Enter an integer value:" << endl;

   cin >> num1;


   cout << "Enter a second integer number:" << endl;

   cin >> num2;


   cout << "You input " << num1 << " as the first integer and " << num2 << " as the second integer" <<
endl;
```

```
    numswap(num1, num2);


    return 0;
}


void numswap(int& x, int& y)
{
    int temp;
    temp = y;
    y = x;
    x = temp;
    cout << "After swapping, number 1 is " << x << " and number 2 is " << y << endl;
}
```

Output:

```
Enter an integer value:
80
Enter a second integer number:
70
You input 80 as the first integer and 70 as the second integer
After swapping, number 1 is 70 and number 2 is 80
```

Question Answer:

Exercise 1 wanted to write the program from scratch and compile until there are no syntax errors. There are no syntax errors in the code above

Exercise 2 wanted to run the program tp see if the results were correct.

Exercise 3 wanted to know if the variables in the function were pass by reference or pass by value. They are pass by reference.

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Lab 6.1.4.2

Source Code:

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

double calculatespeed(double& x, double& y);

int main()
{
   double miles;
   double hours;
   double mph;

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

   cout << "Enter the amount of miles travelled." << endl;
   cin >> miles;

   cout << "Enter the amount of hours travelled" << endl;
   cin >> hours;

   mph = calculatespeed(miles, hours);
   cout << "You travelled " << mph << " miles per hour." << endl;

   return 0;
}

double calculatespeed(double& x, double& y)
{
   double speed;
```

```
    speed = x / y;
    return speed;
}
```

Output:

```
Enter the amount of miles travelled.
180
Enter the amount of hours travelled
2.5
You travelled 72.00 miles per hour.
```

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Lab 6.1.4.3

Source Code:

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

double getgrades(int y);

int main()
{
    int numofgrades;
    double avg;

    cout << "Enter the number of grades recorded" << endl;
    cin >> numofgrades;

    avg = getgrades(numofgrades);

    if (avg > 90)
    {
```

```
        cout << "You got an A" << endl;
    }
    else if (avg >= 80 && avg <= 89.99)
    {
        cout << "you got a B" << endl;
    }
    else if (avg >= 70 && avg <= 79.99)
    {
        cout << "You got a C" << endl;
    }
    else if (avg >= 60 && avg <= 69.99)
    {
        cout << "You got a D" << endl;
    }
    else if (avg <= 60)
    {
        cout << "You failed the class" << endl;
    }
    else{
        cout << "invalid input" << endl;
    }

    return 0;
}

double getgrades(int y)
{
    double x;
    double total = 0;
```

```
    double average;
    for(int i = 0; i < y; i++)
    {
        cout << "Please enter a grade" << endl;
        cin >> x;
        total = total + x;
    }
    static_cast<double>(y);
    average = total / y;
    cout << "Average grade is " << average << endl;
    return average;
}
```

Output:

```
Enter the number of grades recorded
2
Please enter a grade
99.00
Please enter a grade
85.75
Average grade is 92.375
You got an A
```

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