Lab 2

LAB 2.1 Working with the `cout` Statement

Exercise 1
Retrieve program `name.cpp` from the Lab 2 folder.

Fill in the code so that the program will do the following:
Write your first and last name on one line.
Write your address on the next line (recall the function of the endl statement).
Write your city, state and zip on the next line.
Write your telephone number on the next line.

Remember that to output a literal, such as "Hello", you must use quotes.
Compile and run the program.

Example:

```
Deano Beano
123 Markadella Lane
Fruitland, Md. 55503
489-555-5555
```

The code for `name.cpp` is as follows:

```
// This program will write the name, address and telephone
// number of the programmer.

// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;
int main()
{

   // Fill in this pace to write your first and last name
   // Fill in this pace to write your address (on new line)
   // Fill in this pace to write your city, state and zip (on new line)
   // Fill in this pace to write your telephone number (on new line)

   return 0;


}
```

Exercise 2
Change the program so that three blank lines separate the telephone number from the address. Compile and run the program.

Exercise 3
Change the program so that the following (but with your name and address) is printed. Try to get the spacing just like the example. Compile and run the program.

```
************
    Programmer: Deano Beano
                    123 Markadella Lane
                Fruitland, Md. 55503
    Telephone:  489-555-5555

************
```

LAB 2.2 Working with Constants, Variables and Arithmetic Operators

Exercise 1

Bring in the file `circlearea.cpp` from the Lab 2 folder.

The code of `circlearea.cpp` is as follows:

```
// This program will output the circumference and area
// of the circle with a given radius.

// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;

const double PI = 3.14;
const double RADIUS = 5.4;

int main()
{
      __________  area                                  // definition of area of circle
      float circumference;                              // definition of circumference
      circumference = 2 * PI * RADIUS;                  // computes circumference
      area = _______________;                           // computes area

      // Fill in the code for the cout statement that will output (with description)
      // the circumference

      // Fill in the code for the cout statement that will output (with description)
      // the area of the circle

      return 0;
}
```

Exercise 2

Fill in the blanks and the `cout` statements so that the output will produce the following:

```
The circumference of the circle is 33.912
The area of the circle is 91.5624
```

Exercise 3

Change the data type of circumference from float to int . Run the program and record the results.

The circumference of the circle is _____ .
The area of the circle is _____.

Explain what happened to get the above results.

LAB 2.3 Rectangle Area and Perimeter

Exercise 1

Using Lab 2.2 as an example, develop a program that will determine the area and perimeter of a rectangle. The length and width can be given as constants. (`LENGTH=8 WIDTH=3`)

Exercise 2

Compile and run your program. Continue to work on it until you get the following output.

```
The area of the rectangle is 24
The perimeter of the rectangle is 22
```

LAB 2.4 Working with Characters and Strings

Exercise 1

Retrieve program `stringchar.cpp` from the Lab 2 folder. This program illustrates the use of characters and strings. The `char` data type allows only one character to be stored in its memory location. The `string` data type (actually a class and not a true data type built into the language) allows a sequence of characters to be stored in one memory location. The code follows:

```
// This program demonstrates the use of characters and strings

// PLACE YOUR NAME HERE

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

// Definition of constants
const string FAVORITESODA = "Dr. Dolittle";    // use double quotes for strings
const char BESTRATING = 'A';                   // use single quotes for characters

int main()
{
   char rating;                  // 2nd highest product rating
   string favoriteSnack;   // most preferred snack
   int numberOfPeople;           // the number of people in the survey
   int topChoiceTotal;           // the number of people who prefer the top choice

   // Fill in the code to do the following:
   // Assign the value of "crackers" to favoriteSnack
   // Assign a grade of 'B' to rating
   // Assign the number 250 to the numberOfPeople
   // Assign the number 148 to the topChoiceTotal

   // Fill in the blanks of the following:
   cout << "The preferred soda is " << _____________<< endl;
   cout << "The preferred snack is " << _____________<< endl;
   cout << "Out of " << _____________ << " people "
        << _____________ << " chose these items!" << endl;
   cout << "Each of these products were given a rating of " << ;
   cout << " from our expert tasters" << endl;
   cout << "The other products were rated no higher than a " << rating
        << endl;

       return 0;
}
```

Exercise 2

Fill in the indicated code, then compile and run the program. Continue to work on the program until you have no syntax, run-time, or logic errors.

The output should look similar to the following:

The preferred soda is Dr. Dolittle
The preferred snack is crackers
Out of 250 people 148 chose these items!
Each of these products were given a rating of A from our expert tasters
The other products were rated no higher than a B

Exercise 3
Is it possible to change the choice of FAVORITESODA by adding code within the main module of the program? Why or why not?

Exercise 4
Is it possible to change the choice of favoriteSnack by adding code within the program? Why or why not?