Homework Assignment 02:

1. Declare and initialize two integers variables to zero. The variables are named feet and inches.

2. Declare and initialize two variables, one int and one double. Both should be initialized to the appropriate form of 5.

3. Give good variable names for identifiers to store: a) the speed of an automobile, b) an hourly pay rate, c) the highest score on an exam?

4. Write an input statement to place a value in the variable the_number.

5. Write the output statement to prompt for the value to store in the_number.

6. Write an output statement that produces a newline.

7. Format output of rational numbers to show 4 decimal places.

8. Write an if-else statement that outputs the word High if the value of the variable score is greater than 100 and Low if the value of score is at most 100. The variables are of type int.

9. Write an if-else statement that outputs the word Warning provided that either the value of the variable temperature is greater than or equal to 100, or the of the variable pressure is greater than or equal to 200, or both. Otherwise, the if_else statement outputs the word OK. The variables are of type int.

10. Show the output of this code if x is of type int:
    
    x = 10;
    while ( x > 0 )
    {
        cout << x << endl;
        x = x - 3;
    }

11. Show the output of the previous code using the comparison x < 0 instead of x > 0.

12. Create a named constant of type double.

13. Explain if a program can modify the value of a constant.
14. Write a function definition for a function named `in_order` that takes three arguments of type `int`. The function returns `True` if the arguments are in ascending order; otherwise, it returns `False`.

15. Determine the value of these Boolean expressions. Assume `count = 0` and `limit = 10`:
   a) `(count == 0) && (limit < 20)`
   b) `!(count == 12)`
   c) `(limit < 0) && ((limit / count) > 7)`

16. Give the output of this code fragment:

```cpp
{  
  int x = 1;
  cout << x << endl;
  
  {  
    cout << x << endl;
    int x = 2;
    cout << x << endl;
  }
  cout << x << endl;
}
```

17. Determine the output of the following code:

```cpp
for(int count = 1; count < 5; count++)
  cout << (2 * count) << " ";
```

18. Determine which type of loop is likely to be best for:
   a) Summing a series such as $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \cdots + \frac{1}{10}$.
   b) Reading a list of exam scores for one student.
   c) Testing a function to see how it performs with different values of its arguments.

19. Show the bit representation of the following integers declared `short`:
    2015, -2015, 6666, 12345

20. Show the bit representation of the following floating-point numbers declared `float`:
    1.25, -0.09375, 1234.5, -256.625

Due 5pm Wednesday January 27
Either, deliver a paper copy to the HW Box in HFH 2108 before 5pm, or email an electronic copy to the TA, Suraj Rajesh (suraj_rajesh@cs.ucsb.edu). Electronic copy of your homework needs to be in Text, PDF or MS Word, or Open Office format. You could also scan/pdf your handwritten work; however, do not send (low-resolution or small) phone-camera images under any circumstances!