Written exercises #5

1) How many times is the following loop executed? Trace the execution of the code by writing the successive values of the variables number and done.
   ```java
   int number = 2;
   boolean done = false;
   while (!done) {
       number *= 2;
       done = (number > 64);
   }
   ```

2) Write a method, countChar, that takes a String and a char and that returns the number of times that character appears in the string. For instance, countChar("aa123abdae6", 'a') should return 4 since the character 'a' appears 4 times in the string. Use only the methods charAt and length from the String class.

3) If we list all the positive integers less than 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Write a loop that finds the sum of all the positive integers less than 1000 that are multiples of 3 or 5. Run the code in Eclipse and give the answer that you find.

4) Write a nested loop code segment that produces this output
   ```
   1
   1 2
   1 2 3
   1 2 3 4
   1 2 3
   1 2
   1
   ```

5) Write a method, keywordCount, that takes an ArrayList of Strings, listOfStrings, and a String, keyword, and that returns the number of times the String keyword appears in all of the Strings of listOfStrings.

   For instance if listOfStrings contains
   ```java
   ["The classification of cats", "staccato", "catamaran", "the caterpillar and the bobcat"]
   ```
   and if keyword is "cat", then the call keywordCount(listOfStrings, keyword) would return 6 since the string "cat" appears 6 times in all of the strings listed in listOfStrings.

   You may use any method from the String class in your solution (a good one for this problem is indexOf).