COMP 110 – Branching & Loop Review

Executing Loops
For these problems, assume that \( \triangleright \) represents pressing the enter key, and that the variable \( kb \) is defined as follows:

\[
\text{Scanner } \ kb = \text{ new Scanner(System.in);} \]

1. What is the value of \( temp \) at the end of the loop for the following input?  
   \[
   \text{Input: } 5 \ 6 \ 2 \ 7 \ 6 \ 4 \ 1 \ 9 \ 8 \ \triangleright \]
   \[
   \text{System.out.print("Please input an int: ");} \\
   \text{int input = kb.nextInt();} \\
   \text{int temp = 0;} \\
   \text{while (input > 0)} \\
   \{
   \quad \text{if (input > 5)} \\
   \qquad \text{temp++;} \\
   \quad \text{System.out.print("Please input an int: ");} \\
   \quad \text{input = kb.nextInt();}
   \}
   \]
   What would be a better name for \( temp \) (Think about what the program is doing)? \( \text{countOver5} \)

2. What is the value of \( temp \) at the end of the loop for the following input?  
   \[
   \text{Input: } 3 \ 5 \ \triangleright \ 1 \ 7 \ 4 \ 10 \ 4 \ 10 \ 6 \ \triangleright \]
   \[
   \text{System.out.print("Please input an int: ");} \\
   \text{int input = kb.nextInt();} \\
   \text{int temp = input;} \\
   \text{for (int i = 0; i < 7; i++)} \\
   \{
   \quad \text{if (input > temp)} \\
   \qquad \text{temp = input;} \\
   \quad \text{System.out.print("Please input an int: ");} \\
   \quad \text{input = kb.nextInt();}
   \}
   \]
   What would be a better name for \( temp \) (Think about what the program is doing)? \( \text{max} \)

3. What is the value of \( temp \) at the end of the loop for the following input?  
   \[
   \text{Input: } 5 \ 6 \ 2 \ 7 \ 6 \ 4 \ 1 \ 9 \ 8 \ \triangleright \]
   \[
   \text{int temp = 0;} \\
   \text{int input;} \\
   \text{do} \\
   \{
   \quad \text{System.out.print("Please input an int: ");} \\
   \quad \text{input = kb.nextInt();} \\
   \quad \text{temp += input;} \\
   \} \text{ while (input > 0);} \\
   \]
   What would be a better name for \( temp \) (Think about what the program is doing)? \( \text{sum} \)

Note: This program contains a possible logic bug; the sentinel value is included in the sum.
Designing Loops
Write your responses to these problems as a Java code fragment (no class or main method declaration).

4. Write a program fragment that uses one loop to compute two sums: the sum of the positive even integers and the sum of the positive odd integers that are less than or equal to 20.

```java
int oddSum = 0;
int evenSum = 0;
for (int i = 1; i <= 20; i++)
{
    if (i % 2 == 0)
    {
        evenSum = evenSum + i;
    }
    else
    {
        oddSum = oddSum + i;
    }
}
System.out.println("Even Sum = " + evenSum);
System.out.println("Odd Sum  = " + oddSum);
```

5. Write a program fragment that reads in a list of delimited integers from the user, and computes the sum of the values that are strictly greater than any previously entered value. Stop reading in values if the user enters a negative number. For example, for the input 2 6 4 9 8 11 13 4 13 -1 the computed sum would be 41.

```java
Scanner kb = new Scanner(System.in);
System.out.println("Enter a series of space-separated integers, " +
    "ending with -1:");

int sum = 0;
int max = 0;
int value;
do
{
    value = kb.nextInt();
    if (value > max)
    {
        sum += value;
        max = value;
    }
} while(value >= 0);
System.out.println("Strictly Increasing Sum = " + sum);
```