CSC 1051 - Lab 4

Objectives:
Practice using algorithms and programs with **while** loops.

Assignment:
1. What gets printed? Trace through these loops by hand and write your answers on this worksheet. Show output as it will appear or indicate “NO OUTPUT” or show some of the output followed by “INFINITE LOOP.” Afterwards, implement a simple program to verify your answers.

```
int a = 0;
while (a<10)
{
    System.out.println(a);
    a++;
}
```

```
int a = 0;
while (a<10)
    System.out.println(a);
    a++;
// (same as previous one, only no braces)
```

```
int a = 0;
while (a<=10)
{
    System.out.println(a);
    a++;
}
```

Name: ________________________________
```java
int a = 10;
while (a<10)
{
    System.out.println(a);
    a++;
}

int a = 10;
while (a>0)
{
    System.out.println(a);
    a--;
}

int a = 10;
while (a>0)
{
    System.out.println(a);
    a = a - 2;
}

int a = 1;
while (a <= 10)
{
    if (((a%2)==0)
        System.out.println(a);
    a++
}

int a = 1;
while (a <= 5)
{
    System.out.println(2*a);
    a++
}
```
2. Let’s look at the problem of repeating a calculation, for example, the wages calculation in one of our earlier programs (see http://www.csc.villanova.edu/~map/1051/Chap05/Wages.java ). We will do this in four ways.
For each of the four approaches:

• Write the algorithm
• Implement and test the corresponding Java program

A: Keep calculating wages until user quits program (infinite loop).

Variables:

Algorithm:

Demonstrate your program: ______________________________________________

B: Keep calculating wages and ask each time whether to keep going.

Variables:

Algorithm:

Demonstrate your program: ______________________________________________
C: Keep calculating wages until user inputs zero for the hours (sentinel value)

Variables:

Algorithm:

Demonstrate your program: _______________________________________________________

D: Calculate wages for 7 employees (exact count).

Variables:

Algorithm:

Demonstrate your program: _______________________________________________________
3. Modify your program from D, above, so that if the user inputs a non-positive number, it asks them to try again (i.e., use exact count approach with input verification).

Demonstrate your program: ____________________________________________

4. Write an algorithm for finding the maximum of 10 numbers (i.e., input 10 numbers and keep track of the largest, then print the largest when you are done).

(b) Implement your algorithm.
Demonstrate your program: ____________________________________________