CSC 1051 - Lab 4

Objectives:
Get some practice with algorithms and programs that use repetition.

Assignment:
1. Create an application to test some loop constructs. For each one, write out what you think the output is going to be, then test it. [Note: Changes are boldfaced!]
   - Try to also answer any “what if” questions that occur to you as you go through this exercise (make notes on these “what if”s on the back of pages.

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

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

```java
int a = 0;
while (a < 10)
{
    a++;
    System.out.println(a);
}
```
int a = 1;
while (a<=10)
{
    System.out.println(a);
    a++;
}

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 = 10;
while (a!=0)
{
    System.out.println(a);
    a = a - 2;
}
int a = 10;
while (a!=0)
{
    System.out.println(a);
    a = a - 3;
}

double a = 1;
while (a!=0)
{
    System.out.println(a);
    a = a - 0.2;
}

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

int a = 1;
while (a <= 10)
{
    System.out.println(2*a);
    a++
}
int a = 1, b;

while (a <= 4)
{
  b = 1;
  while (b <= 3)
  {
    System.out.println(a + " " + b);
    b++;
  }
  a++;
}

===============================================================

int a = 1, b;

while (a <= 4)
{
  b = a;
  while (b <= 3)
  {
    System.out.println(a + " " + b);
    b++;
  }
  a++;
}

===============================================================

int a = 1, b;

while (a <= 4)
{
  b = a;
  while (b <= 3)
  {
    System.out.print (" " + b);
    b++;
  }
  a++;
  System.out.println();
}
2. Create an application that will read in a positive integer num from the user, and print out all its divisors.

For example a run of the program might look like this:

Enter a positive number > 18
Divisors of 2: 2
Divisors of 3: 3
Divisors of 4: 2 4
Divisors of 5: 5
Divisors of 6: 2 3 6
Divisors of 7: 7
Divisors of 8: 2 4 8
Divisors of 9: 3 9
Divisors of 10: 2 5
Divisors of 11:
Divisors of 12: 2 3 4 6
Divisors of 13:
Divisors of 14: 2 7
Divisors of 15: 3 5
Divisors of 16: 2 4 8
Divisors of 17:
Divisors of 18: 2 3 6 9

a) Write your algorithm below:
b) Please demonstrate your program ____________________

3. We need to write a program that finds the largest of some numbers input through the keyboard.
Here are some questions:
   a) Do we know in advance how many numbers there will be?
   b) Do we want to prompt for each number
   c) If we do not prompt for each number, how do we signal the end of input?

We will write algorithms for doing this problem in each of the above ways.

b) Please demonstrate your program ____________________