Northeastern Illinois University
CS200-1, Programming I, Summer 2017
Homework 4
Due date: Thursday 6/22/2017 at 1:00 p.m.

Problem 1:

Create a class named Problem1, the program would do the following:

- Prompts the user to enter an integer x. Assume without error checking the user enters a positive integer.

- The program then will print all the odd integers between 1 and x that are a multiple of 3.

- Below are two sample runs.

- Copy the output to a text file named Problem1.txt

```
Enter an integer x: 15

3 is a multiple of 3
9 is a multiple of 3
15 is a multiple of 3
```

```
Enter an integer x: 31

3 is a multiple of 3
9 is a multiple of 3
15 is a multiple of 3
21 is a multiple of 3
27 is a multiple of 3
```

Problem 2:

Create a class named Problem2, the program would do the following:

- Prompt the user to enter a positive integer n.(No error checking required)

- The program should **find and print** the sum of all even numbers in the range of 1 to n.

- Below are three sample runs.

- Copy the output to a text file named Problem2.txt

```
Enter integer n: 10

The sum of all even numbers between 1 and 10 is: 30
```

```
Enter integer n: 40

The sum of all even numbers between 1 and 40 is: 420
```

```
Enter integer n: 15

The sum of all even numbers between 1 and 15 is: 56
```

Problem 3:

- What is the **exact** output for the program below?

- Print and use the tracing worksheet provided on the next page. You are required to trace the program by hand in order to get credit for the question. Show your work as well as the output on the tracing worksheet.

- Scan the tracing worksheet, then save it as **.pdf** file.

- Your output should go in the output box provided on the next page.

```java
public class Problem3
{
    public static void main(String[] args)
    {
        int i, j, k, a, b, count, temp;
        count = 3;
        b = 7;

        while(b < 30)
        {
            count = count + 2;
            System.out.println(3 * count + b);
            count++;
            b = b*2;
        }

        System.out.println("count = " + count + ", b = " + b);

        a = 5;
        k = 3;

        while(k < 3)
        {
            a = k + a;
            k++;
            System.out.println(a);
            System.out.println(k);
        }

        i = 10;
        j = 0;
        temp = 3;

        while(i > 0 && j <= i)
        {
            i = i - 3;
            j++;
            System.out.println("i = " + i);
            System.out.println("j = " + j);
            j++;
        }

        System.out.println(temp + 14 % temp * 9);
    }
}
```

Tracing Worksheet

Output:

Memory box:

i =

j =

k =

a =

b =

count =

temp =

Problem 4:

Create a class named Problem4, the program would do the following:

- Prompt the user to enter an integer `n`.

- The program should **find and print** the sum of all digits of the integer `n`, for example if n = 341, the program should print 8 because 3 + 4 + 1 = 8. If n = 10374 the program should print 15 because 1 + 0 + 3 + 7 + 4 = 15

- Also, if n = **-10374**, the program still prints the same value as if n = 10374, think of a way to get the positive value of a number all the time. Which method always returns the positive value of any number?

- Below are four sample runs.

- Copy the output to a text file named Problem4.txt

```
Enter integer n: 24

The sum of all digits of 24 is: 6
```

```
Enter integer n: 1305

The sum of all digits of 1305 is: 9
```

```
Enter integer n: -24

The sum of all digits of -24 is: 6
```

```
Enter integer n: 10374

The sum of all digits of 10374 is: 15
```

General Instructions:

- No hard copies will be collected.

- Do not send your files through the email!

- You should submit your work by the due date, **No** extensions will be given. (See syllabus for late homework policy).

- DO **NOT** turn in multiple files, only one .zip file.

What to turn in:

There should be three .java file, three .txt file and one .pdf file, put all those files into a zip file and name it <YourFirstName_YourLastName>.zip, submit the zip file into the Dropbox on D2L.

How to zip multiple files?
     On Windows: Select all the files > right click > Send to > Comprised File

     On Mac: Select all the files > Click/Tap with two fingers > Compress Items