EECS 1510: Object Oriented Programming

Project 3: If Statements

130 Points Due: Tuesday February 21, 2017

This assignment is designed to sharpen your skills in writing small Java programs using ‘if’ and “if-else” statements. Please think about the problem before you start to write the program. You should first design the algorithmic strategy then think about how to write the necessary statements in Java.

For the submission of this project, be sure to read the posted file
“Project Submissions Version2.doc”.

Program 1: (20 points) ConvertToUpper.java

Write a Java program that reads in a character, presumably a letter, and prints the uppercase equivalent of the letter. If the character is not a letter, the program simply prints a message indicating this. One sample program run must look as follows:

```
Enter a letter: h
The uppercase equivalent of h is
     H
```

The other sample program run must be as follows:

```
Enter a letter: $
Not a letter.
```

Note that the user input is in bold. Name this program as **ConvertToUpper.java**.

Program 2: (40 points) Circle.java

Write a simple program to determine if a point lies within a circle of radius 10.0 centered at the origin. (See Exercise 3.22 on page 112 of the textbook.) For the 2 sample runs, give exactly the same input-output dialog below.

```
Enter a point with two coordinates: 4 5
Point (4, 5) is in the circle.

Enter a point with two coordinates: 9 9
Point (9, 9) is not in the circle.
```

10 points extra credit: Use JOptionPane for the input/output.

Program 3: (30 points) ThreeGuesses.java . Consider the following dialog:

```
Welcome to People's Bank.
Please enter your secret code:     45
Sorry, that is not it.  Try again: 47
Sorry, last chance.  Try again:    51
Fine, go ahead.
```

Here the user gets three (and only three) tries to guess the secret code (here 51). Write a program to give exactly this behavior. Do NOT use loops. For the printout of the 2 sample runs, give one for a correct secret code on the third try (as above), and one for an incorrect code an all three tries.

Program 4: (40 points) Taxes.java

When you fill out one's income tax, you take your income, subtract certain amounts (personal exemption, a standard deduction, gifts to charity, etc), and compute your net taxable income. Given your net income, your tax is computed using the following table (for 2014):

Marginal Tax Rate	Single Filers
10%	Not over $9,275
15%	$9,276 - $37,650
25%	$37,651– $91,150
28%	$91,151 – $190,150
33%	$190,151 – $413,350
35%	$413,351 - $415,050
39.6	Over $415,050

For example, if your net income is $22,000, your tax is

10% of 9,275 + 15% of (22,000 – 9,275)

which computes to $2,836.25

Write a program that reads in a person's net taxable income, and prints the amount of tax using the above table. You need only include inomes below $190,000. A sample program run is as follows:

```
     Enter your net taxable income: 22000
     Your 2014 tax is $2,836.25
```

The user input above is in bold. Name this program as Taxes.java. For the output of the money amount, you need not put the comma in 2,836.25, just print 2836.25.

Option: You can use

```
     DecimalFormat df = new DecimalFormat("$###,###.##");
```

to print the resulting tax in a reasonable notation for money amounts.

Hint: See Listing 3.5 ComputeTax.java in the text by Liang.