Due Date:	By 11:59pm September 28, 2016
Evaluation:	2% of final mark (see marking rubric at the end of handout)
Late Submission:	none accepted
Purpose:	The purpose of this assignment is to help you learn Java identifiers, assignments, strings, input/output, selection and flow of control statements: if, if/else.
CEAB/CIPS Attributes:	Design/Problem analysis/Communication Skills

General Guidelines When Writing Programs:

- Include the following comments at the top of your source codes
  ```
  // -----------------------------------------------------
  // Assignment (include number)
  // Written by: (include your name(s) and student id(s))
  // For COMP 248 Section (your section) – Fall 2016
  // -----------------------------------------------------
  ```
- In a comment, give a general explanation of what your program does. As the programming questions get more complex, the explanations will get lengthier.
- Include comments in your program describing the main steps in your program. Focus in your comments rather on the why than the how.
- Display a welcome message.
- Display clear prompts for users when you are expecting the user to enter data from the keyboard.
- All output should be displayed with clear messages and in an easy to read format.
- End your program with a closing message so that the user knows that the program has terminated.
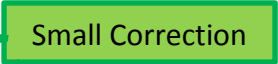
Question 1

Write a program that asks the user how many in-province, out-of-province and international students are registered in the class. Once that information is entered your program should display the total number of students registered in the class and the percentage of in-province, out-of-province and international students, in both decimal and percentage notations. You may assume the user will enter valid integers.

Here are a few sample outputs to illustrate the expected behavior of your program.
<u>Note</u>: user input is highlighted in grey.

```
------------------------------------------------------------
          Student Stats -- Where are they coming from?
------------------------------------------------------------

How many in-province students are there? 5
How many out-of-province students are there? 36
How many international students are there? 20

Great! There are 61 in the class.
        In-province students: 0.08196721311475409 or ~8%
        Out-of-province students: 0.5901639344262295 or ~59%
        International students: 0.32786885245901637 or ~32%
**Have a great term!**
```

```
------------------------------------------------------------
          Student Stats -- Where are they coming from?
------------------------------------------------------------

How many in-province students are there? 60
How many out-of-province students are there? 0
How many international students are there? 40

Great! There are 100 in the class.
        In-province students: 0.6 or ~60%
        Out-of-province students: 0.0 or ~0%
        International students: 0.4 or ~40%
**Have a great term!**
```

Small Correction

Question 2

Write a program that implements a game for guessing a random number. The computer chooses a random number between 0 and 100 (you may use the random() function in the Math class), and the player has to try to guess the number. The player has only <mark>5 guesses</mark>. If the guess is incorrect, output whether the guess is less than or greater than the number chosen by the computer. If the player hasn't guessed the number within 5 guesses they lose. Output what the correct number is whether the player has won or lost the game. You may assume the user will enter valid integers.

Here is an example of the output to illustrate the expected behavior of your program.

Note: user input is highlighted in grey.

> New! The player has only 5 guesses.

```
----------------------------------------------------------
            Pick a number, any number...
----------------------------------------------------------

Pick a number between 0 and 100 (you have 5 guesses!): 50
You are too low!

Guess again: 75
You are too high!

Guess again: 60
You are too low!

Guess again: 70
You are too high!

Guess again: 67
You are too low!

Sorry you didn't guess the right number. The correct number is: 68. Better luck next time!
```

```
----------------------------------------------------------
            Pick a number, any number...
----------------------------------------------------------

Pick a number between 0 and 100 (you have 5 guesses!): 50
You are too high!

Guess again: 25
You are too low!

Guess again: 45
You are too high!

Guess again: 30

You got it! It is indeed: 30
```

Question 3

An online show and movie streaming service, CineShow offers 3 types of packages to its customers.

Pay per view: Each show costs $0.99 to watch and each movie costs $3.99.
Limited: For $15.95/month you can watch 20 shows and 2 movies. Each additional show costs $1.99 and each additional movie $3.99

Unlimited: For $25.95/month you can watch unlimited shows and movies.

Correction

Write a program that helps a customer decide which package is best for them based on the cost of the number of shows and movies they watch in a month. The program should ask the user to enter the number of shows they typically watch in a *week* and the number of movies they watch in a *month*. Calculate the cost of each package and determine which of the three packages is best suited for the user based on the input and the price of the packages.

1) If "Pay per view" is the best package, output the total cost for pay per view.
2) If "Limited" is the best package, output the total cost of both "Pay per view" and "Limited" packages, then recommend the "Limited" package, showing how much they are saving over the cost of "Pay per view" package.
3) If "Unlimited" is the best package, output the total cost of both "Pay per view" and "Limited" packages, and recommend the "Unlimited" package, showing how much they are saving over each of the costs of "Pay per view" and "Limited" packages.

Note you can leave more than 2 decimal places for the prices and you do not need to compute taxes.

Here are a few sample outputs to illustrate the expected behavior of your program. Note: user input is highlighted in grey.

```
------------------------------------------------------
          CineShow's Package Calculator
------------------------------------------------------

How many shows a week do you watch (whole number please):2
How many movies a month do you watch (whole number please):1

The cost of Pay-per-view would be: $11.91/month

Thank you for using CineShow's package calculator program. Happy watching :-)!
```

```
------------------------------------------------------
          CineShow's Package Calculator
------------------------------------------------------

How many shows a week do you watch (whole number please):5
How many movies a month do you watch (whole number please):2

The cost of Pay-per-view would be: $27.78/month
Based on your viewing, the cost of the Limited package would be: $15.95/month


**We recommend getting the Limited package.**
You would save $11.83 from pay-per-view.

Thank you for using CineShow's package calculator program. Happy watching :-)!
```

```
------------------------------------------------------
          CineShow's Package Calculator
------------------------------------------------------

How many shows a week do you watch (whole number please):7
How many movies a month do you watch (whole number please):4

The cost of Pay-per-view would be: $43.68/month
Based on your viewing, the cost of the Limited package would be: $39.85/month

**We recommend getting the Unlimited package.**
You would save $13.90 from the limited package and $17.73 from pay-per-view.

Thank you for using CineShow's package calculator program. Happy watching :-)!
```

```
------------------------------------------------------
          CineShow's Package Calculator
------------------------------------------------------

How many shows a week do you watch (whole number please):6
How many movies a month do you watch (whole number please):0

The cost of Pay-per-view would be: $23.76/month

**We recommend getting the Pay-per-view package.**

Thank you for using CineShow's package calculator program. Happy watching :-)!
```

Submitting Assignment 1

Please check your course moodle webpage on how to submit the assignment.

Evaluation Criteria for Assignment 1 (20 points)

Source Code		
Comments for all 3 questions (5 pts.)		
Description of the program (authors, date, purpose)	2	pts.
Description of variables and constants	1	pt.
Description of the algorithm	2	pts.
Programming Style for all 3 questions (3 pts.)		
Use of significant names for identifiers	1	pt.
Indentation and readability	1	pt.
Welcome Banner/Closing message	1	pt.
Question 1 (3 pts.)		
Prompting user/reading data	1	pt.
Calculation of total students & percentage	1	pt.
Display results	1	pt.
Question 2 (3 pts.)		
Read in picked number	0.5	pts.
Display whether number to high or low	1	pt.
Finish when number is correct or haven't guessed in 5 tries	1	pt.
Display correct number	0.5	pts
Question 3 (6 pts.)		
Prompting user/reading data	1	pt.
Best package	2	pts.
Savings compared to other package(s)	2	pts.
Display results	1	pt.
TOTAL	**20**	**pts.**