Concordia University
COMP 248 – Fall 2015
Assignment 1

Due Date:	By 11:59pm Wednesday September 30, 2015
Evaluation:	3% 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 the Java selection and flow of control statements, if, if/else, while and do/while loops - can use for loops but not required.
CEAB/CIPS Attributes:	Design/Problem analysis/Communication Skills
Teams:	The assignment can be done individually or in teams of 2. Team members must be in the same lecture section. Submit one assignment per team; be sure to have both team members' name in the comments at the top of the assignment.

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 2015
// -------------------------------------------------------
```

- 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.
- 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 males and females 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 male and female students, in both decimal and percentage notation. You can assume the user will enter valid integers.

Here is a sample output.

Here are a few sample outputs to illustrate the expected behavior of your program.

Note: user input is highlighted in grey.

```
-------------------------------------------------------
          Nancy's Male/Female Ratio Program
-------------------------------------------------------

How many female students are registered for your course?
33

How many male students are registered for your course?
55
Congratulations! You have 88 students registered in your course.
       Percentage of females = 0.375 or ~37%
       Percentage of males = 0.625 or ~62%
Have a good term!!!
```

```
-------------------------------------------------------
          Nancy's Male/Female Ratio Program
-------------------------------------------------------

How many female students are registered for your course?
72

How many male students are registered for your course?
27
Congratulations! You have 99 students registered in your course.
       Percentage of females = 0.7272727272727273 or ~72%
       Percentage of males = 0.2727272727272727 or ~27%
Have a good term!!!
```

Question 2

The date June 10, 1960, is special because when we write it in the following format 6/10/1960, the month times the day equals the last 2 digits of the year.

Write a program that asks the user to enter a day, month (in numeric form) and a 4 digit year. The program should then determine whether the month times the day equals the last 2 digits of the year. If so, it should display the date in the form dd/mm/yyyy saying the date is magic, or not magic if it is not. You can assume the user enters a correct date.

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

```
-------------------------------------------------------
          Nancy's Magic Date Program
-------------------------------------------------------

Enter a date as mm dd yyyy and I will tell you if it is magic or not:
31 08 2015
8/31/2015 is NOT a magic year. :(

Come back for another try sometime!
```

```
---------------------------------------------------------
          Nancy's Magic Date Program
---------------------------------------------------------

Enter a date as dd mm yyyy and I will tell you if it is magic or not:
6 10 2060
6/10/2060 is a magic year!!!!

Come back for another try sometime!
```

Question 3

An internet service provider has three different subscription packages for its customers:

Package A: For $9.95/month 10 hours of access are provided. Additional hours are $2.00 per hour.

Package B: For $13.95/month 20 hours of access are provided. Additional hours are $1.00 per hour.

Package C: For $19.95/month unlimited access is provided.

Write a program that calculates a customer's monthly bill. It should ask the user to enter the letter of the package the customer has purchase (A, B or C) and the number of hours that were used. It should display the total charge a. If there would be no savings, no message should be printed.

Here are a few sample outputs to illustrate the expected behavior of your program.

Note: user input is highlighted in grey

```
---------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
---------------------------------------------------

How many hours did you use (whole number please): 10
Do you have package A, B or C? S

      Your monthly bill with Package S is $--.--
Sorry but unable to calculate your monthly bill since Package S does not exist.

Come back next month ...
```

```
---------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
---------------------------------------------------

How many hours did you use (whole number please): 15
Do you have package A, B or C? A

      Your monthly bill with Package A is $19.95
      If you were on Package B you could have saved $6.0

Come back next month ...
```

```
-----------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
-----------------------------------------------------

How many hours did you use (whole number please): 20
Do you have package A, B or C? A

       Your monthly bill with Package A is $29.95
       If you were on Package B you could have saved $16.0
       If you were on Package C you could have saved $10.0

Come back next month ...
```

```
-----------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
-----------------------------------------------------

How many hours did you use (whole number please): 23
Do you have package A, B or C? B

       Your monthly bill with Package B is $16.95

Come back next month ...
```

```
-----------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
-----------------------------------------------------

How many hours did you use (whole number please): 10
Do you have package A, B or C? C

       Your monthly bill with Package C is $19.95

Come back next month ...
```

```
-----------------------------------------------------
       Nancy's Internet Use Monthly Bill Program
-----------------------------------------------------

How many hours did you use (whole number please): 33
Do you have package A, B or C? B

       Your monthly bill with Package B is $26.95
       If you were on Package C you could have saved $7.0

Come back next month ...
```

Submitting Assignment 1

- Zip the source code (the .java file only please) of this assignment.
- Naming convention for zip file: Create one zip file, containing the source files for your assignment using the following naming convention:
  - If the assignment is done by 1 student:
    The zip file should be called *a#_studentID*, where # is the number of the assignment and *studentID* is your student ID number.
    For example, for the first assignment, student 123456 would submit a zip file named a1_123456.zip
  - If the assignment is done by 2 students:
    The zip file should be called *a#_studentID1_studentID2*, where *#* is the number of the assignment, and *studentID1* and *studentID2* are the student ID numbers of each student.
    For example, for the second assignment, student 123456 and 9876543 would submit a zip file named a1_123456_9876543.zip
- Submit your zip file at: https://fis.encs.concordia.ca/eas/
- Submit your assignment as "**Programming Assignment**" and select Submission **1** for assignment #1. **Assignments not submitted to the correct location will not be graded.**
- **Be sure to keep your submission confirmation email.**

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 date	1 pt.
Calculation of total students & percentage	1 pt.
Display results	1 pt.
Question 3 (6 pts.)	
Prompting user/reading data	1 pt.
Cost with user's package	2 pts.
Savings with other package(s)	2 pts.
Display results	1 pt.
TOTAL	**20 pts.**