COMP248 – Winter 2017
Assignment #2 - *Revised*

Due Date: By 11:59 PM, **March 3**, 2017

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 selection flow control statements, if, if / else, while and do while loops - can use for loops but not required.

CEAB/CIPS Attributes: Knowledge base, Design, Use Appropriate Resources/Tools, and 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) – Winter 2017
// -------------------------------------------------------------------------
```

- 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 which includes your name(s).
- 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 prompts the user to enter a positive number of days (n) and displays the number of years contained in this number of days.

You have to consider these following points:

a. **A year has 365 days**
b. **If the number of days entered by the user is less than 365 days, the returned value of the year is 1**
c. **For days over 365 you are required to use a while loop to calculate the number of years; modulo (%) operator is not allowed.**

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

```
Enter a positive number of days n : 300
Number of years : 1
```

```
Enter a positive number of days n : 700
Number of years : 1
```

```
Enter a positive number of days n : 800
Number of years : 2
```

```
Enter a positive number of days n : 1400
Number of years : 3
```

Question #2:

Write a Java program that generate a multiplication table using 2 constants IMAX = 15 which represents the number of rows and JMAX = 10 which represents the number of columns.

In your implementation you are required to make use of a:

i. **for loop**
ii. **if …else statement(s)**
iii. **while loop**

The program displays the following result:

```
    | 1     2     3     4     5     6     7     8     9     10
____________________________________________________________________
1   | 1
2   | 2     4
3   | 3     6     9
4   | 4     8     12    16
5   | 5     10    15    20    25
6   | 6     12    18    24    30    36
7   | 7     14    21    28    35    42    49
8   | 8     16    24    32    40    48    56    64
9   | 9     18    27    36    45    54    63    72    81
10  | 10    20    30    40    50    60    70    80    90    100
11  | 11    22    33    44    55    66    77    88    99    110
12  | 12    24    36    48    60    72    84    96    108   120
13  | 13    26    39    52    65    78    91    104   117   130
14  | 14    28    42    56    70    84    98    112   126   140
15  | 15    30    45    60    75    90    105   120   135   150
```

Question #3:

Write a program to manage Mr. Toto's purchases by considering these following points:

a) Mr. Toto is invited to go to his favorite store only if he has more than $100, otherwise it will be suggested to him to save money and come back later!

b) Mr. Toto must not leave the store with less than $ 10 in his pocket. (Think to the taxi he must take to go home).

c) Mr. Toto should not buy more than 10 items. But he can buy less or not at all, according to his mood of the day ... We will check if he wants to buy. It will be up to Mr. Toto to specify, each time, the price of the item he covets. And a purchase is accepted only if it is within the means of Mr. Toto. (No credit, no ease of payment). Moreover, Mr. Toto will not try to make a purchase that has already been refused!

d) In the event that Mr. Toto has gone into the store, the program must display - at the end of the shopping - the following messages those that apply:
   - "Insufficient assets",
   - "lack of desire of Mr. Toto",
   - "Maximum number of purchases is reached".

e) At the end of the program, Mr. Toto will be advised to go home, by indicating to him the summary of his purchases, as follows:
   - the number of items he has purchased,
   - the amount spent, and
   - the amount he will still have in his pocket.

You have to consider these following points:

a. You have to use :

i. if …else statement

ii. a while loop

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

```
Enter the initial amount : 100

Please save money and come back later !!


-------------------------------------------
Here is a summary of Mr. Toto's purchases.
-------------------------------------------
Number of items     Assets    Spending
      1             100.0       0.0


Thank you for your visit and goodbye !!
```

```
Enter the initial amount : 130

Do you want to make purchases (Y/N) ? y

Please enter the price of the item = 100
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 10
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 10
Insufficient assets !!


Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? n

Lack of desire of Mr. Toto. !!



-------------------------------------------
Here is a summary of Mr. Toto's purchases.
-------------------------------------------
Number of items     Assets    Spending
      3             15.0        115.0


Thank you for your visit and goodbye !!
```

```
Enter the initial amount : 120

Do you want to make purchases (Y/N) ? y

Please enter the price of the item = 20
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 20
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 10
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 10
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 10
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? y

Please enter the price of the item = 5
A purchase is accepted

Do you want to continue (Y/N) ? y
Maximal number of purchases is reached !!


-----------------------------------------
Here is a summary of Mr. Toto's purchases.
-----------------------------------------
Number of items     Assets    Spending
      10              25.0       95.0


Thank you for your visit and goodbye !!
```

Submitting Assignment #2

- Zip the source code (the .java only please) of this assignment.
- Naming convention for zip file: Create one zip file, containing all source code files for your assignment using the following naming convention:
  - If the assignment is done by 1 student:
    The zip file should be called *a#_studentID1_ studentID2*, where # is the number of the assignment *studentID* is your student ID number. For example, for this assignment, student 123456 would submit a zip file named *a2_123456.zip*
  - If the assignment is done by 2 students:
    The zip file should be called *a#_studentID*, where # is the number of the assignment *studentID1* and *studentID2* are your student ID numbers. For example, for this assignment, student 123456 and 9876543 would submit a zip file named *a2_123456*_9876543*.zip*

- **For submission instructions please refer to the course web page.**
- **Assignments not submitted to the correct location or not in the requested format will not be graded.**

Evaluation Criteria or Assignment #1 (20 points)

Source code	
Comments for all 2 questions (3 pts.)	
Description of the program (authors, date, purpose)	1 pt.
Description of variables	2 pts.
Programming Style for all 2 questions (2 pts.)	
Use of significant names for identifiers	1 pt.
Indentation and readability	1 pt.
Question 1 (5 pts.)	
Prompting user/reading data	1 pt.
Using the If … Else statement	1.5 pts.
Using loop : While	1.5 pts.
Display the number of years	1 pt.
Question 2 (5 pts.)	
Using loops : For and While	2 pts.
Using the if … else statement	1.5 pts.
Display a multiplication table	1.5 pt.
Question 3 (5 pts.)	
Prompting user/reading data	0.5 pt.
Using the If … Else statement	1 pt.
Using loop : While	1 pt.
Display the results including different messages	1.5 pts.
Close the Scanner object	0.5 pt.
Closing message	0.5 pt.