Introduction to Computer and Programming
Homework 2

Due date: 29.05.2015

Important notes:

- ❏ Write the source code for each problem in a different file (e.g. ex1.m)
- ❏ For each source file, write a corresponding README file (e.g. README.ex1), containing clear explanations on your work. This file **must** be in text format (in particular: no Word or PDF).
- ❏ Create an archive `yourID_hw2.{zip|rar|tar}` containing all the previous files
- ❏ Submit it on Sakai

Ex. 1 — *Basic loops*
In the Gregorian calendar a regular year is composed of 365 days, and a "leap year" of 366 days, the 29th of February being added in order to reflect more precisely the orbital period of the Earth around the Sun. Determining whether a year is a leap year or not in the Gregorian calendar is done as follows: if a year is not divisible by 4 it's a regular year; if it's divisible by 100 then it's not a leap year, unless it's also divisible by 400.
Write a MATLAB script returning whether a given year is a leap year or not. The user should be prompted for a year until he enters a valid one.

Ex. 2 — *More advanced loops*
A Pythagorean prime is an odd prime number that can be written as the sum of two squares. Such primes are of the form $p = 4n + 1$, for some integer n. Write a MATLAB script that (i) reads a number from the keyboard, then (ii) find the next Pythagorean prime and (iii) returns the two corresponding squares.

Ex. 3 — *Structures*

The following table summarizes a wardrobe inventory. Create an appropriate MATLAB structure to represent the data, and write a script to determine (i) which item (Type+Color) is in the largest quantity and (ii) how old are the items in average – age in years, rounded down.

Type	Color	Quantity	Bought
Jumpers	Blue	2	04/2005
	Brown	3	02/2013
	Green	5	01/2015
Trousers	Black	3	06/2012
	Grey	2	04/2011
	White	1	12/2013
T-shirts	Blue	1	05/2010
	Green	2	09/2014
	Red	3	01/2012
	White	2	03/2008
	Yellow	1	11/2012