HOMEWORK 2

Notes:

– How to hand in the functions you have to write in this homework will be explained later on.

– Before writing a function study its type.

Exercise 1:

Do the exercises of webwork (Will be posted later on).

Exercise 2:

Write the functions $square(x)$, $fib(n)$, $concat(x, y)$, $length(L)$ and $doubleall(L)$ of the lecture notes using pattern-matching.

Exercise 3:

1. Write a function $ListDivisors(n)$ that provides the list of divisors of an integer n (1 and n are in this list).
2. Write a function $SumDivisors(n)$ that returns the sum of the divisors of an integer n.
3. Write a function $IsPerfect(n)$ that tests if a number n is a perfect number.

   Definition: A positive integer n is called a perfect number, if it is equal to the sum of all of its proper positive divisors, excluding n itself. If we do not exclude n, the sum is $2n$. In particular, 1, 6, 28, 496 and 8128 are perfect numbers.
4. Write a function $ListPerfect(n)$ that provides the list of perfect numbers less than n.