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 $\text{square}(x)$, $\text{fib}(n)$, $\text{conc}l(x, y)$, $\text{length}(L)$ and $\text{doubleAll}(L)$ of the lecture notes using pattern-matching.

Exercise 3:
1. Write a function $\text{ListDivisors}(n)$ that provides the list of divisors of an integer $n$ (1 and $n$ are in this list).
2. Write a function $\text{SumDivisors}(n)$ that returns the sum of the divisors of an integer $n$.
3. Write a function $\text{IsPerfect}(n)$ 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 $\text{ListPerfect}(n)$ that provides the list of perfect numbers less than $n$. 