# KSFUPRO1KU, Functional Programming ITU, Spring 2023

## Exercise 1

Last update February 1, 2023

This exercise sheet must be handed in via LearnIT.

You are encouraged to solve this assignment in pairs.

Your name must be part of the filename, e.g., `FP-01-<group><name><name>.fsx`. An example: `FP-01-DeEnesteTo-MadsAndersen-KirstenKnudsen.fsx`.

You can only hand in one file and it must be of type `fs` or `fsx`.

It is important that you annotate your own code with comments. It is also important that you apply a functional style, i.e., no loops and no mutable variables.

In case you want to check your solutions with CodeJudge, then start with the `template01.fs` file. Assignments marked with (CJ) are covered by tests in Code Judge. Only files with extension `fs` works with CodeJudge.

**Exercise 1.1** Write a function `sqr:int->int` so that `sqr x` returns $x^2$.
(CJ)

**Exercise 1.2** Write a function `pow : float -> float -> float` so that `pow x n` returns $x^n$.
You can use the library function: `System.Math.Pow`.
(CJ)

**Exercise 1.3** Solve HR, exercise 1.1 (CJ)

**Exercise 1.4** Solve HR, exercise 1.2 (CJ)

**Exercise 1.5** Solve HR, exercise 1.4 (CJ)

**Exercise 1.6** Solve HR, exercise 1.5 (CJ)

**Exercise 1.7** Solve HR, exercise 1.6 (CJ)

**Exercise 1.8** Solve HR, exercise 1.7 (CJ)

**Exercise 1.9** Solve HR, exercise 1.8

**Exercise 1.10** Write a function `dup:string->string` that concatenates a string with itself.
You can either use + or ^. For example:

```
val dup : string -> string

> dup "Hi ";;
val it : string = "Hi Hi "
```

(CJ)

**Exercise 1.11** Write a function `dupn:string->int->string` so that `dupn s n` creates the concatenation of `n` copies of `s`. For example:

```
val dupn : string -> int -> string

> dupn "Hi " 3;;
val it : string = "Hi Hi Hi "
```

(CJ)