

# KSFUPRO1KU, Functional Programming The IT University, Spring 2021

## Exercise 2

Last update February 6, 2021

This exercise sheet must be handed in via LearnIt.

You solve this assignment in your groups.

Your names must be part of the filename, e.g., `FP-02-<name1>-<name2>.fsx`. An example: `FP-02-MadsAndersen-H`

You can only upload 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 `template02.fs` file. Assignments marked with (CJ) are covered by tests in Code Judge.

**Exercise 2.1** Assume the time of day is represented as a pair `(hh, mm) : int * int`.

Write a function `timediff : int * int -> int * int -> int` so that `timediff t1 t2` computes the difference in minutes between `t1` and `t2`, i.e., `t2 - t1`. A few examples:

```
val timediff : int * int -> int * int -> int

> timediff (12,34) (11,35);;
val it : int = -59
> timediff (12,34) (13,35);;
val it : int = 61
```

(CJ)

**Exercise 2.2** Write a function `minutes : int * int -> int` to compute the number of minutes since midnight. Easily done using the function `timediff`. A few examples:

```
val minutes : int * int -> int

> minutes (14,24);;
val it : int = 864
> minutes (23,1);;
val it : int = 1381
```

(CJ)

**Exercise 2.3** Solve HR, exercise 2.2 (CJ)

**Exercise 2.4** Solve HR, exercise 2.8 (CJ)

**Exercise 2.5** Solve HR, exercise 2.9

**Exercise 2.6** Solve HR, exercise 2.10

**Exercise 2.7** Solve HR, exercise 2.13 (CJ)