

KSFUPRO1KU, Functional Programming The IT University, Spring 2020

Exercise 2

Last update January 26, 2020

This exercise sheet must be handed in via LearnIt.

You are encouraged to solve this assignment individually.

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

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.

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
```

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
```

Exercise 2.3 Solve HR, exercise 2.2

Exercise 2.4 Solve HR, exercise 2.8

Exercise 2.5 Solve HR, exercise 2.9

Exercise 2.6 Solve HR, exercise 2.10

Exercise 2.7 Solve HR, exercise 2.13