



Utrecht University

Questions & Answers

Functional Programming

Utrecht University

Administrativa

Similar to the previous exams on the website

- The exam is on Remindo
- Two types of questions
 - Open: explain something or write some code
 - Multiple choice: choose one answer
- You **cannot** bring any notes to the exam, nor can you use ghc/ghci/your favourite editor etc.
- You have to answer in English or Dutch

Everything until today

- Basic types: lists, tuples, numbers
- User-defined data types
- Define functions by pattern matching
- Recursion on lists and other data types
- Write functions using accumulators
- Define and use higher-order functions
- Write classes and instances
- Infer and check the type of an expression

Do I need to know all the types by heart?

Writing and understanding type signatures is something you need to learn, and we need to test

- We expect you to know, or be able to deduce, the types of the functions:
id, (.), const, flip, fst, snd, null, head, tail, (++), concat, foldr, foldl, map, filter, sum, all, max, min, any, elem, not, (&&), (| |), zip, reverse, take, drop, and all the members of the type classes Show, Eq, Ord, Enum and Num.
- Some higher-order functions are *very* important
 - `map` :: (a -> b) -> [a] -> [b]
 - `filter` :: (a -> Bool) -> [a] -> [a]
 - `foldr` :: (a -> b -> b) -> b -> [a] -> b

In most cases you can deduce their type if you know what they do

- Unless specifically stated otherwise you can use these functions without defining them in your answers.

Outcome of the exam

- You should expect your grades in about two weeks
- What happens if I fail the exam?
 - *Nothing*, your grade is the average with the final one
 - Remember, $T = 0.3 \times \text{midterm} + 0.7 \times \text{final}$
 - *Reflect* on your mistakes and *act* to fix them

Q&A session
