Final Exam: Advanced Programming (BSc-Level, Master-Level, MSc-Level)
IT University of Copenhagen
Spring 2017

The exam consists of 12 tasks to be solved within 4 hours. The BSc students answer only the first 10 questions. The Master students answer only the first 11 questions. The MSc students answer all 12 questions. You can use any function from the course (textbook, exercises) in the solutions, as well as standard library functions. You can access any written or electronic materials, also online, but you are not allowed to communicate with anybody during the exam.

By submitting, you declare to have solved the problems alone, without communicating with anybody.

Submission. Solve the tasks in the file `exam2017.scala` found in the zip file at `http://dropbox.com/concealed/`. Write your name and your ITU email in the top of the `exam2017.scala` file. Submit this file and only this file to **learnIT**. Do not convert it to any other format than `.scala`. Do not reorder the answers, and do not remove question numbers from the file. When free text answers are expected, write them as comments in the same file.

The only accepted file format is `.scala`.

Criteria. The answers will be graded manually. We will focus on the correctness of ideas and the use of the course concepts. We will be permissive on minor issues such as semicolons, other punctuation, small deviations in function names, switching between curried and uncurried parameters, etc. We will not check whether the type inference succeeds, if a human reader could infer types.

We **do not** recommend solving questions to the point when they compile and pass tests. Dependency problems and other technical issues can take a lot of time, so only do this, once you are done with drafting all answers.

Nevertheless, if you do compile, you can use the `build.sbt` file provided in the `.zip` archive linked above. It has the necessary library dependencies configured. The file also contains the course libraries that the solutions depend on.

About this document. This document is prepared as a literate program: it is a Scala file (the `monospaced` fragments are Scala) interleaved with comments in English (task descriptions) in Roman font. All Scala snippets together form a legal Scala program, after removing the questions. This is the same Scala program you will find in `exam2017.scala`.