About the Examination in Programming Paradigms

Hans

Autumn 2025

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1 Time and Location of the Examination

The examination will take place on *5 January 2026 from 9:00 to 12:00* in Agri Nord Hallen, Hobrovej 435, 9200 Aalborg. This document cannot cover all the rules regarding examinations at AAU. The website `https://www.dat.aau.dk/uddannelse/regler-og-retningslinjer#eksamensregler` and your study secretary are important resources if there is more you need to know.

2 Examination Syllabus

The examination paper aims to cover the syllabus and test the learning objectives within it. The syllabus for the 2025 edition of the course is:

> Graham Hutton: *Programming in Haskell*, chapters 1 to 8, 10, 12, 13, and 15.

You can see the learning objectives in the slides for each of the 13 lectures. Learning objectives not directly related to the chapters from *Programming in Haskell* (in this case, dynamic types and λ-calculus) are not part of the syllabus.

3 Before the Examination

- *Am I supposed to bring a computer to the examination?* Yes. You must bring your own computer. The computer must have a working local installation of GHCI. You may not use an online interpreter or a smartphone.

- *What should I do if my computer breaks before the examination?* See if you can borrow a computer from someone. In 2024, unfortunately, there was a student who could not borrow a computer from others. The student contacted me the evening before, I contacted ITS, and the student went to the ITS helpdesk early in the morning and received a loaner computer to take to the examination location. However, this was an unusual situation—*do not rely on this*. Instead, do everything you can to ensure your computer works as it should before the examination. Turn off updates the day before the examination to avoid unpleasant surprises. Disable external services such as iCloud and Windows Remote Disk. Go offline and check that GHCI works as intended.

- *If I can borrow a computer from ITS, do I then have to sit at at the ITS helpdesk during the examination?* No. The examination does not take place at ITS but in Agri Nord Hallen (except for students with special needs). So you must go to the examination location as soon as you have received a computer. You must have GHCI installed on the computer you have borrowed before you arrive.

4 During the Examination

What will I receive for the examination? When you log in to Digital Examination, you can download a zip archive. The zip archive contains the examination paper as a PDF file, the compendium as a PDF file, and a file named `solutions.hs`, where you will write your answers.

How do I start? *Do this immediately!!* Unzip the zip archive—it is not enough to look inside it; you *must* unzip the archive and save the examination paper and `solutions.hs` *locally on your computer*. Otherwise, the answers you write in `solutions.hs` will not be saved. Write your full name, AAU email address, and student number at the top of your local copy of `solutions.hs` saved on your computer, where indicated in the file. If you have problems with the file suffix `.hs`, temporarily rename the file and give it back its original file type name `.hs` just before submitting the file to Digital Examination.

Må jeg skrive på dansk? Ja, det må du gerne. Eksaminator (det er mig) og de to censorer taler og forstår dansk.

How and where should I write my solution? You must write your answers in your local copy of `solutions.hs`, which you have placed on your computer. You must indicate in comments which task you are answering and which sub-task it concerns. All other text—i.e., your explanations, examples of running tests, and Haskell code that cannot be executed (such as code containing type errors)—must also be written in comments. Use the format as shown in the example below.

```
-- Problem 2.2

bingo = 17

-- The solution is to declare a variable called bingo with the value 17.
-- Here is the result of a test of bingo.
--
-- ghci> bingo
-- ghci> 17
```

How should I submit my solution? *Submit the file `solutions.hs` and nothing else.* DO NOT SUBMIT A ZIP ARCHIVE. MAKE SURE YOU SUBMIT THE CORRECT VERSION OF `solutions.hs`.

Is internet access allowed during the examination? Internet access is only allowed to download the zip file and to submit your answers to Digital Examination. Services such as iCloud, Dropbox, and other remote storage forms are **not allowed**. Programming tools that require internet access are **not allowed**.

What aids are allowed during the examination? During the examination, you may use:

1. The textbook *Programming in Haskell* by Graham Hutton (also in its PDF/e-book edition)
2. The compendium
3. Your local installation of Haskell and an IDE for it.

No other aids than these three are allowed during the examination. This means:

- GitHub CoPilot, ChatGPT, and other AI-based tools are **not allowed**.
- Your own or others' notes, slides, and other books are **not allowed**.
- Access to Moodle is **not allowed**.
- Access to the internet, except for Digital Examination, is **not allowed**.

Can I watch videos or listen to podcasts during the examination? No.

Which libraries can I use to write my code? You may only use the Haskell `Prelude` for your Haskell code unless the text of a specific task explicitly states that you should use another specific module. Do not use any special GHCI directives.

Is there anything else I should know? Yes. Please read the text for each task ***very carefully*** before attempting to solve it. All the information you need is in the task text. Make sure you understand what you are being asked to do. Read the text *more than once*, and when you think you have an answer, read the task text again.

Can I get someone to help me with the answers during the examination? No. The purpose of the examination is to assess whether you, as an individual, meet the learning objectives of the course. All examinations have this as their goal. You must solve the problems on your own.

But what if I am sure there is an error in the problem set? We do everything we can to prevent errors in the problem set. But it can still happen from time to time. If you notice what you believe is a genuine error and are sure this is the case, contact the examination invigilators.

Are the censors present during the examination? No. Study secretaries and I are present. The people in the room are examination invigilators. They are usually retirees and are hired specifically for this task. Censors are never present during a written examination in Denmark. The external censors are colleagues from other Danish universities and are chosen from the official list of censors.

What should I do if I am ill on the examination day? If you are ill, do not show up for the examination but instead contact the study secretary on the examination day and read `https://www.dat.aau.dk/uddannelse/regler-og-retningslinjer#eksamensregler` to see what else you need to do.

Can I write my answers in another programming language that I am more familiar with? Don't be silly.

5   After the Examination

- In the Danish system, many exams use so-called external censors. They are academics working at other institutions in Denmark. For this exam, we use two censors.

- The censors and I review all the submitted answers. We do this individually. We load each candidate's answers into GHCi and check if they are free of syntax errors and type errors. We test the code when necessary. Each candidate receives a number of points (between 0 and 100) for their answers.

- On a date we have agreed upon, the censors and I meet to determine all participants' grades. It is only then that we share and discuss our points.

- It is only when the censors and I meet to determine the grades that we establish a conversion of points to grades. Therefore, I am not able to tell you if x points will give you the grade y—this is not up to me alone but is the result of a negotiation between the external censors and me. This is standard practice.

- If you need to better understand the grade you have received, you are very welcome to contact me once the grades are available.