# Introduction to Programming

Week 15

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# Week 15: Outline

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# Course Description

# Course content

**Foundational:** Understanding what a Java program is, how to compile it, and how to execute it. Reasoning about whether a program is well-formed and about its behavior.

**Imperative Concepts:** Writing simple methods using local variables, if-then-else, and for and while loops. Writing simple data structures using plain objects and arrays.

**Object-Oriented Concepts:** Writing simple classes with encapsulated state, getters and setters, and using interfaces and inheritance.

**Programming Techniques:** Programming with common data structures, such as lists, sets, and maps. Applying basic debugging and testing techniques to understand how a program behaves. Manipulating the file system, including the creation, reading, and writing of files.

# Learning objectives (1/2)

After the course, students will be able to:

- Explain how to write a Java computer program, compile it, and execute it.
- Use elementary imperative programming language constructs, including: primitive data types, local variables, assignment, arrays, if-then-else, and for and while loops.
- Use elementary object-oriented programming language constructs, including: classes, interfaces, objects, and methods.
- Use common data structures such as lists, sets, and maps.

# Learning objectives (2/2)

After the course, students will be able to:

- Identify, explain, and overcome compiler errors (e.g. syntax, semantic, or type errors).
- Apply programming techniques to write small programs in imperative or object-oriented style.
- Apply basic debugging and testing techniques to understand and correct program behavior.
- Apply advanced programming features such as inheritance and generics.

# Exam

# Exam

The exam consists of two parts:

**Part A:** An individual take-home programming project. The exam is open-book, i.e. students may use all materials available except Generative AI. Students may discuss the project, but may not share any source code.

**Part B:** An individual written exam. The exam is closed-book, i.e. students may not use any materials. The scope of the written exam is the entire course syllabus plus the take-home programming project.

The two parts take place at different times and places.

- You have three days for the take-home programming project.
- You have two hours for the written exam.

# Exam

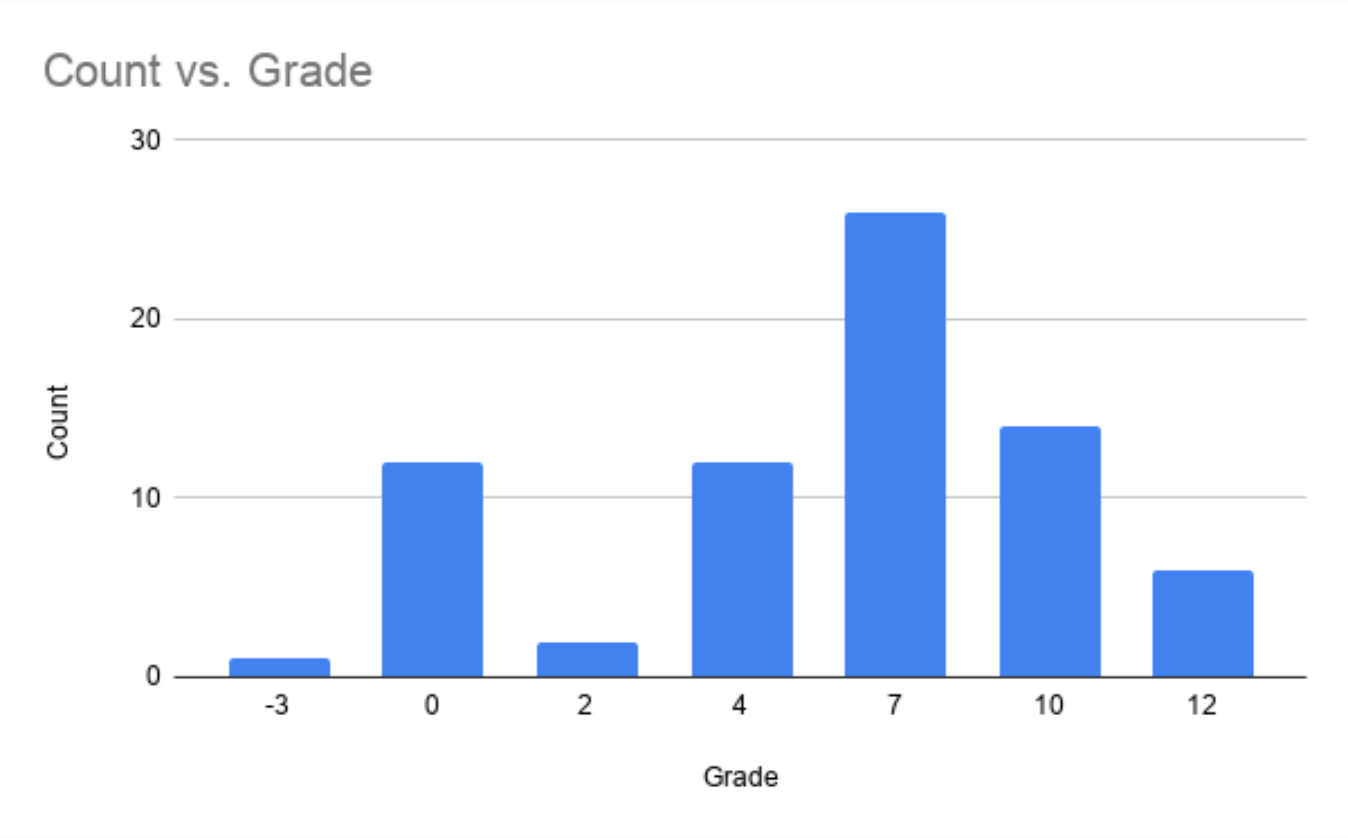
You obtain **one grade** weighted approximately 40/60 between **Part A** and **Part B**.

The Danish grading system, the so-called “7-trins-skalaen”:

| Grade | Danish | English | ECTS |
|---|---|---|---|
| 12 | Fremragende | Outstanding | A |
| 10 | Fortrinligt | Excellent | B |
| 7 | Godt | Good | C |
| 4 | Jævnt | OK | D |
| 02 | Tilstrækkeligt | Adequate | E |
| 00 | Utilstrækkeligt | Inadequate | Fx |
| -3 | Ringe | Poor | F |

*cf.* [https://ufm.dk/en/education/the-danish-education-system/grading-system](https://ufm.dk/en/education/the-danish-education-system/grading-system)

# Grade distribution from last year




Last year, 17.8% of students received either `-3` or `00` and hence failed the exam.

# A message from the future? (the past)

*“Do no take written part for granted.” [sic]*

*“Prepare for the written part and to not only learn the theory, but actually code to prepare.” [sic]*

*“Study a bit earlier for the written exam (I started 2 days before).”*

# Don’t hand in blank, make a choice (my advice)

If you are sick or get sick:

- **Project Exam:** Get a doctor’s note, contact the study office, and do not hand in (you are sick).
- **Written Exam:** Inform the “exam guard”, physically leave the exam area, get a doctor’s note, contact the study office, and do not hand in (you are sick).

If you are not sick (and want to fail the exam “correctly”):

- **Exam Project:** `class Main { }`
- **Written Exam:** Q1: The answer is 42.
  (You fail, but you can attend the re-exam in May/June.)

If you hand in the exam project too late...

If you hand in the exam project too late...

**Then you are screwed!**

# How to prepare for the exam (then)

✓ I have read and understood the textbook and other material.

✓ I have solved all weekly exercises and understood them.

✓ I have completed all mandatory assignments and understood the TA's feedback.

✓ I have attended lectures, exercise classes, and the study cafe.

✓ Whenever I did not understand something, I asked for help.

If you do these things, you will be successful 🌈 🎉 🥳.

# How to prepare for the exam (now)

- Next two weeks: **programming exercises**
- Next five weeks: **reading the course materials**
- **QA session**: talk to your TA

# Old Exams

# Old exams

The exam project and the written exam from 2025 are available:

- Exam project 2025
- Written exam 2025