Aalto University
School of Science

CS-C2105
Programming Studio A

Lauri Malmi, Otto Seppälä

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Lecture practices

- I recommend using laptop / desktop when following lectures. Mobile screen is small and it may be hard to read slides / other content.
- Keep your microphone closed in Zoom to avoid distractive voices.
- If you want to ask something
  - Send the question in chat to all (public for all) OR
  - Send a *private message* to Otto Seppälä (hidden, maintains anonymity)
  - Otto follows the chat and responds in writing or notifies me.
- Occasionally, I set up a poll (interactive question), where you can (anonymously) select answer(s) on multiply choice questions on your own computer.
- Breakout rooms not used in this lecture.

General

- The course is a direct continuation of the course Programming 1.
- Targeted to Data Science students of the Aalto Bachelor's Programme in Science and Technology.
  - English speaking students from other programs can take it, too.
  - 5 ECTS
- Continues the Programming MOOC with 2 credit extension

Two parallel courses

- Programming Studio A and CS-C2120, Programming Studio 2 are parallel courses
  - Studio A given in English
  - Studio 2 given in Finnish
  - Joint organization and schedule
  - The course contents and requirements have very little differences in Spring 2021.

Goals 1

- Learn some approaches in program design and implementation methods
  - Focuses on OO design
  - Basics of UML
  - Some design patterns
  - Testing
  - Version controlling
- These will be applied in a personal project work.

Goals 2

- Learn some new important features of Scala
  - File management
  - Exceptions
  - Types and type management
  - Basics of building graphical user interfaces
  - Threads

Prerequisites

- Programming 1
  - Strong recommendation that you completed at least most of B level assignments
  - If not, this course could be difficult.
  - If you completed Programming 1 earlier than last autumn, use some time to recap your Scala programming skills.

Requirements 1

1. Weekly exercises during period 3
   - UML design task
   - Scala programming exercises
   - Version control exercises
2. Chapter feedback
   - The same practice as in Programming 1
   - Weekly summaries will be short

Requirements 2

3. Personal programming project
   - Includes project plan, technical plan, implementation and demo
   - *This is the most important part of the course.*
4. Course feedback survey at the end

If you started earlier…

- If you completed weekly exercises in spring 2020, but did not complete the project.
  - You need to do only the project
  - You must follow the instructions on this spring course.
- Otherwise, you need to redo the whole course

Grading

- Weekly exercises (30%)
- Project work (70%)
  - Project grading covers many aspects, e.g., program functionality, user interface features, code quality, data storage, testing and documentation.

- Note: MOOC students do only the exercises, not the project

Exercises 1

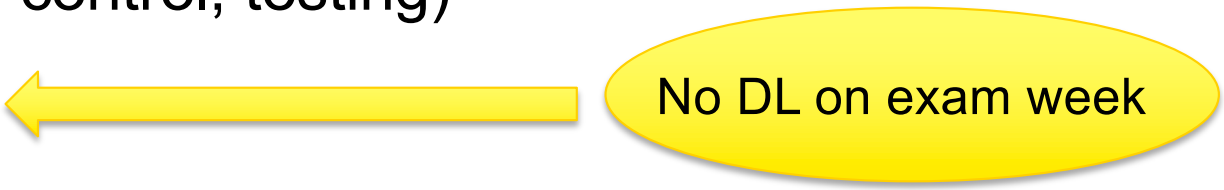
- Includes
  - Some multiply choice question to check understanding of new concepts
  - Programming exercises
  - UML design exercise
  - Version control exercises
- Can be solved using pair programming
  - Register as a group in A+, if you want this.

Exercises 2

- Automatic assessment used in most assignments
  - Allows several resubmissions after getting feedback.
  - The best result is recorded.
- The deadlines are strict
  - After DL you can submit your work, but gain no points.
  - In case of system problems we postpone deadline and announce this in MyCourses / A+, if possible.
- Start early. Do NOT start working the previous day before the DL.

Exercise deadlines

- Chapter 14 (UML)
  - 27.1 at noon
- Chapter 15 (Exceptions)
  - 3.2 at noon
- Chapter 16 (File management)
  - 10.2 at noon
- Chapter 17 (Version control, testing)
  - 17.2 at noon
- Chapter 18 (Types)
  - 3.3 at noon
- Chapter 19 (Design patterns, graphical user interfaces)
  - 10.3.3 at noon



Chapter feedback

- We collect feedback from each chapter to improve the course material, and follow how much time you used
  - Your exercise points are recorded when your feedback has been accepted.
- Some form of weekly summary is created after chapter DL.

Course feedback

- Collected using standard practice at the end of the course
  - It is also important for us to improve the course.
- Changes implemented compared to Studio 2 course last year:
  - IntelliJ used instead Eclipse. The same integration to A+ as in Programming 1
  - Some new small exercises are added.
  - Course learning resources have been polished.
  - More projects directed to Data Science topics.
  - A realistic document of a program development process

Personal project 1

- Designing and implementing a somewhat larger program independently
  - Applying methods and practices learned during the weekly exercises.
- Parts
  - General plan (DL 17.2)
  - Technical plan (DL 19.2)
  - Interim reporting in version control
  - Optional interim meetings in March / April
  - Implementation and documents (DL 28.4)
  - Demo (late April, May)

Personal project 2

- This is a *personal* task.
  - You can discuss the project with peers but you code the program yourself.
- You can choose from many different topics
  - Own topics can be suggested, and accepted if they meet the project goals.
  - Suggestions to Lauri Malmi by Feb 3rd

Resources

- Online course material in A+
  - All assignments are in A+.
- MyCourses is used
  - To give general announcements, for example, changes in schedules or practical arrangements.
  - To publish lecture materials.

Lectures

- Lectures in Finnish, Wednesdays 12.15-14 (Zoom)
  - 13.1 Introduction, program design
  - 20.1 Program design cont., UML
  - 27.1 Program design cont.
  - 3.2 Version control, testing, project introduction
  - 10.2 Project planning
  - 17.2 Graphical user interfaces

Lectures

- Additional demo sessions, in English Fridays 12.15-14
  - Joint session for Studio 2 and Studio A
  - Practical design cases, demonstrations, live coding examples
  - **NOT on Jan 15th**

Exercise sessions

- Zoom sessions to get personal guidance from course teaching assistants.
- Voluntary, recommendble
- Period 3 (starting at 22.1)
  - Mondays 14.15-18
  - Tuesdays 12.15-16
  - Fridays, 14.15-16
- Period 4
  - Mondays 14.15-16
  - Thursdays 12.15-14

Zulip

- Zulip discussion forum (replaces Piazza)
- Present questions there.
- Assistants follow the forum and try to respond within 24 hours.
- You can get answers from peers, too.

- Telegram is a not formal support forum, while getting support from peers is possible there, too.

No Email

- Do not email to teaching assistants.
- You can email to Lauri.Malmi@aalto.fi, but quick responses cannot be guaranteed.
  - No programming guidance

Course staff

- Lauri Malmi (lectures, course organization, teacher in charge)
- Otto Seppälä (lectures, demo sessions, course learning content, teacher in charge)
- Teaching assistants
  - Ray Atreya, Khoa Lai, Trang Nguyen, Tuan Nguyen, Linnea Risku, Alena Shchevyeva, Valtteri Valtonen, Taige Wang ja Sergey Zakuraev

Questions?