## Datastructures and Algorithms Lab

#### Introductory lecture for BSc students

Saska Dönges - 28.10.2020

#### Course assistants

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- Hannu Kärnä first\_name.last\_name@helsinki.fi
- Contact via e-mail or the course telegram channel
- Telegram channel https://t.me/tkttiralabra/ (will contain discourse in Finnish)
- Course page https://tiralabra.github.io/2020\_p2/en

On the course you will implement some program that utilizes "difficult" algorithm(s)/data structure(s) including all of the required data structure and algorithms

## Prerequisite knowledge:

- Data Structures and Algorithms
  - Mandatory
- Programming techique (only in Finnish)
  - Very beneficial but the course materials cover the required knowledge in testing and project sturctures
- Ask if:
  - You have done Data Structure and Algorithms but do not have the credit (missing the exam for example)
  - You are unsure about the prerequisite knowledge requirements

- The programming language to be used has to be accepted by a course assistant. At least Java will be accepted
  - Ask a course assistant if you prefer some other languages
  - Note that testing and test coverage reporting is required no matter the language
- Git version control and GitHub is used
- ► The lab consists of **individual work**
- Generally the product will be some sort of running program
  - Not a library or a bunch of code that can not be executed
- ► Typically progams need to have some sort of user interface

### Project examples:

- Comparison of path finding algorithms
- Data compression algorithms
- Cryptography
- ► Game solvers (minesweepers, nonograms, solitaire...)
  - There is a minesweeper template project on git!
- ► AI (Chess, Go. . . )
  - There is a chess template project on git!
- Try to chose a topic you are personally interested in!

- The code written for this course should be of high quality and easy to read. You should use some kind of style checkking (e.g. Java Checkstyle)
- The project name should be indicative of the contents. Course assitants will not appreciate it if all the project names are along the lines of "Lab-2020"
- Project structure along the lines of the programming techniques course

 $\blacktriangleright\,$  I.e. not all of the project code should be in the same file/folder

 Good coding conventions like DRY ja Single responsibility should be applied

# Conduct of the course

Deadlines according to the course material

- Each deadline gives 0-3 points based on the deadline requirements
  - The first week deadline only gives up to 1 point
- Submissions are done by *pushing* the project state to GitHub
  - No submissions by e-mail
- A large part of the points and the grade are based on deadlines
- After each deadline, a course assistant will give some sort of feedback – more thorough feedback is available through paja, e-mail or Telegram
- Extra time for deadlines may be available with good reasons if asked for in advance.

- Weekly workshopw (paja) is available on mondays and tuesdays on zoom according to the timetable
  - Mondays 16-18 and tuesdays 14-16, there will be help avaialable in English
  - Personal guidance can be provided on campus or Zoom if requested
  - Not mandatory
  - Best way to get help from a course assistant
  - Telegram is not an official source of information but can be useful
  - Other TAs in paja may also be able to help even if the lab is not explicitly on the agenda at the time

- A code review is done in conjunciton with Deadlines 4 and 5
  - Every student will get another student project to review
  - Students write and receive feedback on each others' projects
  - The intention is to get familiar with reading code written by others
  - Maximum points for each review is 2

- At the end of the course there will be a mandatory demo session
  - Each student presents their project for 3 to 5 minutes
  - Every student is present for the entire session
  - The project does not have to be completely done at the demo session
- ► There is **no course exam**

- This can be one of the most fun courses during Bachelors' studies - you can implement whatever you want!
- If you get stuck, ask a course assitant for help
  I'm here for you!
- Normally there are no real penalties for dropping courses labs are an exception to this
  - It may be harder to enroll to the course after dropping the course

- During fall of 2019 a group of students created 2 new project templates for the lab
  - Chess and
  - Minesweeper
- If either of these subjects are of interest, you may want to check them out. Links can be found on the course page

#### Welcome to the course!

- Most information about the course can be found at: https://tiralabra.github.io/2020\_p2/en
  - It's a good idea to read through the entire site!
- ▶ I will stay for a while to answer any questions you may have!