Course Introduction

Operating Systems UE
2022W

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Computer Engineering
Cyber-Physical Systems

2022-10-04

Overview

- Registration to the Course: TISS
- Course organization: TUWEL
  (resources, exercises, registration to exams, etc.)
- Getting started quiz (as prerequisite for the course)
- 8 lectures ($\rightarrow$ schedule and slides in TUWEL)
- 3 programming exercises
  - Programming language: C
  - Operating system: Linux
  - Get help from tutors
- 2 exams on computer
  - closed-book exam!
  - usual lab environment incl. man pages
    but no Internet

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  $\Rightarrow$ OSUE lectures are introductions, opening up of OS topics through exercises!
- No exceptions to regular procedure of the course!
  $\Rightarrow$ Fairness for all participants + smooth work load over the semester for students and teaching staff.

OSUE is sophisticated ... but pays off!

- Get familiar with Linux/Unix (command line, editors, . . .)
- Advanced programming in C
  - Build environment (GNU Make)
  - Debugging
- Programming of concurrent processes
- Interprocess communication & synchronisation of access to shared resources
- Development of system-level tools and applications

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- Development of system-level tools and applications
- Basis for a deeper and wider range of skills:
  - e.g., Microcontroller programming, embedded systems

`https://tiss.tuwien.ac.at/course/courseDetails.xhtml?courseNr=182694`

Registration

- Registration only via TISS:
  - 182.709 Betriebssysteme UE, 2022W
  - `https://tiss.tuwien.ac.at/course/courseDetails.xhtml?courseNr=182709&semester=2022W`
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- Further organisation via TUWEL:
  - Requirement: Registration to OSUE via TISS (your registration will be forwarded!)
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- InfLab account (required for the exercises and exams!)
  - Requirement: Registration to OSUE via TISS (your registration will be forwarded!)
  - Fetch account
    (you will get an email from the InfLab admin)
    `https://password.inflab.tuwien.ac.at`

Registration

Procedure

1. You: TISS registration (until Oct 16th)

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3. We: Creation of InfLab accounts
   - Registration before Oct 6, 23:59: account on Oct 8.
   - Registration before Oct 10, 23:59: account on Oct 12.
   - Registration before Oct 17, 23:59: account on Oct 19.

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4. We: Email to fetch account to eXXXXXXXX@student.tuwien.ac.at
5. You: Fetch InfLab account and set password `https://password.inflab.tuwien.ac.at`

Getting Started Quiz

- Prerequisite to participate in the course
- Multiple choice test in TUWEL
  - None or multiple answers might be correct
- Does not count towards your final grade
- Unlimited attempts
- **Deadline: October 23th, 23:55**

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You need to pass the quiz to be able to participate in the course (upload the exercises and register for the exams)!

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Lectures

Topics

- UNIX and C
  - Introduction to UNIX
  - The C programming language
  - Development in C (program conventions, compile, debug)
- Processes and Communication
  - Interprocess communication (Sockets, Pipes, POSIX Shared Memory)
  - Explicit synchronisation (POSIX Semaphores)
  - C interfaces to OS concepts
  - Programming examples

Lectures

Organisation

Lectures are blocked, see schedule on TUWEL

- Lectures take place in InfHS (Informatik Hörsaal)
  - 2022-10-04 Course introduction + Unix introduction
  - 2022-10-06 C programming (advanced)
  - 2022-10-11 Development in C I
  - 2022-10-13 Development in C I (ctd.)
  - 2022-10-18 Development in C II
  - 2022-10-20 Relevant topics for exercise 1
  - 2022-11-08 Relevant topics for exercise 2
  - 2022-12-06 Relevant topics for exercise 3

Lectures

Resources

- Slides (see TUWEL)
- "C Programming" in Wikibooks
  `http://en.wikibooks.org/wiki/C_Programming`
- Brian W. Kernighan and Dennis M. Ritchie:
  "C Programming Language (Second Edition)"

InfLab

Favoritenstraße 11, ground floor

Lab with UNIX workstations, on which you can program **and test** your implementations for the programming exercises.

- Remote access via SSH (ssh.inflab.tuwien.ac.at)
- Remote access via desktop sharing using a VNC client (details in TUWEL - "Connecting remotely to the lab PCs")
- Contact to lab admins (accounts, PCs, ...): `https://www.inflab.tuwien.ac.at/`

Getting Started Tutorial

Taking place in Inflab

- Optional, but registration to a slot **in TUWEL** needed if you want to participate
- For students who have no or less experience with Linux
- Contents: editors, "Hello World" program, Makefiles, ...
- Remote access to lab PCs
- Duration: about 60 minutes

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- Duration: about 60 minutes
- Registration starts today, 18:00
- **Please do not panic if there are no places left!** Additional slots will be added if required!

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Requirements

- Register to the course ASAP!
- Fetch InfLab account and set your password **before** the tutorial!

Exercises

- 3 programming exercises (assignment in TUWEL, submission also via TUWEL)
- Support by tutors during lab hours in InfLab

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- **Individual work!** Group work is considered as plagiarism!
- Strict deadlines, no late submissions!

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Note

Plagiarism will be graded with 0 points! In case of repetition the offenders will be expelled from the course with a negative certificate!

Exercises

Assessment

Delivery Talks

- Register for a slot in TUWEL!
- at InfLab
- Duration: about 20-30 minutes
- Procedure
  - Check of program compilation (on lab computers!)
  - Black-box tests of program
  - Explanation
  - Check compliance with our coding guidelines
- **Program must work as required in the assignment, otherwise 0 points! Make sure to test your program!**

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Note

Uploaded exercises will be graded with 0 points if you do not attend the delivery talks!

Exams

- **Exams take place in InfLab**
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- registration via TUWEL
- Preparation time + usual development environment of InfLab

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- 1st exam (2022-12-01)
  - Practical part only
  - Content: all topics covered to this date
- 2nd exam (2023-01-25)
  - Theoretical + practical part
  - Content: all topics covered to this date

Grading

	Points (max)
Exercise 1	20
Exercise 2	20
Exercise 3	20
1st Exam	60
2nd Exam	80
Sum	200

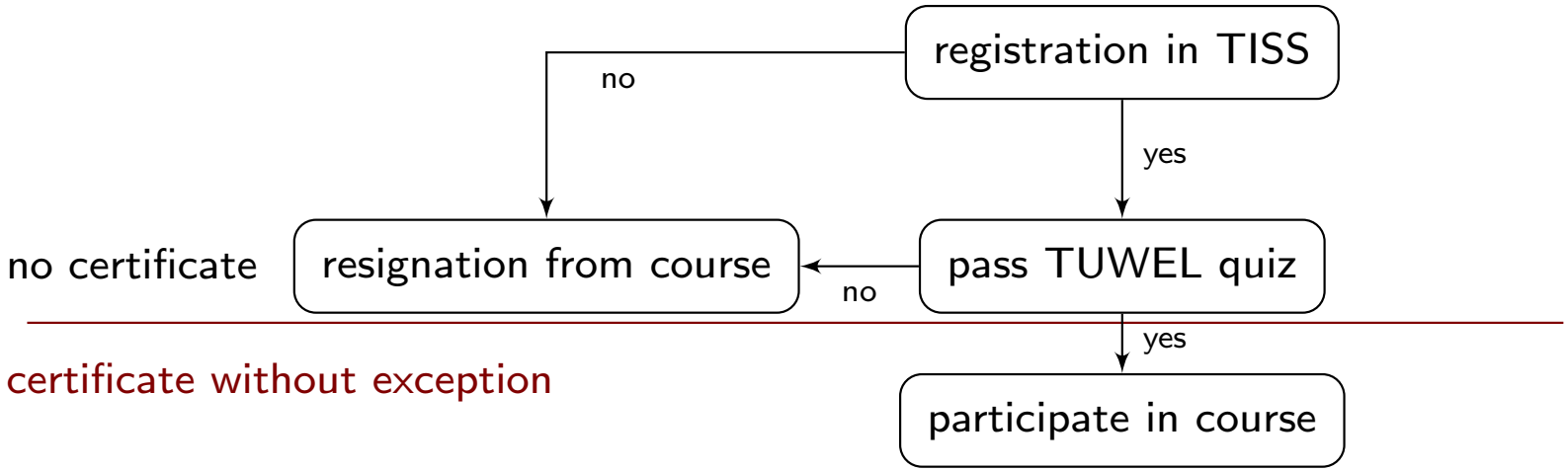
Assuming ≥ 60 points on the exams and ≥ 25 on the exercises:

Grade	Points
1	≥ 175
2	≥ 150
3	≥ 125
4	≥ 100

Improve your grade by bonus points,
when you are already positive

Grading

Certificate Criteria



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Getting Help

- All information on TUWEL
  (lecture slides, additional information, coding guidelines, lab hours of tutors)
  - Important news are published via TISS
- Problems with exercises?
  - Discuss with colleagues in TUWEL discussion forum
  - Meet tutors during lab hours (benefit from early feedback!)
  - Ask early. Do not expect timely help if you ask shortly before submission deadlines.
- Organisational matters
  - If it concerns all: TUWEL discussion forum
  - If it concerns you personally: Send an e-mail to
    `osue-team@cps.tuwien.ac.at`
    Only accepts e-mails from TU Wien addresses!

Conclusion

Important:

- Registration in TISS (preferably today!)
- Fetch InfLab account online
- Start with the exercises on time

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We wish you great success in the course!