Database Systems 2014
Administrative and Organisational Notes

Prof. Dr. Jens Dittrich

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1 Organisation of the Lecture

This document describes all important administrative aspects of this lecture.

Please read this document carefully.

1.1 Basic Idea

The lecture is organized as a *Flipped Classroom* (aka Flip Teaching), i.e. the lecturer does **not** present the teaching material in front of the students in the lecture hall — as it would be the case with a traditional lecture.

Instead, we offer learning material for self study, i.e. instructional videos (mostly self-produced), slides, research papers, and other sources. We expect students to study this material following their own pace and prepare themselves for the weekly meetings (the so-called *LAB*). The LAB happens in the time the traditional lecture would take place. The purpose of the LAB is to jointly apply the material and deepen your understanding. The professor and the head tutor(s) will be present in the LAB. The formerly 4 hours per week (SWS) traditional lecture time is reduced to 2 SWS LAB.

1.2 Videos

The instructional videos are available on the http://www.datenbankenlernen.de website or http://www.youtube.com/jensdit youtube channel at any time. About 50% of the videos of this course are already online. More videos will be produced and added throughout the semester. We will try to make new videos available at least one week before the corresponding LAB.

1.3 Q&As

For every video there is a so called Q&A available in the lecture tool. These are simple questions that are much easier to answer than, for example, the exercises of the weekly assignment sheet. Participation

in these weekly Q&As is mandatory for all students. The answers are evaluated every week to decide whether the content of the video was understood by the students. For each week of the semester, there is an average of 3–5 questions per Q&A and video. Wrong answers provide negative points to prevent getting points by randomly answering. If you are unsure about a specific answer, rather not tick that answer.

Each Q&A can be answered any number of times. For the evaluation the *last* answer of each Q&A matters. After evaluation, the student initially does not receive feedback on the result achieved. 24 hours before the start of the LAB (Monday 10:15am) each student will see her/his individual result. To answer a single Q&A, there is no time limit. For each week, this results in a sum of points earned on all Q&As for that week. Students who reach *at least* 90% of the Q&As points in a week get *a bonus point* (see Section 5). For admission to the final exam *at least* 50% of the achievable points must be achieved over all Q&As. For *at most* three lecture weeks of the semester, the sum of the points of Q&As per week may be 0. The Q&As must be answered until 24 hours before the beginning of the LAB (Monday 10:15am) to be considered in the assessment.

1.4 LAB

The weekly LAB (Tuesdays from 10:15am until noon) replaces the traditional lecture and is used for practical application and the immersion in the contents of the videos. In the LAB, students work in groups of 3 to 4 people. Students solve small problems in groups and try to work out solutions on site. In that process the students are supported and supervised by the professor and the chief tutors. In addition, students who show positive cooperation and provide constructive solutions in the LAB can obtain *two bonus points* per week (see Section 5).

Please get together in groups of 3 to 4 people **upon arrival** in the auditorium. Please leave all *odd* rows completely free to enable the lecturers and tutors the passage. Please try to speak as quietly as possible so as not to avoid interfering with other groups at work.

Throughout the semester, we will also form groups in the LAB, working on various issues with potentially different levels of difficulty. We will form each of these groups dynamically — depending on interest and/or learning speed.

If your group has solved a specific task, you get stuck for a longer period of time or have any questions, please contact us by hand signal.

Notice that starting Friday, Jun 27, 12:15 we will be looking at specific variants of data management systems (parallel systems, NoSQL, etc.). For this we are planning to have guest lectures as well as some traditional lectures (replacing partially the weekly video material). For these kind of talks we will use the (old) second slot of the lecture which is fridays 12:15 to 14:00 in GHH. Please make sure to reserve this weekly appointment in your calender.

1.5 Assignments

1.5.1 Assignment Sheets

Accompanying the material covered in each week, assignment sheets are made available through the lecture tool (each Tuesday afternoon after the LAB), which are to be answered within a week. The solutions of the assignment sheet must be submitted in electronic form in the lecture tool (no later than Tuesday

10:00am). Only hand-ins in pdf format are permitted. Please note that the size of the pdfs must not exceed 2MB. Scans of handwritten solutions are also allowed. Hand-ins in paper form are not accepted. The solutions are then corrected by the respective tutor of the exercise group. This correction is then eventually available in the lecture tool in the form of points obtained and footnotes to the handed in solution.

It is allowed that *two* students hand in an assignment sheet *as a group* (note: only if they are in the same tutorial). The name and matriculation number of **both** students must be specified on the first page of the PDF output. The submission in the lecture tool can be issued from one of the two students. Furthermore, the work groups can be formed anew for each assignment sheet.

For admission to the final exam *at least* 50% of the points of all exercise sheets are required. Furthermore, you may have *at most 2 assignment sheets with 0 points* to be admitted to participate in the final exam (see Section 5).

The sample solution of an assignment sheet will be published after it has been discussed in the tutorials. In total there will be about ∼11 assignment sheets.

1.5.2 Tutorials

In addition to the LAB there will be a classical tutorial every week. At the beginning of the semester, every student can choose her/his preferred tutorial group in the lecture tool. We try to provide every student with her/his favorite time slot. The tutorials will be held at the following times:

Tutorial	Slot	Room	Tutor
Tutorial A	Thu 10.15 – 12	E 1 1, 3.06	Muhammad Bilal Zafar
Tutorial B	Thu 14.15 – 16	E 1 1, 3.06	Endre Palatinus
Tutorial C	Fr 10.15 – 12	E 1 1, 3.06	Xiao Chen
Tutorial D	Fr 14.15 – 16	E 1 1, 3.06	Stefan Schuh

The exercises of the assignment sheets are presented and discussed in the tutorials. Every student has to present *at least one solution* successfully in front of the group throughout the semester. We expect every student to be able to present all solutions of her/his assignment sheet. If somebody is not able to present a solution that she or he handed in, he or she will gain 0 points for that assignment sheet (see Section 6).

1.5.3 Example Sequence of Events

This results in learning a topic Z in the lecture with the following time schedule:

When?	What?
until week X, Monday	lecture material (videos and/or literature) covering topic Z available
until week X+1, Monday 10:15am	solve Q&As
until week X+1, Tuesday 10:15am	work with lecture material, answer questions from the script
week X+1, Tuesday 10:15 – 12:00	LAB, practicing the learned material
week X+1, Tuesday 12:00	publication of the assignment sheet
week X+2, Tuesday 10:00 am	submission of the assignment sheet
week X+3	discussion of the solutions
week X+3, Friday	sample solution of the assignment sheet is published

This means that you have *at least* a week's time to basically understand topic Z, on the basis of the instructional videos and other literature. Using the questions from the electronic script, you can first check yourself whether you have really understood the essential content of the videos. Once you can answer these questions, you solve the Q&As in the lecture tool and thus show the lecturer team that you have basically understood the contents of the tutorial videos. In the LAB, you then not only 'know' about topic Z, but also apply it yourself (idea: only by applying the material you can actually learn it). In the LAB you deepen your understanding of the material learned from the videos under the guidance of the professor, the head tutor and your fellow students. Note that the learning contents from the previously distributed educational materials (videos and / or literature) is generally *not* repeated in the LAB. The LAB is meant *to deepen* your understanding of the already learned material. In the LAB you apply the topic Z to small issues and problems yourselves. After the LAB you practice topic Z further at home (alone or in study groups) with some more challenging exercises and problems on the assignment sheet. The results thereof are then discussed in the tutorial.

2 Lecture Tool

In order to organize the lecture we use the lecture tool *Moodle*. It can be reached at `https://islecture.cs.uni-saarland.de`. It contains all the relevant materials and information. In the course of the lecture we will announce what learning material from the electronic script will be covered (the mapping of the script to the semester weeks). In addition, links to the Q&As (1.3) and assignment sheets (1.5.1) will be added to the lecture tool.

Every student that wants to participate in the lecture has to register in the lecture tool. To register you have to use an email address that ends on uni-saarland.de, like e.g. your student address.

2.1 Electronic Script

All topics of the lecture are listed in the TODO Electronic Script. For every topic of the lecture it contains links to the videos (Section 1.2), lecture slides (Section 2.2), and additional literature (Section 2.3).

Part 1 of this script covering roughly 60 instructional videos is already available. Additional parts of

this script will be made available throughout the semester.

The electronic script also contains *Learning Questions* for every topic. Every student should be able to answer these questions after studying the learning material. We advise you to try to answer all the learning questions *immediately* after working with the videos.

2.2 Lecture Slides

You can find the slides, together with the handwritten notes from the video, within the lecture tool or on the http://datenbankenlernen.de site as pdfs. We provide the original slides used for the video recordings, e.g. http://datenbankenlernen.de/14233original.pdf, as well as inverted slides (for easier printing), e.g. http://datenbankenlernen.de/14233inverted.pdf.

2.3 Additional Literature

All the books used in this lecture can be found in our Semesterapparat: either in form of physical books in SULB or electronically. Additional literature will be linked in the lecture tool, if necessary.

2.4 Forum

We also provide a forum http://dbmsforum.infosys.uni-saarland.de where questions regarding the content of the lecture can be discussed. Every student needs to register separately for the forum. In the forum students can ask questions that may be answered by other students. The professor as well as the tutors will also join the discussion in the forum. Provided answers can be rated by everyone. Students that leave a good impression (i.e., that post interesting questions or provide good answers) can get *one bonus point* per week (see Section 5). On Monday noon the participation in the forum for the previous week is evaluated. Please note: the forum should be used to discuss the content of the lecture — the publication and discussion of concrete solutions to Q&As or assignment sheets *before* the deadlines is not allowed.

3 Exams

There will be three exams in this lecture:

- *Midterm:* The midterm takes place on the 27.5.2014. The exam covers all material that was covered in the lecture until that point in time. The exam will be in written form and takes 90 minutes. There is **no passing limit**. The result counts 20% for the final result (see Section 5). The result of the midterm does not influence your right to participate in the final exam or the re-exam.

- *Final exam:* The final exam takes place at the end of the lecture period (22.07.2014). It covers the whole material. The exam will be in written form and takes 120 minutes. You need at least 50% of the reachable points to pass the exam. The result of the final exam counts 50% for the final result (see Section 5).

- *Re-exam:* The re-exam takes place at the end of the semester (23.09.2014) and is a repetition of the final exam. The same conditions as for the final exam apply in terms of preconditions and passing

of the exam. The re-exam can be taken even if you have passed the final exam. The best result of your final exam and the re-exam counts 50% for the final result.

You can take four two-sided physical A4-pages (i.e. eight logical pages of text) of your personal *handwritten* summary of the lecture content (no print-outs, no assignment sheets, no carbon copies) with you to the final exam and the re-exam, but **not** for the midterm exam.

4   Project

You should build small teams of 2-3 students (we will help you with that) and implement a small project throughout the semester: a main-memory database system. You may use only Java for coding plus a set of pre-defined libraries (see project definition). Notice that learning groups and project teams may be different. There will be three milestones (Dates: MS1: 18.05.; MS2: 15.06.; MS3: 13.07. at 23:59 each) plus a final hand-in (Date: 10.08. at 23:59) throughout the semester. For each milestone there will be a number of functional and performance tests. The outcome of the functional tests define 3% of your overall grade, the performance test another 3%, i.e. in total 6% for each milestone. Notice that performance tests for your program will only be executed in case the corresponding functional tests do not produce any errors. Performance tests for the milestones will be graded *after* the final hand-in only (and only for those milestones that do not produce any errors). This allows you to improve the performance of your entire system throughout the entire semester — even after the milestone deadline. In summary, this means you can improve the performance of your system throughout the semester, but you cannot improve functional results after a milestone deadline. Only milestones with 100% functional correctness participate in the final performance evaluation. After each milestone already we will give you some initial feedback on the performance of your solution. The final project hand-in defines another 12%, i.e. in total 6+6+6+12 = 30%. In case you do not hand-in a milestone or the final project on time, you do not receive any points for that milestone. Late hand-ins will not be considered. Please do not ask for extensions. Rather try to hand-in whatever you have on time than not handing-in at all. Only hand-ins that have been stored into our Git repository will be considered. Please do not send your results by email. The final hand-in of your project includes a brief oral presentation where each team member is expected to briefly show what she or he contributed to the project. Furthermore, we will do a code inspection with your team. Please note that incorrect code that passes the functional tests (e.g. because your team exploits a testing loophole) can still lead to a loss of functional correctness and performance points in retrospect when discovered during this code inspection. You need to pass this evaluation to pass the lecture. Yet there will be individual project grades for the team members. Overall you have to obtain 50% of the points in the project. IN that case the project counts 30% of your overall grade. We will provide you with a Git-repository plus an automatic testing and performance evaluation environment.

We also offer a weekly office hour mondays from noon to 2pm at our group.

5   Grading

The description of the grading scheme follows. You passed the course, if *all* of the following conditions are fulfilled:

1. The sum of all reached points in the assignment sheets is $\geq 50\%$ of the reachable points, at most

two sheets are graded with 0 points.

2. The sum of all reached points from the Q&As is $\geq 50\%$ of the reachable points, in at most three weeks the sum of the points was 0.

3. The points reached in the final exam or the re-exam are $\geq 50\%$ of the reachable points.

4. The points reached in the project are $\geq 50\%$ of the reachable points.

In this case the final result can be computed as:

Final Result = $\quad$ 20%×Result(Midterm)

$\qquad$ + 50%× Best(Result(Final Exam), Result(Re-exam))

$\qquad$ + 30%× Project

$\qquad$ + 10%×(avg(min(Bonus points per week, 3)) / 3.0).

This final result of maximal 110% is then translated into a grade. Here 100% corresponds to a 1.0. This means that the bonus points can be used to fill up missed points in other areas of the lecture. If you get all bonus points, you can make up for e.g. a bad midterm exam, where you only reached half the points. Every week you can gain 4 bonus points (two in the LAB, one in the forum, and one for the Q&As). You only need three per week to get the full bonus for that week.

6 Fraud / Copy

You are not allowed to copy solutions of assignment sheets from other students (however, open group work between two students is explicitly encouraged, see Section 1.5.1; you should also work in groups of two to four people to solve the problems presented in the LAB, see Section 1.4). It is also not allowed to copy from old sample solutions. As already discussed in Section 1.5.2: If a student cannot present a correct solution she or he handed-in, she or he will receive 0 points for the whole assignment sheet. You are also not allowed to work on the Q&As in groups.

You should use the learning material to solve the problems presented in the LAB. As you can get bonus points in the LAB, throughout the LAB it is not allowed to use and search the Internet for solutions to the presented problem. Of course you can use the slides, the videos and any other learning material from the lecture listed in the electronic script.

For the exams the usual regulations about cheating apply.

For the project, that can be worked on by up to three people, every student should strive to contribute the same amount. If you observe an unbalanced work distribution in your project team, please contact the project tutor early on. We will then try to find a solution together. In the final project presentation, every student is tested individually with respect to their contribution to the project. If a student cannot convince the project tutors that she or he actively contributed to the project, her or his project is graded as *not passed*.

Any attempt to present work done by others as one's own performance is rated as fraud and may result in the student losing the right to examination concerning this lecture.