

Formal Requirements for Your Pre-Exam Requirement

Passing of the pre-exam requirement is the prerequisite for participating in the exam. The pre-exam is graded only on a pass/fail basis.

For technical reasons the grading system will show a "pass" grade in your list after approximately June 25. If you do not complete your pre-exam project or paper and/or do not present it, this will be changed to "fail" afterwards.

For the pre-exam requirement, you have the choice between a "standard project" and a "free project".

Teams:

Team size: two or three people

You may choose your teammate(s) as you wish. Normally, I impose the following restriction:

Every group must have members from at least two different cultural backgrounds. I want you to practice your communication skills!

With groups of three: do make sure that if 2 members have the same native language that they don't exclude the third person!!

In the current time of the Corona pandemic, I am not enforcing this restriction, however. I want everyone to feel as comfortable as possible. So choose your project partners to your liking, same culture or not. We can use any comfort we can give each other in these hard times...

Standard project:

This description refers to the standard type of database project that you can do for the pre-exam requirement. **Develop a database with a small GUI written in Java or some other programming language. Use an appropriate interface (JDBC, ODBC,...) to interface between your application and your database. Choose a relational DBMS (do not use Microsoft Access).**

Structure your documentation as shown in the later pages in this document here.

The graphical user interface should be working, but the complexity or beauty of the GUI is not critical for passing the project.

Free Project:

If you feel the standard project is not very interesting to you, and your experience extends beyond that, you may do an alternative "free" project if it is relevant to the field of databases and sufficiently advanced. For instance you could choose a different type of database system (NoSQL, In-Memory, SAP Hana, etc.) or explore a specific topic in more depth. Please ask me by Email to approve your topic (see deadlines).

Deadlines:

It is possible to turn in deliverables earlier than the set deadline.

Deadline	Activity	Place
Thu, 16 April 2021	Register project team (You still need to register in the LSF for the pre-exam requirement).	Project Groups Wiki in our Moodle course in the Exercises folder
Fri, 14 May 2021	Send proposal for free project by email to Prof. Koch for approval	Email
Fri, 18 June 2021, 24.00 Uhr	Upload your project documentation to the project database.	In our Moodle course (in the Project Documentation database in the Exercises folder)
Thu, 24 June 2021	Presentation of projects with live demo. Everyone needs to be present for this!	In the LIDA, using the LIDA server or bring your own computer (check early whether you need any adapters!). Alternatively: during a video conference.

Formatting requirements for everyone:

Item	Requirements
Paper Deliverable	<ul style="list-style-type: none">• Hand in one copy of your documentation on paper, in a folder.• Print the declaration with the HFT logo included in this document here, sign it (all group members!) and bind this sheet with your project documentation or seminar paper.• Absolutely make sure that your printouts are <u>readable</u>! The regular text must be at least 11pt, text in diagrams at least 9 pt. Anything smaller will not be accepted!!! If necessary, print screenshots or model diagrams on larger pages or turn them horizontally.• Use page numbers.• If the size of your code exceeds 10 printed pages, print only the first 10 pages on paper.

Electronic Deliverable	<ul style="list-style-type: none"> • Upload your documentation into the database inside the Moodle course. You find this database in the "Exercises" folder. • The documentation must consist of <u>one single PDF file</u>. (No zip-Archives or similar. If this presents a problem: talk to me!) • The PDF file must contain the complete code of your project, even if it has many pages. • Formatting of the file names: Make a filename composed of "2021SS" followed by the family names of the group members followed by a keyword describing the topic of your project or presentation. Use camel case. Example: 2021SSKochBesnerGenomicData.pdf
Quoting	In your documentation: list all sources that you have used (papers, books, websites, etc.) and mark the used sources within your text. Some guidelines describing which formats to use for citations are posted in the Moodle in the Exercises folder. You also find a scientific database paper there that can serve as an example where you can see how sources are quoted.
Oral Presentation	<ul style="list-style-type: none"> • per group: 15-20 minutes presentation • All team members must take their share in the presentation.

Additional requirements for a free implementation project:

Contents	Details
Implementation	Implement it on your own laptop or on the LIDA server. You must show a live demo in the presentation.

Documentation (paper + PDF)	<ol style="list-style-type: none"> 1. <u>Cover page</u> with title of the project, course name (Database Systems II) and semester, names + email addresses of the contributors 2. <u>Introduction</u> (What is the project about, what are the objectives, who would use the system. Between half a page and one page) 3. <u>System Platform</u> (A list of all systems you used (with version numbers), under what licences (open source, test licence, payed system), on which operating system). Include short installation descriptions of specific systems you used for fellow students who want to install the same environment (like source of download, is there an installer, etc.) 4. <u>Data</u> (a short explanation of the contents, size, purpose, and sources of your data set. Display a few (10-20) data records as an example on paper. Include the complete data in the electronic version. If this presents a problem, talk to me). 5. <u>Operations</u> (what did you do with the data, what type of analysis did you perform, list a few (at least 5) queries/use cases, include some screen shots) 6. <u>Conclusion</u> (what did you learn from the project: what was difficult, what was easy, what was fun? Any recommendations for others doing a similar project?) 7. <u>List of References</u> (papers, websites, tutorials, manuals, whatever you have used)
Presentation	<p>Use your documentation as "slides"</p> <ul style="list-style-type: none"> • Briefly explain the topic and objectives of your project • log in to your system • show which data you are operating on • explain and demonstrate some operations that you did • explain your conclusions and experiences

Additional requirements for a free seminar paper:

Requirements	Details
Contents	<p>Use the normal format of scientific papers, with</p> <ul style="list-style-type: none"> • title, list of authors, date, place, affiliation (HFT Stuttgart) • abstract • introduction • main part • conclusion • list of references <p>Use a numbering system for sections and subsections. Structure your main part as suitable for the topic.</p>

Size	At least 5 pages per team member, but not more than 15 pages for a 2 person group and not more than 20 pages for a 3 person group.
Text structure	<ul style="list-style-type: none"> • Include diagrams or pictures as necessary and useful, but the text should not consist only or mainly of those. • Write real text in normal sentences (not just powerpoint slides with bullet enumerations). • Write in your own words - it is not acceptable to simply copy sentences or entire paragraphs from other sources, even if you quote where they are from.
Presentation	<ul style="list-style-type: none"> • Prepare a set of powerpoint slides in addition to the seminar paper • Email me the powerpoint slides in PDF format AFTER your presentation, so I can upload them also into the Moodle. • The presentation structure must follow the paper structure.

Declaration for the Class "Database Systems II" in Summer Semester 2021

We hereby declare that we agree that the documentation and presentation slides as well as the programming code that we have prepared for the pre-exam requirement in the class Database Systems II in Summer Semester 2021 by the title

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may be used for educational purposes at HFT Stuttgart and may be distributed to other students or staff at HFT on paper and in electronic format.

We also agree to present our project to the class during a video conference session which will not be recorded.

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Date

.....

Printed name

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Signature

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Printed name

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Signature

Use the following sample structure for a standard project

A Database for the Management of Weather Forecasts

Project for the class Database Systems II
in the Summer Semester 2021

The following persons have contributed to this project:

< signature person 1>

< signature person 2>

< printed name person 1>

< printed name person 2>

< email person 1>

< email person 2>

8 Data Model for the Weather Forecast Database

8.1 Explanation of the Data and the Application

<Overview: your explanation of the situation you want to store data about; which data is relevant, who will use it for which purposes, what are typical queries. The explanation should be enough to understand all entities and relationships in the ERM. Size: approximately 0.5 - 1 A4 page>

8.2 The Data Model

<your ER or UML model, in big enough print!!>

9 System Requirements

<brief description of the DBMS (which version) you have used under which operating system, which JDBC driver, how did you implement the GUI, and any other necessary software or hardware parameters>

10 Relational Design

10.1 Table Schemas

<list of the created tables with their schemas; include your create table statements>

10.2 Database Tables with Data

<The printout of your table contents.

Print the result of `SELECT * FROM tablename` for all your tables.

In case you have too many tuples to be printed reasonably, print one page for each table.>

10.3 Normalization

<Brief explanation of the normalization status (1NF, 2NF, 3NF, BCNF) and what decisions were made for this>

10.4 Integrity Constraints

<Explain in words why you have defined which referential integrity constraints.>

11 Use Cases /

11.1 Use Cases

<A description of the functionality of how your database will be used. This includes a description of use cases with diagrams. Use the UML use case notation.>

11.2 Description of the Graphical User Interface

<A short verbal description of how you implemented the GUI.>

12 Transactions / Triggers

12.1 Transactions

<Verbal explanation of the database queries / transactions that belong to the use cases. At least one query should show something involving your integrity constraints. Your project must contain a minimum of four transactions/queries involving joins (five, if your group has three members). Define the transaction boundaries; implement a commit point. Explain if there are any rollback scenarios.

Print the SQL code of each transaction after each verbal explanation as well as a screen shot of the transaction result).>

12.2 Triggers

<Verbally explain the triggers that you have implemented. There should be at least one trigger per team member. Print out the Create Trigger statements you implemented.>

13 List of References

<List of references other than the class notes that you have used>

14 Appendix

14.1 Source Code of the Application and User Interface

<The complete code of your application. Please use inline comments!>

14.2 ???

<any other interesting things you did that you would like to document>