

**Modultitel:**

IDB-PRA: Implementation of a Database Engine (Database Technology Lab)

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Leistungspunkte:

6

Modulverantwortlicher:

Markl, Volker

URL:<http://www.dima.tu-berlin.de>**Sekretariat:**

EN 7

Ansprechpartner:

Alexandrov, Alexander

Modulsprache:

Englisch

Kontakt:

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Lernergebnisse

The global data volume is increasing dramatically each year. Understanding how to store, process and manage these huge amounts of data efficiently is a key requirement for software engineers and data analysts in the modern IT world. This lab (following the corresponding lecture topics of DBT-Database Technology) will teach students both the fundamentals of data processing in traditional single-node database systems and how to scale out these techniques to huge amounts of data in large-scale, distributed environments. During the implementation part of the lab, students will get hands-on experience with important data processing techniques by implementing several components of a relational database system and by using parallel programming platforms like Apache Hadoop or Nephel/PACT.

Technical skills: 30x; Method skills: 30x; System skills: 30x; Social competence: 10x.

no translation

Lehrinhalte

In the database technology lab, students will implement components of a relational database system and get hands-on experience with a parallel data processing platform. The actual components implemented may vary each year, but will include parsing, query optimizer, execution engine, index structures and storage system.

no translation

Modulbestandteile

Lehrveranstaltungen	Art	Nummer	Turnus	SWS
IDB-PRA: Implementation of a Database Engine	PR	0434 L 468	WS	4

Arbeitsaufwand und Leistungspunkte

IDB-PRA: Implementation of a Database Engine (Praktikum)	Multiplikator:	Stunden:	Gesamt:
Lab/Project Work (individual/group work)	15.0	8.0h	120.0h
Plenary Meetings	15.0	4.0h	60.0h
			180.0h

Ein Leistungspunkt entspricht 30.0 Stunden (Es wird folgende Rundungsart verwendet: Aufrunden)

Beschreibung der Lehr- und Lernformen

Lectures are accompanied by exercises in small groups to practically rehearse the theory taught in the lectures. In the project, the students will be split in teams and under self-control will implement some components of a database system, with the goal to have a running demonstrator at the end of the semester.

Voraussetzungen für die Teilnahme / Prüfung

Wünschenswerte Voraussetzungen für die Teilnahme zu den Lehrveranstaltungen:

This course is the base course for master students with focus on database systems and information management and should be attended in the first semester of the master program. In contrast to the introduction of database systems (MPGI5/DBS), which looks database systems from an application programmers point of view, this class focuses on the internals of database systems.

To participate, students are required to have successfully completed a Bachelor in computer science with a focus on database systems (participation in the Datenbankpraktikum, Datenbankprojekt).

As a mandatory requirement, knowledge of data modeling, relational algebra, and SQL as well as a very good command (!!) of Java, or possibly C/C++/C#, programming is required to participate in the course.

Verpflichtende Voraussetzungen für die Modulprüfungsanmeldung:

keine Angabe

Abschluss des Moduls

Prüfungsform:
Portfolioprüfung

Benotet:
benotet

The final grade according to § 47 (2) AllgStuPO will be calculated with the faculty grading table 2.
(Die Gesamtnote gemäß § 47 (2) AllgStuPO wird nach dem Notenschlüssel 2 der Fakultät IV ermittelt.)

Prüfungselement
(Deliverable assessment) 10 implementation tasks with 10 points each

Gewicht
100

Dauer des Moduls

Das Modul kann in 1 Semester(n) abgeschlossen werden.

Maximale teilnehmende Personen

Das Modul ist auf 60 Teilnehmer begrenzt.

Anmeldeformalitäten

Students are required to register via the DIMA course registration tool before the start of the first lecture (<http://www.dima.tu-berlin.de/>). Within the first six weeks after commencement of the lecture, students will have to register for the course at QISPOS (university examination protocol tool) and ISIS (course organization tool) in addition to the registration at the DIMA course registration tool.

Literaturhinweise, Skripte

Skript in Papierform:
nicht verfügbar

Elektronisches Skript:
Es wird ein elektronisches Skript angeboten

Empfohlene Literatur:

- [1] Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: Database Systems - The Complete Book, Pearson Education International, 2002.
[2] Or: (the same book, but different publisher) Garcia-Molina, Ullman, Widom: "Database Systems: The Complete Book," Prentice Hall, 2000

Zugeordnete Studiengänge

Die Modulversion wird auf keiner Modulliste verwendet.

Sonstiges

Recommended Reading:

Primary Literature:

- [1] Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: "Database Systems: The Complete Book", Pearson Education International, 2002.
[2] Or: (the same book, but different publisher) Garcia-Molina, Ullman, Widom: "Database Systems: The Complete Book," Prentice Hall, 2000

Additional Literature:

- [3] R. Elmasri und S.B. Navathe: Fundamentals of Database Systems, Benjamin Cummings
Deutsche Übersetzung: "Grundlagen von Datenbanksystemen," Pearson, 2002
[4] J. Gray, A. Reuter: Transaction Processing, Morgan Kaufman, 1993
[5] T. Özsu und P. Valduriez: Principles of Distributed Database Systems, Prentice Hall, 1999
[6] Saake, Heuer, Sattler: "Datenbanken: Implementierungstechniken", mitp Verlag, 2005 (2. Auflage)
[7] Härder, Rahm: "Datenbanksysteme. Konzepte und Techniken der Implementierung," Springer, 2. Auflage 2001
[8] Kemper, Eickler: "Datenbanksysteme - Eine Einführung," Oldenburg, 5. Auflage 2004