


Modulbeschreibung
DBT: Database Technology
Modultitel:

DBT: Database Technology
 DBT: Database Technology

Leistungspunkte:

6

Modulverantwortlicher:

Markl, Volker

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

EN 7

Ansprechpartner:

Markl, Volker

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 course 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.

no translation

Lehrinhalte

The database technology course is split into two parts, each covering roughly one half of the semester. During the first part, the students learn the fundamentals of database technology for relational database systems. This includes the general architecture of a DBMS, file- and buffer management, query processing, indexing, metadata management, query optimization, locking, recovery and transaction management. In the second part, students learn the basics of parallel data processing, with a focus on largescale, distributed systems and "cloud computing". Topics include parallel relational databases, parallel no-SQL processing platforms like MapReduce, distributed data storage and retrieval – e.g., via DHTs –, techniques for distributed locking and transaction handling, multi-tenancy and software as a service, as well as modern hardware, benchmarking, and data stream processing. The course consists of a lecture and theoretical, written exercises.

no translation

Modulbestandteile

Lehrveranstaltungen	Art	Nummer	Turnus	SWS
DBT: Database Technology	IV		WS/SS	4

Arbeitsaufwand und Leistungspunkte

DBT: Database Technology (Integrierte Veranstaltung)	Multiplikator:	Stunden:	Gesamt:
Präsenzzeit	15.0	4.0h	60.0h
			60.0h

Modulspezifischer, lehrveranstaltungsunabhängiger Aufwand	Multiplikator:	Stunden:	Gesamt:
Exam preparation	1.0	30.0h	30.0h
Graded problem sheets	1.0	60.0h	60.0h
Preparation/Consolidation IDB	15.0	2.0h	30.0h
			120.0h

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

Beschreibung der Lehr- und Lernformen

Lectures are accompanied by individual exercises to practically rehearse the theory taught in the lectures.

The course will be given in English.

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/Informationssysteme&Datenanalyse), which looks at 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). 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. Due to capacity reasons, the class is limited to at most 60 participants.

Verpflichtende Voraussetzungen für die Modulprüfungsanmeldung:

keine Angabe

Abschluss des Moduls

Prüfungsform:	Benotet:
Portfolioprüfung	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	Gewicht
(Deliverable assessment) Assessment of 4 homework exercises with 5 pts.	20
(Examination) End term test	40
(Examination) Mid term test	40

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:	Elektronisches Skript:
<i>nicht verfügbar</i>	<i>nicht verfügbar</i>

Empfohlene Literatur:

- [1] Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: Database Systems - The Complete Book, Pearson Education International, 2002. Or:
- [2] Garcia-Molina, Ullman, Widom: "Database Systems: The Complete Book," Prentice Hall, 2000.
- [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," Oldenbourg, 5. Auflage 2004.

Zugeordnete Studiengänge

Die Modulversion wird auf keiner Modulliste verwendet.

Sonstiges

keine Angabe