Course logistics

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Bases de Dados

Mestrado Integrado em Engenharia Informática e Computação, FEUP

Agenda

Motivation for studying databases

Administrative structure

Course logistics

Overview of lecture coverage

Data growth statistics

40k search queries every second on Google [1]

1.23 billion daily active users on Facebook [2]

Facebook: 31.25 million messages, 510k comments and 136k photos every minute [3, 4]

500 million monthly active users on WhatsApp [4]

284 million on Twitter [4]

200 million on Instagram [4]

Every minute up to 300 hours of video are uploaded to YouTube [3]

1.2 trillion photos were predicted to be taken in 2017 [5]

From Flickr [6].

What this course is (and is not)

Discuss **fundamentals of data management**

- How to design databases, query databases.
- How to debug them when they go wrong!
- Not how to be a DBA or how to tune a database management system.

We'll cover **how database management systems work**

But not **the principles of how to build** them ☹

Faculty

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Communication with faculty

Moodle forum

The goal is to get you to answer each other's questions so you can benefit and learn from each other.

Email

By appointment

Moodle

https://moodle.up.pt/course/view.php?id=2162

Resources

Suggested readings

Forums

Group arrangements

Practical assignments submissions

Exams

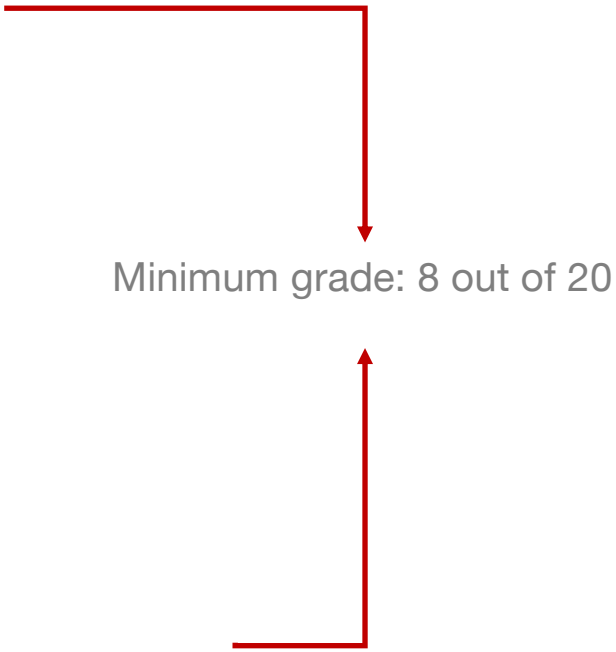
Assessment

Distributed Assessment (50%)

- Intermediate quiz (20%)
- Project (30%)
  - Groups of 3 students

Final Exam (50%)

- Max #absences in the lab classes: 25% * #classes



Special assessment

Distributed Assessment (30%)

Project (30%)

Groups of 3 students

Minimum grade: 8 out of 20

Classification can be improved in the following year

Final Exam (70%)

Minimum grade: 8 out of 20

Class participation

We will be using kahoot!

- Your nickname should be your student id (e.g.: 201503316)

- Always choose a proper nickname

In lectures I will present multiple-choice questions

- Each student submits their answers using an electronic device
- For each student, the best 50%of the answers will be considered

Bonus in the final exam

Let's see how kahoot! Works: 1st quiz

Intermediate quiz

Auto-correcting quiz

In moodle

April, 22th

Relational Databases, Database design, Creating Relational Databases, Relational Design Theory, DDL:SQL, Relational Algebra

Project

Theme [February, 23th]

- Proposed by the group but has to be approved by the lab class's faculty

1st submission [March, 8th]

- Conceptual model
- 25% of the project grade

2nd submission [April, 5th]

- Relational scheme + DDL + load
- 25% of the project grade

3rd submission [May, 24th]

- DML
- 50% of the project grade

What is expected from you

Attend lectures

If you don't, it's at your own peril

Be active and think critically

Ask questions, post comments on forums

Do the exercises of the practical classes and the project

Start early and be honest

Study for the final exam

Lectures

Data Models

- Relational Databases

Database Design

- Unified Modeling Language
- Relational Design Theory

Creating Relational Databases

- SQL
- Constraints and Triggers

Querying Relational Databases

- Relational algebra
- SQL

Advanced features

- Indexes and Transactions
- Views
- Data Warehouses and On-Line Analytical Processing
- NoSQL systems

Main bibliography

Ullman Jeffrey D.; **A First course in database systems**. ISBN: 978-0-13-600-637-4

Raghu Ramakrishnan, Johannes Gehrke; **Database management systems**. ISBN: 0-07-116898-2

References

[1] http://www.internetlivestats.com/google-search-statistics/

[2] http://newsroom.fb.com/company-info/

[3] http://www.forbes.com/sites/bernardmarr/2015/09/30/big-data-20-mind-boggling-facts-everyone-must-read/

[4] https://zephoria.com/top-15-valuable-facebook-statistics/

[5] http://mylio.com/true-stories/tech-today/how-many-digital-photos-will-be-taken-2017-repost

[6] https://c7.staticflickr.com/8/7213/6914441342_605f947885_z.jpg