Ho Chi Minh City University of Technology
Faculty of Computer Science and Engineering

Database Systems

(CO2013)

Computer Science Program

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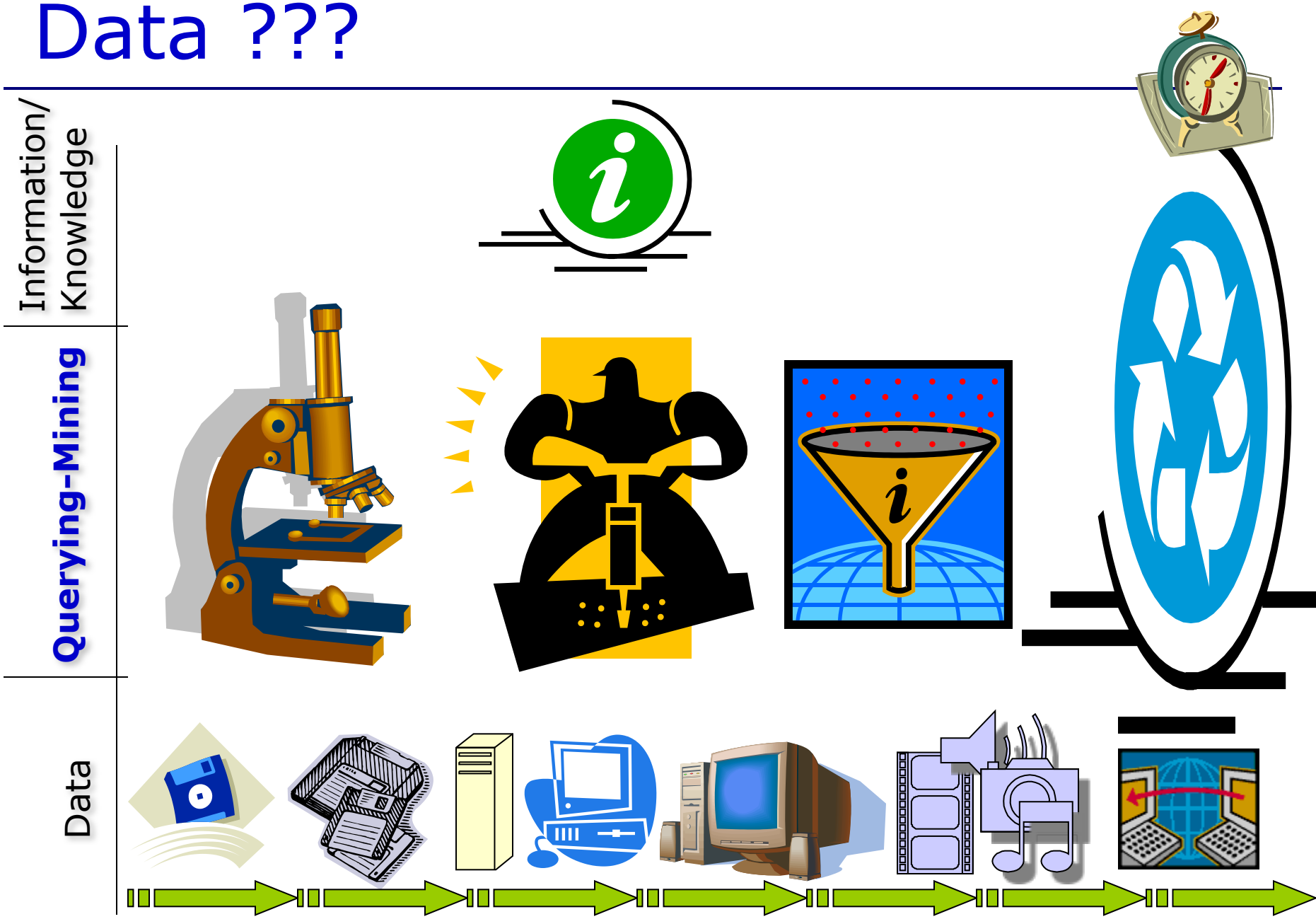
Semester 1 – 2023-2024

Data ???



References

Text:

- [1] R. Elmasri, S. R. Navathe, Fundamentals of Database Systems- 6th Edition, Pearson- Addison Wesley, 2011.
  - ***R. Elmasri, S. R. Navathe, Fundamentals of Database Systems- 7th Edition, Pearson, 2016.***

References:

[1] S. Chittayasothorn, *Relational Database Systems: Language, Conceptual Modeling and Design for Engineers*, Nutcha Printing Co. Ltd, 2017.

[3] A. Silberschatz, H. F. Korth, S. Sudarshan, *Database System Concepts – 6th Edition*, McGraw-Hill, 2006.

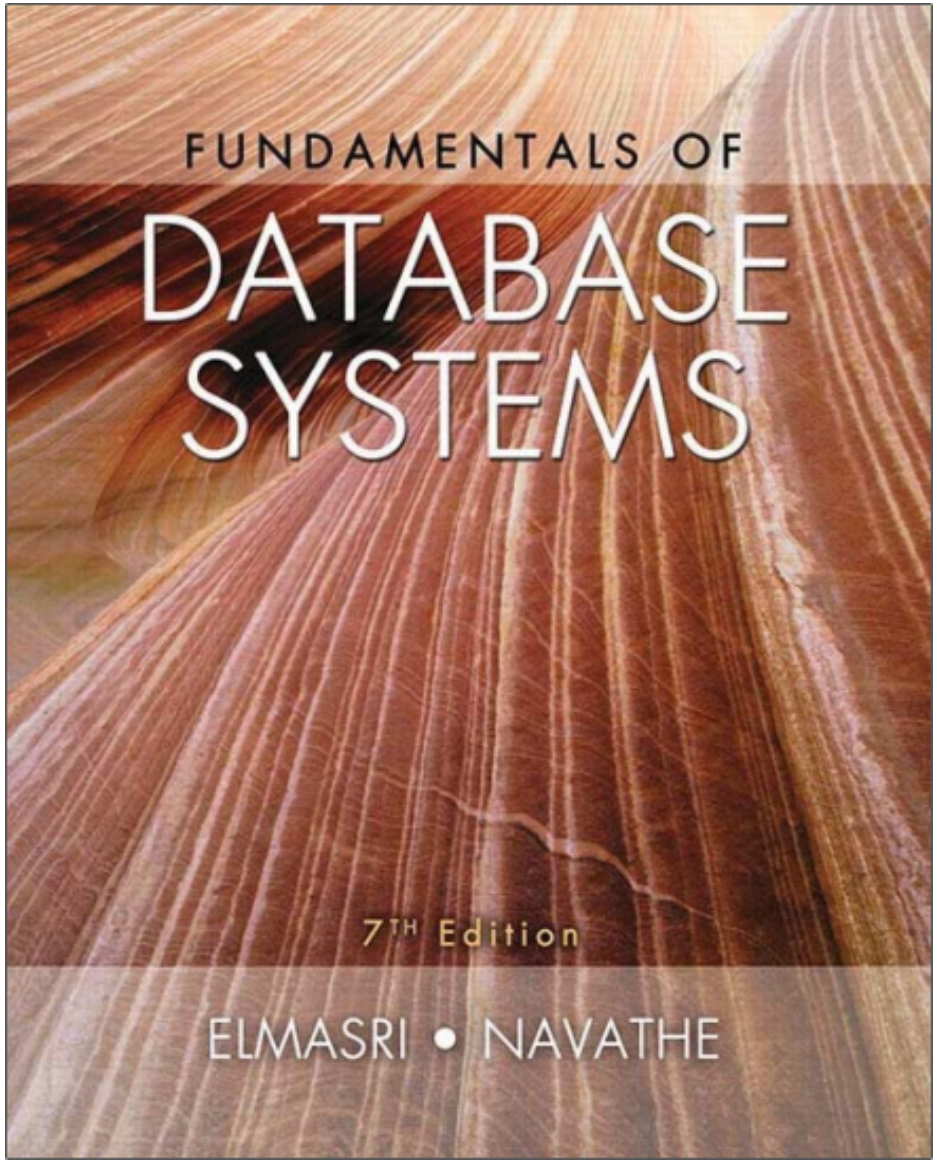
[4] H. G. Molina, J. D. Ullman, J. Widom, *Database Systems: The Complete Book - 2nd Edition,* Prentice-Hall, 2009.

[5] R. Ramakrishnan, J. Gehrke, *Database Management Systems - 2nd Edition,* McGraw-Hill.

[6] M. P. Papazoglou, S. Spaccapietra, Z. Tari, *Advances in Object-Oriented Data Modeling*, MIT Press, 2000.

[7]. G. Simsion, *Data Modeling: Theory and Practice*, Technics Publications, LLC, 2007.

R. Elmasri, S. R. Navathe, Fundamentals of Database Systems- 7th Edition, Pearson, 2016.



Content

- Chapter 1: An Overview of Database Systems
- Chapter 2: The Entity-Relationship Model
- Chapter 3: The Relational Data Model
- Chapter 4: The SQL Language
- Chapter 5: Relational Database Design
- Chapter 6: Physical Storage and Data Management
- Chapter 7: Database Security

Course Learning Outcomes

- Explain basic concepts (data, data model, database, database system, the relational data model, the relational algebra, SQL, database design methodology, the entity relationship model, data normalization, database application), describe the architecture of a database system and the components of a database system.
- Design a database using the entity relationship model, the relational data model and a database design methodology to meet data requirements of a particular database application.
- Use SQL and manage databases on an existing relational database management system (DBMS) such as MySQL, Oracle, and MS SQL Server.
- Be able to analyze tradeoffs between usability, performance, security and constraints of resource and technology in order to identify an appropriate approach for data design and implementation (file based approach or database approach, relational data model or other data models, approaches for database management systems).

Assessment

- Exercises/Labs/Practice/Online Tests/ Discussions/…: 20%
- Assignment #1: 15%
- Assignment #2: 15%
- Final Exam: 50%
  - Multiple-choice questions + Writing questions
  - Open-book

Grading

- Never copy from the others
- Never let the others copy from you
- Never be absent from class if not necessary
  - In-class time less than 75% is not allowed!
- Never be absent from examination

Requirements

- You are asked to study each chapter with the references before its session.
- You are asked to do homework before and after each chapter
- You are suggested to find and study other materials, especially those from the Internet.
- You should practise the major steps with some tools/systems:
  - Data modeling
  - Data management

Practice

- Data modeling tools
  - ERwin Data Modeler, Rational Rose, Oracle SQL Developer Data Modeler, …
- Commercial database management systems
  - Oracle, MS SQL Server, IBM DB2, Informix, Versant, Caché, …
- Open source database management systems
  - PostgreSQL, MySQL, …

Database Management Systems

DBMS???

Where to Find References?

- Database field:
  - Conference proceedings: ACM-SIGMOD, ACM-PODS, VLDB, ICDE, EDBT DASFAA, etc.
  - Journals: ACM-TODS, J. ACM, IEEE-TKDE, JIIS, DKE, etc.
- Data mining and KDD:
  - Conference proceedings: KDD, and others, such as PKDD, PAKDD, etc.
  - Journal: Data Mining and Knowledge Discovery, etc.
- AI and Machine Learning:
  - Conference proceedings: Machine learning, AAAI, IJCAI, etc.
  - Journals: Machine Learning, Artificial Intelligence, etc.
- Statistics:
  - Conference proceedings: Joint Stat. Meeting, etc.
  - Journals: Annals of statistics, etc.
- Visualization:
  - Conference proceedings: CHI, etc.
  - Journals: IEEE Trans. visualization and computer graphics, etc.

Where to Find References?

- Publishers of Interest
  - ACM
  - IEEE
  - Springer
  - Elsevier
  - Others

Contact

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  - Monday, 12:00-14:50
  - By appointment

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