# Welcome to CSC3170

# Database Systems

# Staff

- Instructor
  - Clement Leung: clementleung@cuhk.edu.cn
- Teaching Assistants
  - Cai Weilin:  220019066@link.cuhk.edu.cn (Lead  TA)
  - Wang Haijin: 218019068@link.cuhk.edu.cn
  - Pan Zibin : 220019030@link.cuhk.edu.cn
  - Chen Weibin : 220019062@link.cuhk.edu.cn

# Hours

- Two lectures per week (1½ hours each)

  Lectures will also be connected via Zoom

  Meeting ID: 254 310 2088, Passcode: 010519
- One tutorial per week (No tutorial in the first week)
- Office Hours
  - Clement Leung, Research A 421
    - Mondays 5:00 – 6:00 pm
    - Wednesdays 10:30 – 11:30 am
    - Online: Wednesdays 5:30 – 6:30 pm (same Meeting ID as above)
  - Teaching Assistants
    - Cai, Weilin: Mondays 8:00 - 9:00 pm, Cheng Dao 318B
    - Wang, Haijin: Tuesdays 8:00 - 9:00 am, Cheng Dao 318B
    - Pan, Zibin : Mondays 7:00 - 8:00 pm, Cheng Dao 320A
    - Chen, Weibin : Thursdays 10:00 – 11:00 am, Dao Yuan 511

# Topics

- Database Schemas and Architectures
- The Relational Model
- The Entity-Relationship Model
- Functional and Multivalued Dependencies
- Database Design and Normalization
- SQL
- Data Storage Structures
- Indexing and Hashing
- Transaction Management
- Analytic Processing
- Data Warehouse and Data Mining

# Learning Outcomes

- To apply SQL to relational data definition and manipulation (K, S)
- To develop an understanding of functional dependency and normalization (K, S)
- To perform effective relational database design (S, V)
- To perform conceptual database design using the E-R Model (K, S)
- To transform E-R models into relational database schemas (K, S)
- To explain the key functions of database transaction management (K)
- To explain the difference between transaction processing and analytic processing (K, V)
- To develop an understanding of data warehouse, business intelligence, and data mining (K, S, V)

K=Knowledge, S=Skills, V=Value

# Assessments

- Four Assignments (Total 20%)
- Mid-term Test in Week 7 (2 hours 20%): tentatively 17 March 2021 (5 - 7pm)
- Project (20%)
  - in Groups of 4 - 5
  - Final Presentation & Report
- Final Examination (40%)

# Textbook & Reference

- Textbook

  A. Silberschatz, H. Korth, and S. Sudarshan, *Database System Concepts,* 7th edition, McGraw-Hill (2020)

- Recommended Reference

  R. Elmasri and S. B. Navathe, *Fundamentals of Database Systems*, 7th edition, Addison-Wesley (2016)