

Topic 1: Normal forms: BCNF, 4NF, and 5NF

References: 14.5, 14.6, 14.7 in [1]

Description:

- Boyce-Codd Normal Form (BCNF)
- Multivalued Dependency and Fourth Normal Form
- Join Dependencies and Fifth Normal Form
- Review questions (≥ 5)

Topic 2: Transact-SQL statements in MS SQL Server

References: [2]

Description:

- Data types
- Constants and variables
- Transact-SQL statements: cursor, case, loop, for loop, if statements... (đưa 1-2 ví dụ minh họa cho mỗi câu lệnh)
- Print messages, raise errors
- Review questions and Exercises

Topic 3: Procedures in MS SQL Server

References: [2]

Description:

- Specification of Procedure
- Explain some concepts
- Examples of both Procedure and Function: 3 examples for each, and from simple to complex procedures/ functions (đưa 3 ví dụ minh họa cho mỗi hàm)
- Review questions and Exercises

Topic 4: Functions in MS SQL Server

References: [2]

Description:

- Specification of Function
- Explain some concepts
- Examples of both Procedure and Function: 3 examples for each, and from simple to complex procedures/ functions (đưa 3 ví dụ minh họa cho mỗi hàm)
- Review questions and Exercises

Topic 5: Constraints and Triggers in MS SQL Server

References: [2]

Description:

- Regular expressions in MS SQL Server (with examples)
- Specifying Constraints as Assertions (with examples)
- Specification of Triggers (with 3-5 examples, and from simple to complex triggers) (đưa 3 ví dụ minh họa cho mỗi hàm)
- When and why using triggers? Problems
- Review questions and Exercises

Topic 6: Application programming with MS SQL Server database in .NET/JAVA

Description: [2]

Viết 1 ứng dụng đơn giản (có giao diện) để truy vấn cơ sở dữ liệu trong **MS SQL Server** → demo với CSDL COMPANY, ghi rõ thêm/ xóa/ sửa 1 table cụ thể

- Giới thiệu mô hình MVC
- Giới thiệu các database adapter cho Java, .Net (liệt kê ra 1 số cái, mô tả ngắn) → giới thiệu 1 adapter do nhóm chọn
- Cách kết nối ứng dụng với cơ sở dữ liệu (connection string như thế nào? ...)
- Tạo các procedure/function để truy vấn/thêm/xóa/sửa 1 bảng CSDL (lưu ý validate data)
- Demo

Topic 7: NoSQL - MongoDB

Description: [3]

- Giới thiệu NoSQL và MongoDB

References:

[1] R. Elmasri & S.B. Navathe (2016). ***Fundamentals of Database Systems***, 7th Edition, Addison-Wesley

[2] Scott Shaw & Kathi Kellenberger (2012). Beginning T-SQL 2012, 2nd Edition, ExpertVoice in Databases

<https://drive.google.com/file/d/1nwiNSr5KRjI006YJDlp9VlzeakWiGXCe/view?usp=sharing>

[3] <https://docs.mongodb.com/manual/core/document/>

[4] Others:

[4.1] Book: Microsoft SQL Server 2012 step by step

https://drive.google.com/file/d/1nki1wfh2TbyO-Y0_o1VDc-ZFUUpUFj6_/view?usp=sharing

[4.2] Tutorialspoint.com (attached file)

<https://drive.google.com/file/d/114imaEXY3zMtAK8DzN7jh4yGKBxBYnsw/view?usp=sharing>

[4.3] W3Resource.com (link)