

NSS Enriching Knowledge for the Information and Communication Technology Curriculum Series: (10) Database Applications, Development and Society
 新高中資訊及通訊科技課程知識增益系列：(10) 數據庫應用、發展與社會

Programme
程序表

Date: 5 July 2011 (Tuesday)
日期: 2011年7月5日 (星期二)

Time: 2:00 p.m. – 5:00 p.m.
時間: 下午2時至5時

Venue: Lecture Theater N003, G/F, Core N,
 The Hong Kong Polytechnic University, Hung Hom, Kowloon
地點: 九龍紅磡香港理工大學N座地下N003演講廳

Time 時間	Content / Activity 內容／活動	Speaker(s) 講者
2:00 p.m.	Registration 簽到	
2:10 p.m.	Overview of “Database Applications, Development and Society” 「數據庫應用、發展與社會」概覽	Mr LUI Sze-ming, Atkin Curriculum Development Officer (Technology Education), Curriculum Development Institute, Education Bureau 雷思銘先生 教育局課程發展處課程發展主任 (科技教育)
2:40 p.m.	<u>Part 1</u> CASE Tools Data Mining 第一部分 電腦輔助軟件工程工具 數據開採	Dr NG To-yee, Vincent Associate Professor and Associate Head, Department of Computing, the Hong Kong Polytechnic University 吳道義博士 香港理工大學電子計算學系副教授及副系主任
3:20 p.m.	Break and Professional Exchange 小休、專業交流	
3:35 p.m.	<u>Part 2</u> Latest Trends in Database Development 第二部分 未來數據庫開發的趨向	Dr NG To-yee, Vincent 吳道義博士
4:40 p.m.	Q&A 答問時間	All speakers 所有講者

DADS in 17 hours

- Database Application Development Lifecycle
 - Practise the main activities
 - Apply simple CASE tools
- Data mining - use and application
- Needs and trends of future database development
- Database personnel
- Data privacy
- Effective use of database applications

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- Understand the stages involved in the database application development lifecycle and the links between them.
 - include requirements collection and analysis, system definition, application and database design, DBMS selection, form and report design, prototyping, implementation, data migration, conversion and loading, testing, and operational maintenance
 - often involve review and repetition of previous stages through feedback loops

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- Practise the main activities associated with the stages of the database application development lifecycle in an educational or commercial scenario
 - (CASE) tools to automate, manage and simplify the database design process. CASE supports may include tools for data dictionary construction, and those for facilitating data models development, etc.
- Be aware of the uses and applications of data mining in daily life and explain how data mining can improve the quality of living.

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- Discuss the needs and trends of future database development and the corresponding applications.
 - mobile and wireless technologies, and dynamic web pages on database development
 - factors such as volume of data, variety of data and variety of users
 - Trends in database models, including distributed, parallel, and multimedia, etc. and their impact

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- Identify different database personnel such as database administrators, designers, developers and data entry operators, and describe their roles and responsibilities in database development and maintenance.
 - The responsibilities and ethics of different database personnel should be stressed.

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- Discuss the importance of data privacy and develop proper attitudes to be an ethical user of database to respect data privacy.
 - Ways to achieve data privacy in database applications using access rights should be discussed.
- Appreciate how effective use of database applications changes people's lives.

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Learning and Teaching DADS

- Database Application Development Lifecycle
 - Practise the main activities
 - Apply simple CASE tools
- Data mining - use and application
- Needs and trends of future database development
- Database personnel
- Data privacy

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Learning and Teaching DADS: Database Application Development Lifecycle

- Components:
 - requirements collection and analysis
 - system definition
 - application and database design
 - DBMS selection
 - form and report design
 - prototyping
 - implementation
 - data migration, conversion and loading
 - testing
 - operational maintenance

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Learning and Teaching DADS: Database Application Development Lifecycle

- Extended Reading
 - Diagram showing stages of Database Application Development Lifecycle
 - http://cms2.unescobkk.org/fileadmin/user_upload/ai_ms/database_development_life_cycle.ppt
 - Summary Notes on each stage in the lifecycle
 - <http://www.csc.liv.ac.uk/~ullrich/COMP102/notes/lect27.ps>
 - <http://www.csus.edu/indiv/t/tsain/m150/m150c9.ppt>
 - Feedback loops (Waterfall Model)
 - http://www.informatik.uni-bremen.de/gdpa/def/def_wWATERFALL.htm

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Learning and Teaching DADS: CASE tools

- A quite exhaustive list of CASE tools
 - http://www.databaseanswers.org/modelling_tools.htm
- Simple Tools
 - **Dia**: drawing tool
 - **WWW SQL Designer**
 - web-based, draw schema, export as SQL scripts
 - **Database Design Tool**
 - draw schema and generate related SQL scripts
- Comprehensive Tools
 - **Toad Data Modeler Freeware**: trial version
 - with [video demo](#) and link to [additional resources](#)
 - **SQL Power Architect**: [Demo / tutorial videos](#) available
 - **Visual Paradigm**: HK-made, [free online training web](#)
 - **MySQL Workbench**: free with MySQL
 - **Oracle SQL Developer Data Modeler**

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Learning and Teaching DADS: CASE tools

- Bonus track
 - **Reverse Snowflake Joins**
 - (SQL statement → diagram)
- Extended reading
 - **CASE Tool 能幫您作什麼?**
 - http://www.mpinfo.com.tw/TechnologyColumnFiles/PD_A_200305_CaseToolColumn.htm
 - **CASE Tool 能在各階段所提供的協助**
 - http://www.mpinfo.com.tw/TechnologyColumnFiles/PD_A_200307_CaseToolColumn.htm

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Learning and Teaching DADS: Data Mining

- Try data mining
 - **Easy Data Mining**
 - Descriptive examples with test data provided (e.g. [Beer and Nappies](#)) and links to free software
 - **AlphaMiner** – Open-source application from ETI, HKU
 - **Microsoft SQL server – Data Mining with Excel Add-in**
 - [Sample video](#)
 - **XLMiner** – another paid Excel Add-in

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Learning and Teaching DADS: Data Mining

- **Extended Reading**
 - **What is Data Mining? – Oracle Data Mining Concepts**
 - http://download.oracle.com/docs/cd/B28359_01/datamine.111/b28129/process.htm#DMCON002
 - **Data Mining – Overview and Applications**
 - http://www.data-miners.com/dmt_companion.htm
 - “Chapter 14: Finding Customers in Data”: [second] Supplemental material from Dr. Norman’s course.
 - **A Tools-Based Approach to Teaching Data Mining Methods**
 - <http://jite.org/documents/Vol9/JITEv9IIPp001-024Jafar740.pdf>

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Learning and Teaching DADS: Needs and trends of future database development

- **Impact of technologies ... on database development**
 - Mobile and wireless technologies
 - Dynamic web pages
- **Trends in database models**
 - Distributed,
 - Parallel,
 - Multimedia, ...
- **Cloud Computing**

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Learning and Teaching DADS: Database Personnel

- **Job titles**
 - DBA, designers, developers, data entry operators ...
- **Career information**
 - Roles and responsibilities
 - <http://www.microsoft.com/learning/career/en/us/jobs/data-admin.aspx>
 - <http://www.microsoft.com/learning/career/en/us/jobs/data-dev.aspx>
 - http://www.prospects.ac.uk/case_studies_database_administrator_joe.htm
 - Related job titles
 - <http://www.bls.gov/oco/ocos305.htm>
- **Extended Reading**
 - Roles in the Database Environment
 - http://cms2.unescobkk.org/fileadmin/user_upload/aims/Data_Collection_and_Design_Simplisio_Rwezuva_.ppt

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Learning and Teaching DADS: Data Privacy

- **Extended Reading**
 - **Data Privacy**
 - Hong Kong - Personal Data Privacy Principles:
 - <http://www.pcpd.org.hk/english/ordinance/ordgiance1.html#dataprotect>
 - Hong Kong – Code of Practice
 - <http://www.pcpd.org.hk/english/ordinance/codes.html>
 - BCS – Personal Data Guardianship Code
 - <http://www.bcs.org/category/10685>
 - **Access Control**
 - <http://www.devshed.com/c/a/MySQL/Client-Access-Control-with-MySQL/>

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Learning and Teaching DADS: Pedagogy

- **Read**
 - Data Mining
 - Needs and trends of future database development
- **Discuss**
 - Database personnel
 - Data privacy
 - Effective use of database applications
- **Practice / Apply**
 - Database Application Development Lifecycle
 - CASE tool
 - (Data Mining)
- **Connect L&T with project work**

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Assessing Student Learning of DADS

- **Internal Assessment**
 - Oral questioning
 - Short quiz
 - Practical task
 - Students’ self-reflection
 - Project work
- **Public Assessment**
 - Sample Question
 - SBA

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