1814ict/2814ict/7003ict/1011ICT:
Data Management/Database Design/Applied Computing

Week 1: Introduction to Data Management (Chapter 1)

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Learning Outcomes

At the end of this lecture students will be able to know:

- What are data, a database, and a DBMS.

- The advantages of a database approach to data management.

- The functions and components of a DBMS.

Content

- Data & information
- Data hierarchy

Outcome 1

- Importance of data management
- Advantage of database approach over spreadsheet
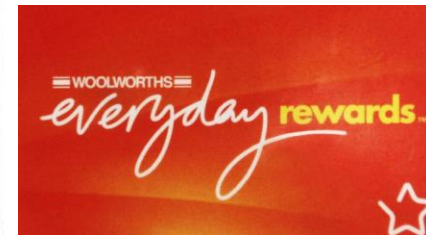
Outcome 2

- Database
- DBMS
- Functions & components of DBMS

Outcome 3

Explore data in your daily life!

Why are Collection and Analysis of Data important?

- Give examples from your daily life!
    - An obvious example is business data
    - Distributed customer information collected from
        - Transactional histories
        - Customer feedback & surveys
        - Social media applications
        - Mobile device activities, and
        - Software logs
    - These are vast in amount and generally unstructured
    - So, systematic storage and analysis are essential to use the data
    - **Why important**:
        - Processed using special software to find new insights about customer behaviour
        - Predict future from current!
            - Flybuys, everyday rewards!
            - Toddler products ➔ School products!

Data & data hierarchy

Data

- So, business activity involves data (**True/False?**)
- Basis of all information systems
- Raw facts (unprocessed):
  - Invoice number
  - Customer number
  - Medicare number
- Stored as binary codes of numbers or characters
  - 3.45   [number]
  - A, B, C, …   [letter]
  - s4749845   [string/words/sentences]

Information
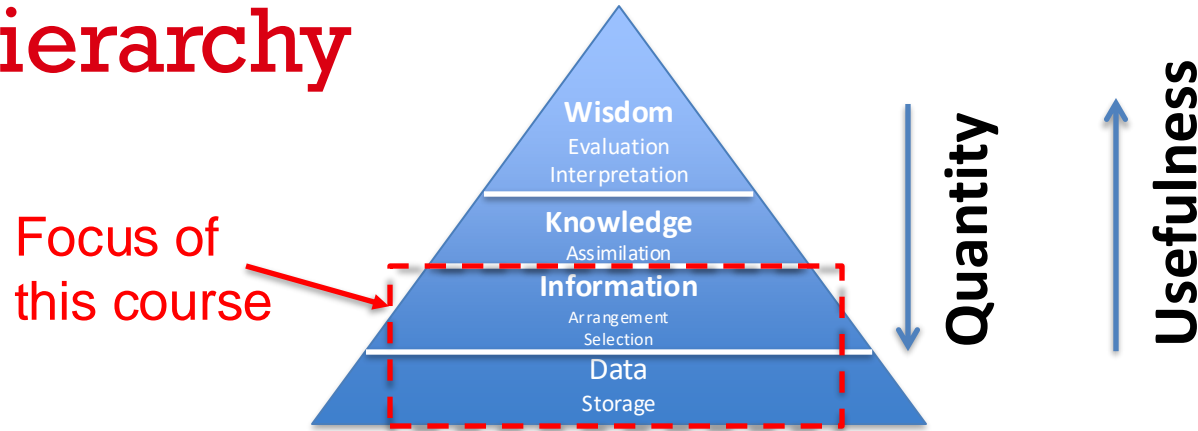
- Organised or processed data to make value to the user
  - Grade point average is a number, but when it is coupled with a student's name
    - John's GPA is 3.45

- Data **context** – important to reveal full information, e.g., Sarah's student number is s435521

- Data **format** – In what format do you store data? E.g., MM/DD/YY or DD/MM/YYYY; Yes or No; etc.

Knowledge

- Data and/or information are organised and processed to convey understanding and experience

  o Over the time, a recruiting agency has found students having grades HD or above have higher success in its management program

- Information & Knowledge are valuable organisational resources that can provide a competitive advantage to businesses

Knowledge

Information

Data

Data hierarchy

Focus of this course

Wisdom
Evaluation
Interpretation

Knowledge
Assimilation

Information
Arrangement
Selection

Data
Storage

Quantity

Usefulness

"Data are collected, sorted, grouped, analyzed, & interpreted. When data are processed in this manner, they become information. Information contains substance and purpose. Knowledge is generated when information is combined with context and experience." (Huang, Lee & Wang, 1990)

Characteristics of high quality data

- Accurate
- Complete
- Consistent/reliable
- Timely
- Relevant
- Accessible
- Concise

Thank you.