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# Information Systems

## ISM 3011

Spring 2004

Unit 5B

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# Assignment for Next Class

- Read chapter 7 (p. 272 – 308).
- Pass the self assessment test (p. 309 – 309).
- Check that you know and understand the key terms on p. 309.
- Prepare the review questions 1 - 5, 9, 14, 16 - 18, 22, and 23 (p. 309 – 310).

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# Data Warehouses

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# Comparison of OLTP and Data Warehousing

Characteristic	OLTP Database	Data Warehousing
Purpose	Support transaction processing	Support decision support
Source of data	Business transactions	Multiple files, databases—data internal and external to the firm
Data access allowed users	Read and write	Read only
Primary data access mode	Simple database update and query	Simple and complex database queries with increasing use of data mining to recognize patterns in the data
Primary database model employed	Relational	Relational
Level of detail	Detailed transactions	Often summarized data
Availability of historical data	Very limited—typically a few weeks or months	Multiple years
Update process	On-line, ongoing process as transactions are captured	Periodic process, once per week or once per month
Ease of update	Routine and easy	Complex, must combine data from many sources; data must go through a data cleanup process
Data integrity issues	Each individual transaction must be closely edited	Major effort to "clean" and integrate data from multiple sources

TABLE 5.3  
Comparison of OLTP and Data Warehousing

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# Database Developments

- Data Warehouses
- Data Marts
- Data Mining

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# Data Mining

TABLE 5.4  
Common Data Mining Applications

Application	Description
Branding and positioning of products and services	Enable the strategist to visualize the different positions of competitors in a given market using performance (or importance) data on dozens of key features of the product in question and then to condense all that data into a perceptual map of just two or three dimensions
Customer churn	Predict current customers who are likely to go to a competitor
Direct marketing	Identify prospects most likely to respond to a direct marketing campaign such as telephone solicitation or direct mailing
Fraud detection	Highlight transactions most likely to be deceptive or illegal
Market basket analysis	Identify products and services that are most commonly purchased at the same time (e.g., nail polish and lipsticks)
Market segmentation	Group customers based on who they are or on what they prefer
Trend analysis	Analyze how key variables (e.g., sales, spending, promotions) vary over time

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# Telecommunications and Networks

## Chapter 6

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## Communications

**FIGURE 6-1**

*Overview of Communications*  
The message (data and information) is communicated via the signal. The transmission medium "carries" the signal.

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## Communications

**FIGURE 6-2**

*Communication and Telecommunication*  
In human speech, the sender transmits a signal through the transmission medium of the air. In telecommunication, the sender transmits a signal through a cable or other telecommunication medium.

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## Telecommunications

**FIGURE 6-3**

*Elements of a Telecommunications System*  
Telecommunications devices relay signals between computer systems and transmission media.

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## Basic Communications Channel Characteristics

- Simplex channel
- Half-duplex
- Full-duplex channel

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## Bandwidth

- The range of frequencies that an electronic signal occupies on a given transmission medium.

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## Broadband

- Telecommunications in which a wide band of frequencies is available to transmit information, allowing more information to be transmitted in a given amount of time.

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## Cellular Transmission

**FIGURE 6-9**  
A Typical Cellular Transmission Scenario  
Using a cellular car phone, the caller (1) dials the number. The signal is sent from the car's antenna to the low-powered cellular antenna located in that cell (2). The signal is sent to the regional cellular phone switching office, also called the mobile telephone subscriber office (MTSO) (3). The signal is switched to the local telephone company switching station located nearest the call destination (4). Now integrated into the regular phone system, the call is automatically switched to the number originally dialed (5), all without the need for operator assistance.

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## Modems

**FIGURE 6-10**  
How a Modem Works  
Digital signals are modulated into analog signals, which can be carried over existing phone lines. The analog signals are then demodulated back into digital signals by the receiving modem.

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## Multiplexers

**FIGURE 6-11**  
Use of a Multiplexer to Consolidate Data Communications onto a Single Communications Link

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## Front-End Processors

**FIGURE 6-12**  
Front-End Processor  
A front-end processor takes the burden of communications management away from the main system processor.

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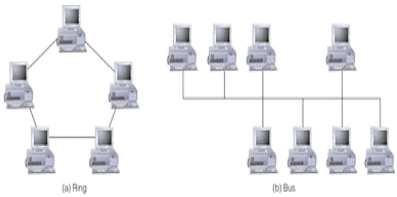
## Network Concepts and Considerations

- Network topology
  - Ring network
  - Bus network
  - Hierarchical
  - Star network
  - Hybrid network
- Network types
  - Local Area Networks
  - Wide Area Networks
  - International networks
  - Home and small business networks

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## Network Topology

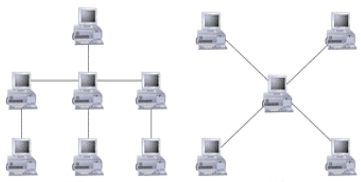


(a) Ring      (b) Bus

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## Network Topology




(c) Hierarchical      (d) Star

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## Network Topology



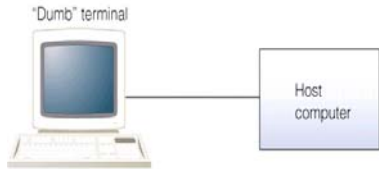
(e) Hybrid

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## Terminal-to-Host

**FIGURE 6-18**  
*Terminal-to-Host Connection*




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## Electronic Data Interchange (EDI)

**FIGURE 6-24**  
*Two Approaches to Electronic Data Interchange*  
Many organizations now insist that their suppliers operate using EDI systems. Often the EDI connection is made directly between vendor and customer (a). Alternatively, the link may be provided by a third-party clearinghouse, which provides data conversion and other services for the participants (b).



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## Thank you!

The slides will be available on the internet at  
<http://ruby.fgcu.edu/courses/mhepp/>  
 (-> CRN10033)

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