



# Module 2

## Introduction to Databases and DBMSs

### Lesson 5: Transaction Processing Overview



# Lesson Objectives

- Provide an example of a transaction that you use
- Briefly explain key characteristics of database transactions
- Explain the word “transparency” for transaction processing services



# Transaction Definition

- Supports daily operations of an organization
- Collection of database operations
- Reliably and efficiently processed as one unit of work
- No lost data
  - Interference among multiple users
  - Failures



# Airline Transaction Example

## START TRANSACTION

Display greeting

*input* Get reservation preferences from user

SELECT departure and return flight records

If reservation is acceptable then

    UPDATE seats remaining of departure flight record

    UPDATE seats remaining of return flight record

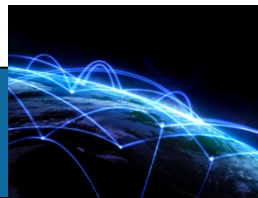
    INSERT reservation record

    Print ticket if requested

End If

On Error: ROLLBACK

COMMIT



# ATM Transaction Example

## START TRANSACTION

Display greeting

Get account number, pin, type, and amount

SELECT account number, type, and balance

If balance is sufficient then

    UPDATE account by posting debit

    UPDATE account by posting debit

    INSERT history record

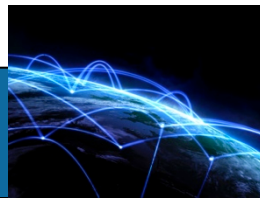
    Display message and dispense cash

    Print receipt if requested

End If

On Error: ROLLBACK

COMMIT

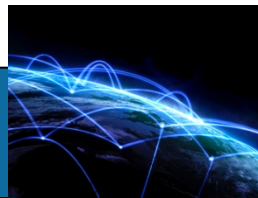


# Transaction Processing

- Reliable and efficient processing of transactions
  - Control simultaneous users
  - Recover from failures
- Internal features for enterprise DBMSs
  - Concurrency control manager - *Do not overwrite*
  - Recovery manager
  - Transparent services for application developers

*↳ Internal details are invisible*

*\* more resource*



# Summary

- Supports daily operations
- Evolution over 50 years
- Key technology behind growth of electronic commerce

