Business School
UNIVERSITY OF COLORADO DENVER

Information Systems Program

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
        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