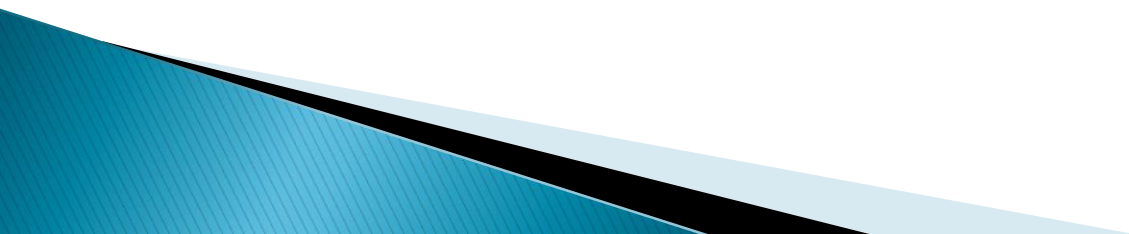


DB Systems Development Lifecycle, Chapter 10 (Portion of Chapter 11 & 18)



DB Systems Development Lifecycle

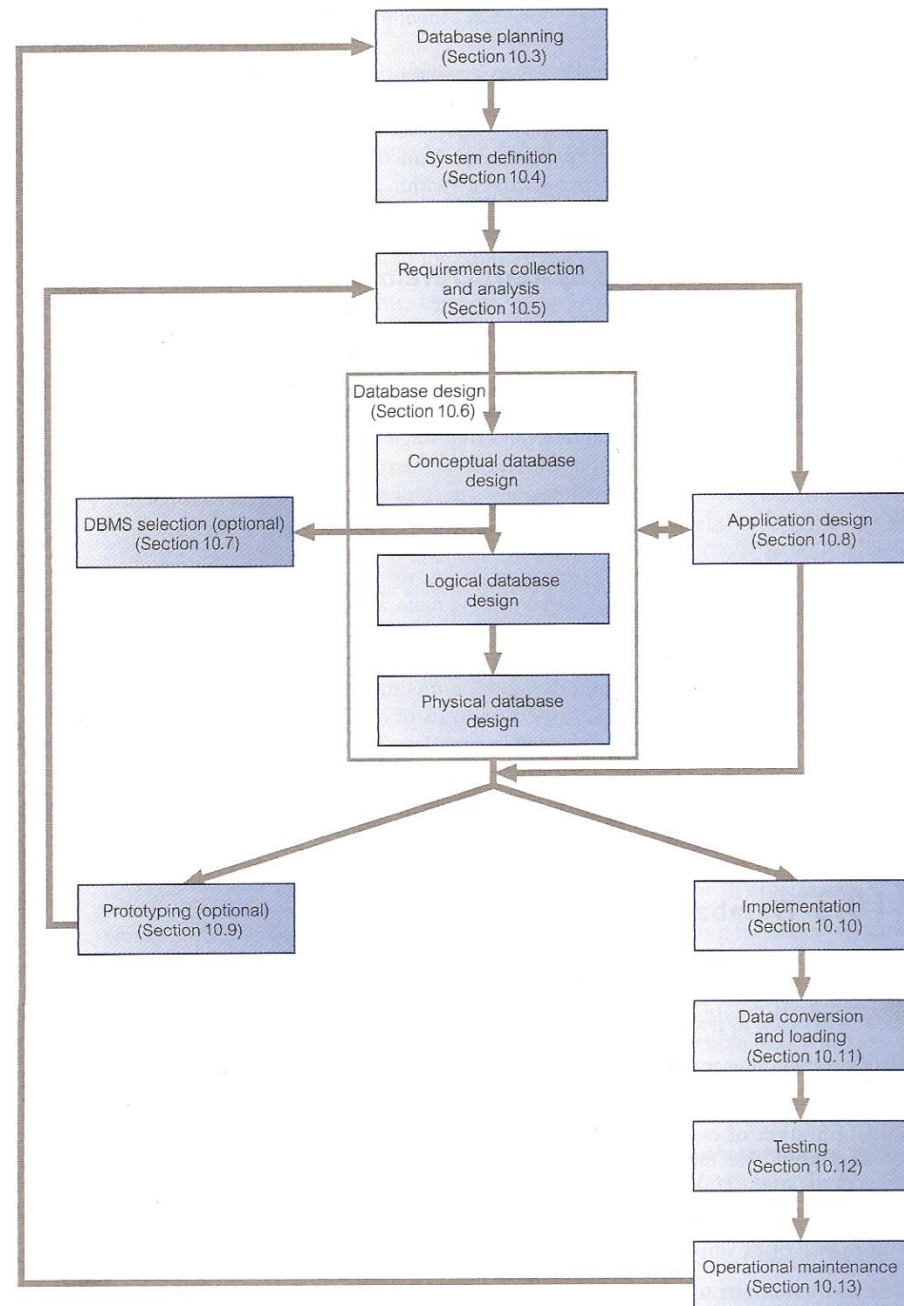


Figure 10.1 The stages of the database system development lifecycle.

User Views (Page 267)

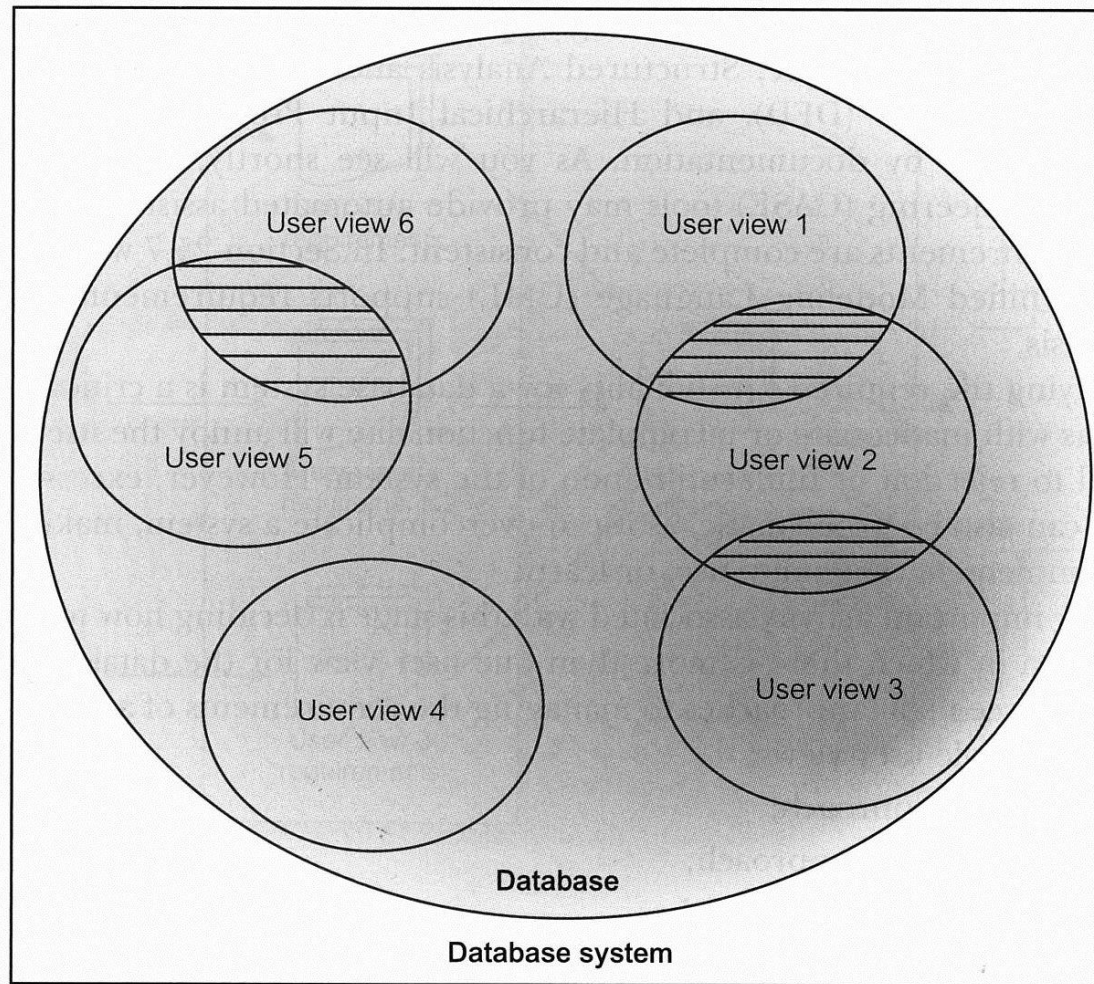
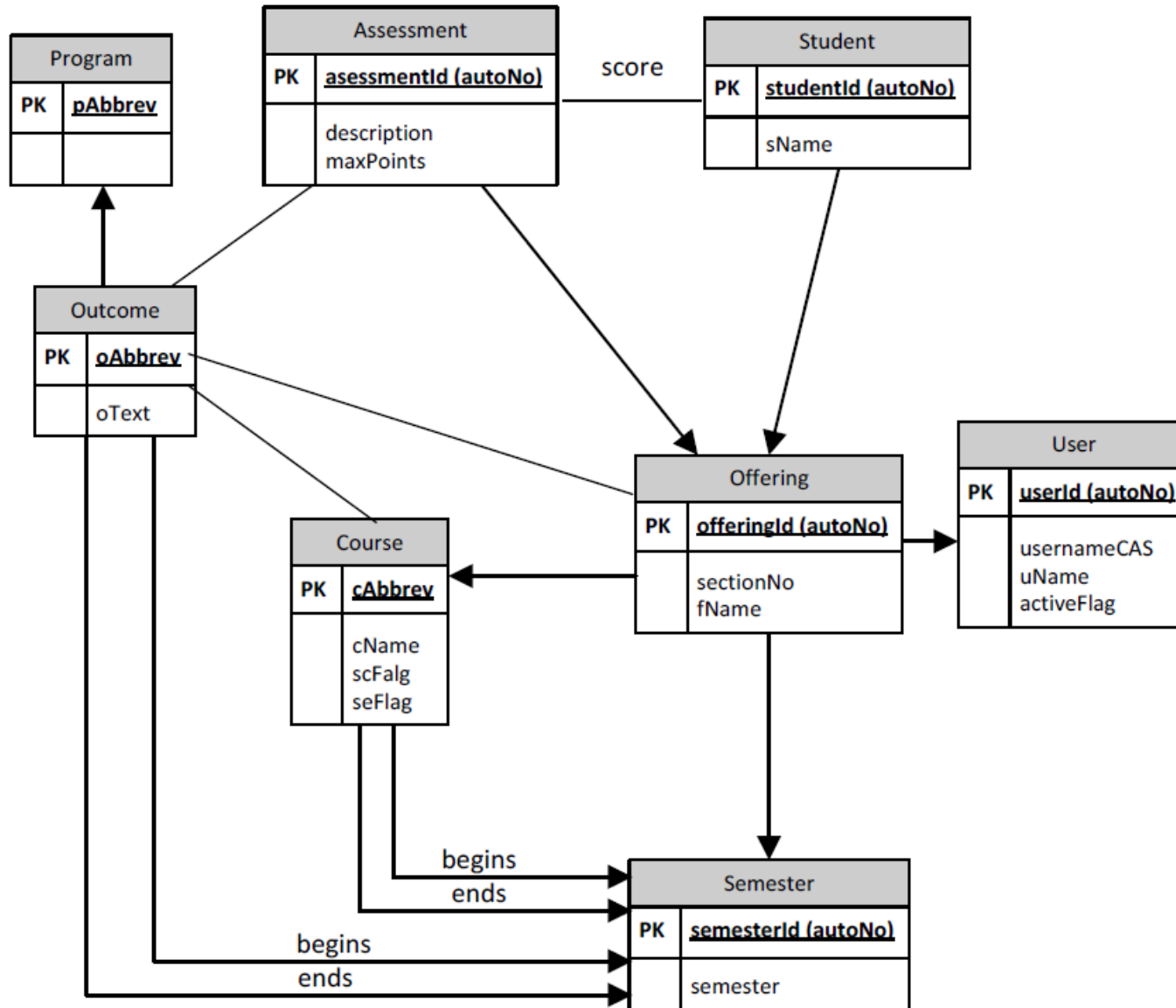
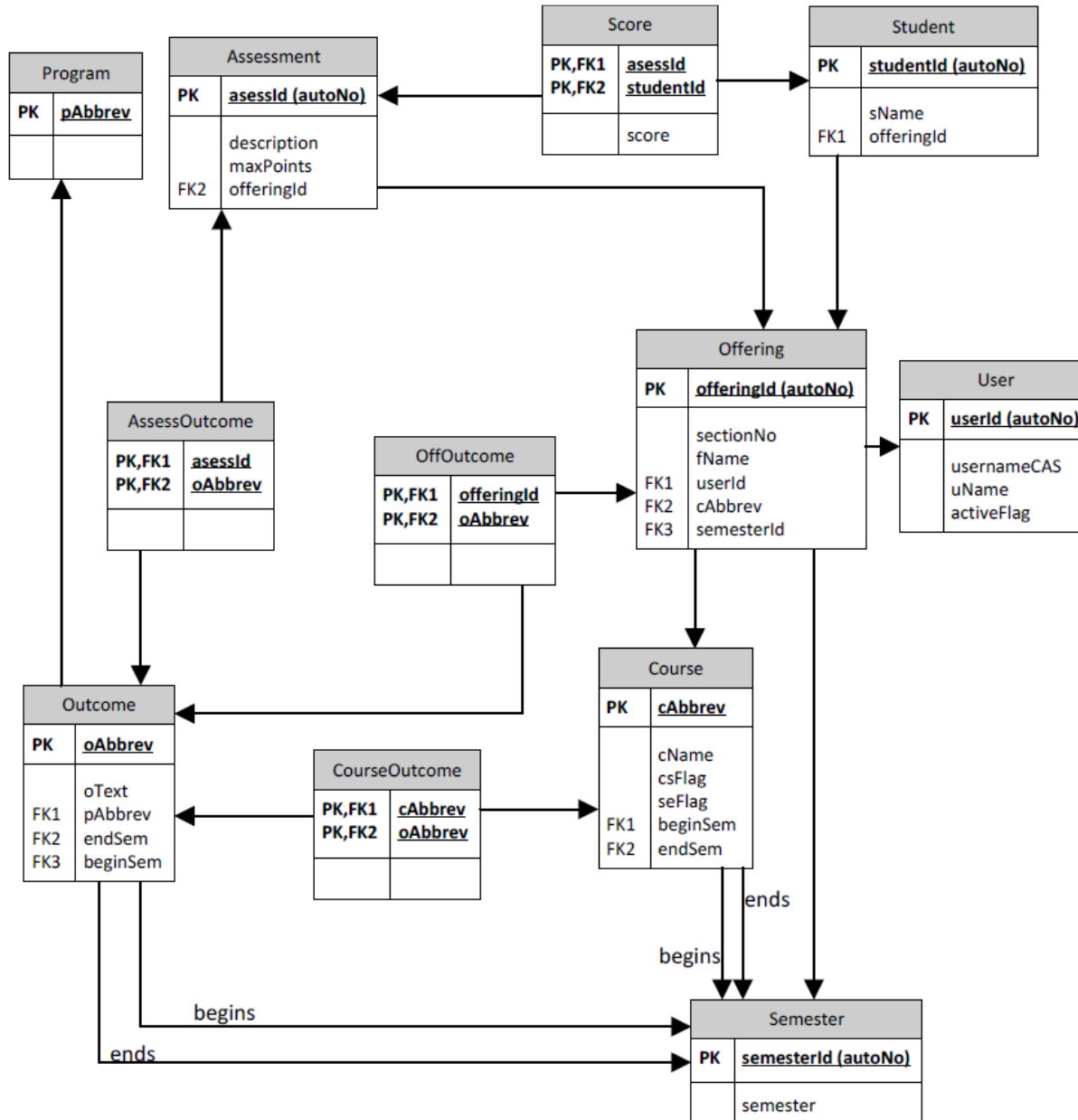


Figure 10.2 Representation of a database system with multiple user views: user views (1, 2, and 3) and (5 and 6) have overlapping requirements (shown as hatched areas), whereas user view 4 has distinct requirements.

Sample Conceptual Model



Sample Logical Model



Features for DBMS Evalu- ation

TABLE 10.4 Features for DBMS evaluation.

DATA DEFINITION	PHYSICAL DEFINITION
Primary key enforcement	File structures available
Foreign key specification	File structure maintenance
Data types available	Ease of reorganization
Data type extensibility	Indexing
Domain specification	Variable length fields/records
Ease of restructuring	Data compression
Integrity controls	Encryption routines
View mechanism	Memory requirements
Data dictionary	Storage requirements
Data independence	
Underlying data model	
Schema evolution	
ACCESSIBILITY	TRANSACTION HANDLING
Query language: SQL2/SQL:2008/ODMG compliant	Backup and recovery routines
Interfacing to 3GLs	Checkpointing facility
Multi-user	Logging facility
Security	Granularity of concurrency
<ul style="list-style-type: none"> • Access controls • Authorization mechanism 	Deadlock resolution strategy
	Advanced transaction models
	Parallel query processing
UTILITIES	DEVELOPMENT
Performance measuring	4GL/5GL tools
Tuning	CASE tools
Load/unload facilities	Windows capabilities
User usage monitoring	Stored procedures, triggers, and rules
Database administration support	Web development tools
OTHER FEATURES	
Upgradability	Interoperability with other DBMSs and other systems
Vendor stability	Web integration
User base	Replication utilities
Training and user support	Distributed capabilities

Guidelines for Form/Report Design

TABLE 10.6 Guidelines for form/report design.

Meaningful title

Comprehensible instructions

Logical grouping and sequencing of fields

Visually appealing layout of the form/report

Familiar field labels

Consistent terminology and abbreviations

Consistent use of color

Visible space and boundaries for data entry fields

Convenient cursor movement

Error correction for individual characters and entire fields

Error messages for unacceptable values

Optional fields marked clearly

Explanatory messages for fields

Completion signal

Sources of Documentation (Page 294)

TABLE 11.2 Examples of types of documentation that should be examined.

PURPOSE OF DOCUMENTATION	EXAMPLES OF USEFUL SOURCES
Describes problem and need for database	Internal memos, emails, and minutes of meetings Employee/customer complaints, and documents that describe the problem Performance reviews/reports
Describes the part of the enterprise affected by problem	Organizational chart, mission statement, and strategic plan of the enterprise Objectives for the part of the enterprise being studied Task/job descriptions Samples of completed manual forms and reports Samples of completed computerized forms and reports
Describes current system	Various types of flowcharts and diagrams Data dictionary Database system design Program documentation User/training manuals

Mission Statement (page 303)

"The purpose of the *DreamHome* database system is to maintain the data that is used and generated to support the property rentals business for our clients and property owners and to facilitate the cooperation and sharing of information between branches."

Figure 11.8 Mission statement for the *DreamHome* database system.

List of Tasks (page 308)

To maintain (enter, update, and delete) data on branches.
To maintain (enter, update, and delete) data on staff.
To maintain (enter, update, and delete) data on properties for rent.
To maintain (enter, update, and delete) data on property owners.
To maintain (enter, update, and delete) data on clients.
To maintain (enter, update, and delete) data on property viewings.
To maintain (enter, update, and delete) data on leases.
To maintain (enter, update, and delete) data on newspaper adverts.

To perform searches on branches.
To perform searches on staff.
To perform searches on properties for rent.
To perform searches on property owners.
To perform searches on clients.
To perform searches on property viewings.
To perform searches on leases.
To perform searches on newspaper adverts.

To track the status of property for rent.
To track the status of clients wishing to rent.
To track the status of leases.

To report on branches.
To report on staff.
To report on properties for rent.
To report on property owners.
To report on clients.
To report on property viewings.
To report on leases.
To report on newspaper adverts.

Figure 11.9 Mission objectives for the *DreamHome* database system.

Scope and Boundary (page 309)

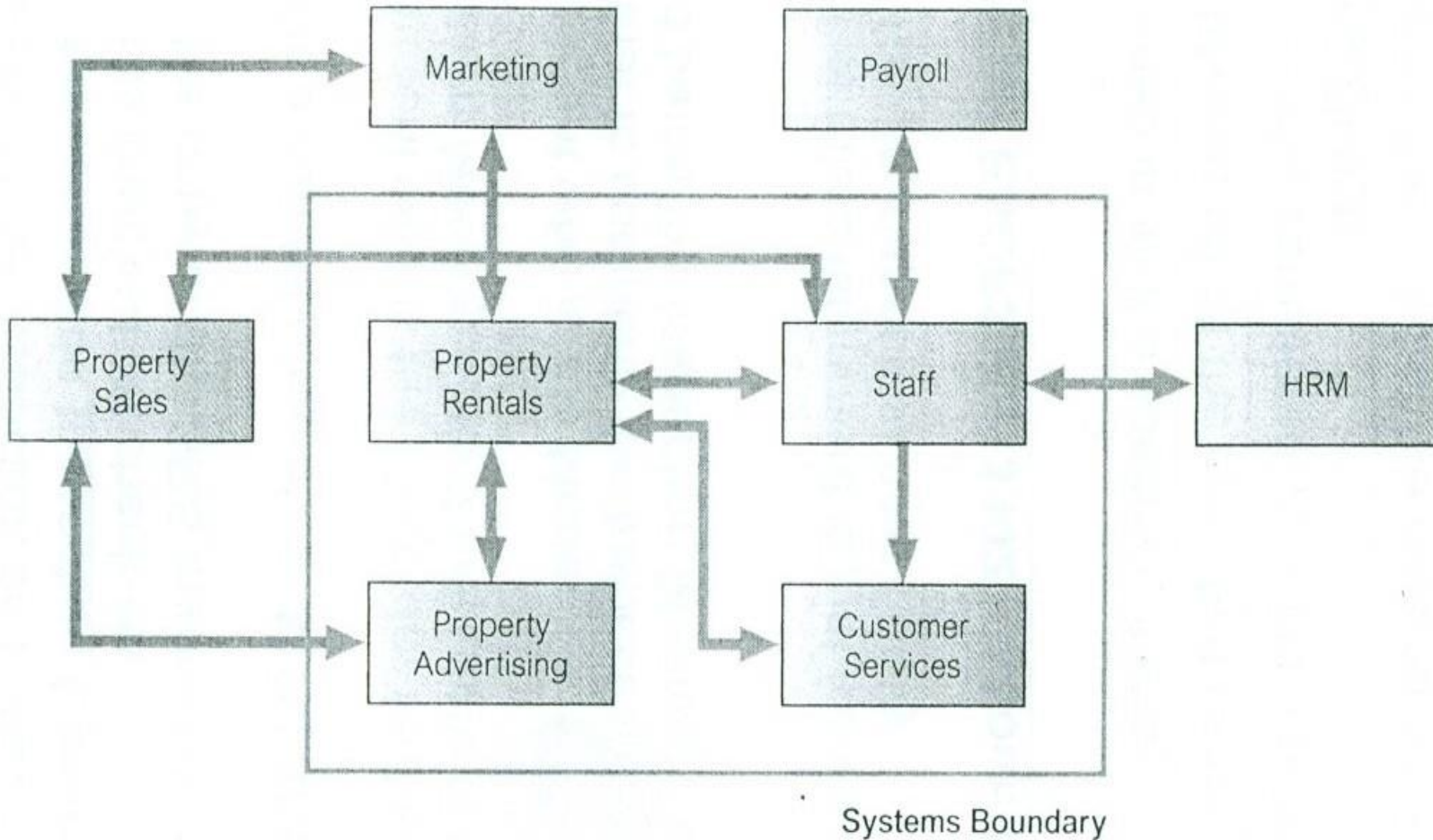


Figure 11.10 Systems boundary for the *DreamHome* database system.

Sample CRUD Matrix

Form/Report \ Entity	Order	Chemical	Requester	Vendor Catalog
Place Order	C	R	R	R
Change Order	U, D		R	R
Manage Chemical Inventory		C, U, D		
Report on Orders	R	R	R	
Edit Requesters			C, U	

FIGURE 13-5 Sample CRUD matrix for the Chemical Tracking System.

From Software Requirements by Karl Wieggers and Joy Beatty

Cross-Reference of User Views (page 314)

TABLE 11.7 Cross-reference of user views with the main types of data used by each.

	DIRECTOR	MANAGER	SUPERVISOR	ASSISTANT	CLIENT
branch	X	X			
staff	X	X	X		
property for rent	X	X	X	X	X
owner	X	X	X	X	
client	X	X	X	X	X
property viewing			X	X	
lease	X	X	X	X	
newspaper	X	X			

Cross-Reference of Transactions and Relations (page 481)

TABLE 18.1 Cross-referencing transactions and relations.

TRANSACTION/ RELATION	(A)				(B)				(C)				(D)				(E)				(F)							
	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D				
Branch									X				X												X			
Telephone																												
Staff	X				X				X								X				X				X			
Manager																												
PrivateOwner	X																											
BusinessOwner	X																											
PropertyForRent	X					X	X	X					X					X							X			
Viewing																												
Client																												
Registration																												
Lease																												
Newspaper																												
Advert																												

I = Insert; R = Read; U = Update; D = Delete