CHAPTER 2: DATA MODELS

1. A data model is usually graphical.

a. True

b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.36

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

2. An implementation-ready data model needn't necessarily contain enforceable rules to guarantee the integrity of the data.

a. True b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Moderate REF: p.36

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: Data Modeling and Data Models

3. An implementation-ready data model should contain a description of the data structure that will store the enduser data.

a. True

b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.36

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

4. Within the database environment, a data model represents data structures with the purpose of supporting a specific problem domain.

a. True

b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.36

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models

5. Even when a good database blueprint is available, an applications programmer's view of the data should match that of the manager and the end user.

a. True

b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Moderate REF: p.37

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: The Importance of Data Models

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- 6. In the context of data models, an entity is a person, place, thing, or event about which data will be collected and stored.
 - a. True

b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.37-38

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Model Basic Building Blocks

- 7. Database designers determine the data and information that yield the required understanding of the entire business.
 - a. True

b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Easy REF: p.39

NAT: BUSPROG: Technology STATE: DISC: Information Technologies

KEY: Bloom's: Knowledge TOP: Business Rules

- 8. Business rules apply to businesses and government groups, but not to other types of organizations such as religious groups or research laboratories.
 - a. True

b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Moderate REF: p.39

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies

KEY: Bloom's: Comprehension TOP: Business Rules

- 9. Business rules must be rendered in writing.
 - a. True

b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.39

NAT: BUSPROG: Communication STATE: DISC: Information Technologies

KEY: Bloom's: Knowledge TOP: Business Rules

- 10. A disadvantage of the relational database management system (RDBMS) is its inability to hide the complexities of the relational model from the user.
 - a. True

b. False

ANSWER: False.

PTS: 1 DIF: Difficulty: Moderate REF: p.43

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: The Evolution of Data Models

- 11. In an SQL-based relational database, each table is dependent on every other table.
 - a. True
 - b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Easy REF: p.45

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 12. In an SQL-based relational database, rows in different tables are related based on common values in common attributes.
 - a. Trueb. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.45

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 13. Each row in the relational table is known as an entity instance or entity occurrence in the ER model.
 - a. True
 - b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.46

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 14. M:N relationships are not appropriate in a relational model.
 - a. True
 - b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.47

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 15. In Chen notation, entities and relationships have to be oriented horizontally; not vertically.
 - a. True
 - b. False

ANSWER: False

PTS: 1 DIF: Difficulty: Easy REF: p.47

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 16. Today, most relational database products can be classified as object/relational.
 - a. True
 - b. False

ANSWER: True

PTS: 1 DIF: Difficulty: Easy REF: p.50

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

17.	The network model has structural level dependence. a. True b. False				
	ANSWER: True PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.56
18.	The external model is the representational a. True b. False	on of the c	database as "seen" by the DBMS.		
	ANSWER: False PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Degrees of Data Abstraction	REF:	p.60
19.	The hierarchical model is software-in a. True b. False	dependent	•		
	ANSWER: False PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Degrees of Data Abstraction	REF:	p.62
20.	The relational model is hardware-dep a. True b. False	endent and	l software-independent.		
	ANSWER: False PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Degrees of Data Abstraction	REF:	p.62
21.		p one und	erstand the complexities of the real-world e	nvironm	ent.
	a. nodeb. entityc. modeld. database				
	ANSWER: c PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Data Modeling and Data Models	REF:	p.36
22.	A(n)is anything about wa. attribute b. entity c. relationship d. constraint	vhich data	are to be collected and stored.		

ANSWER: b PTS: 1 DIF: Difficulty: Easy REF: p.37 NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Model Basic Building Blocks 23. A(n) represents a particular type of object in the real world. a. attribute b. entity c. relationship d. node ANSWER: b PTS: 1 Difficulty: Easy DIF: REF: p.38 STATE: DISC: Information Technologies NAT: BUSPROG: Technology KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models 24. A(n) is the equivalent of a field in a file system. a. attribute b. entity c. relationship d. constraint ANSWER: a PTS: 1 DIF: Difficulty: Easy REF: p.38 NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge Data Modeling and Data Models TOP: 25. A(n) is bidirectional. a. attribute b. entity c. relationship d. constraint ANSWER: c PTS: 1 DIF: Difficulty: Easy REF: p.38 NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Data Modeling and Data Models 26. A(n)_____is a restriction placed on the data. a. attribute b. entity d. constraint c. relationship ANSWER: d PTS: 1 DIF: Difficulty: Easy REF: p.38 STATE: DISC: Information Technologies NAT: BUSPROG: Technology Data Modeling and Data Models KEY: Bloom's: Knowledge TOP: 27. are important because they help to ensure data integrity. b. Entities a. Attributes c. Relationships d. Constraints ANSWER: d PTS: 1 DIF: Difficulty: Easy REF: p.38 NAT: BUSPROG: Technology STATE: DISC: Information Technologies Data Modeling and Data Models KEY: Bloom's: Knowledge TOP:

Chapter 2: Data Models				
28are normally expressed in the fa. Attributes b. Entities c. Relationships d. Constraints	Form of rul	es.		
ANSWER: d PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Data Modeling and Data Models	REF:	p.38
29. Students and classes have arelation relation re	lationship.			
ANSWER: d PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Data Modeling and Data Models	REF:	p.38
30. From a database point of view, the codefineda. business rulesb. business normsc. business goalsd. business plans	llection of	data becomes meaningful only when it refl	ects pro	perly
ANSWER: a PTS: 1 NAT: BUSPROG: Analytic KEY: Bloom's: Comprehension		Difficulty: Moderate DISC: Information Technologies usiness Rules	REF:	p.39
31. Which of the following is true of busing a. They allow the designer to set complete. They allow the designer to develop the can serve as a communication of the provide a framework for the can be also be	pany polic business p tool betw	ies with regard to data. processes. reen the users and designers.		
ANSWER: c PTS: 1 NAT: BUSPROG: Analytic KEY: Bloom's: Comprehension	DIF: STATE: TOP:	Difficulty: Moderate DISC: Information Technologies Business Rules	REF:	p.40
32. A noun in a business rule translates to a. entity b. attribute c. relationship d. constraint	o a(n)	in the data model.		
ANSWER: a PTS: 1 NAT: BUSPROG: Communication KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies Business Rules	REF:	p.40

Chapter 2: Data Models				
33. A verb associating two nouns in a buta. entityb. attributec. relationshipd. constraint	isiness rule	translates to a(n)in the data model		
ANSWER: c PTS: 1 NAT: BUSPROG: Communication KEY: Bloom's: Knowledge			REF:	p.40
34. In themodel, the basic logical a. hierarchical b. network c. relational d. entity relationsh		s represented as an upside-down tree.		
ANSWER: a PTS: 1 NAT: BUSPROG: Technology	DIF:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.41
35. In themodel, each parent can a. hierarchical b. network c. relational d. entity relationsh	·	children, but each child has only one pare	ent.	
ANSWER: a PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	STATE:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.41
36. The hierarchical data model was dev a. 1960s b. 1970s c. 1980s d. 1990s	eloped in the	he		
ANSWER: a PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.41
37. In themodel, the user perceiv record can have more than one paren a. hierarchical b. network c. object-oriented d. entity relatio	ıt.	base as a collection of records in 1:M relat	ionships,	where each
ANSWER: b PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.41-42

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38. The object-oriented data model was developed in the_____

a. 1960s

c. 1980s

b. 1970s

d. 1990s

	ANSWER: c				
	PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.42
39.	VMS/VSAM is an example of the_	•			
	a. hierarchical model b. file sy	stem data m	odel		
	c. relational data model d. XML	data model			
	ANSWER: b PTS: 1	DIF:	Difficulty: Easy	REF:	p.42
	NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	TOP:	DISC: Information Technologies The Evolution of Data Models		
40	_				
40.	Oracle 11g is an example of the a. hierarchical model b. file sy	 stem data m	odel		
	c. relational data model d. XML/				
		11y orra data	inouci		
	ANSWER: d PTS: 1	DIF:	Difficulty: Easy	REF:	p.42
	NAT: BUSPROG: Technology		DISC: Information Technologies	KLI'.	p.42
	KEY: Bloom's: Knowledge	TOP:			
41.	MySQL is an example of the	<u>.</u> .			
	a. hierarchical model b. file sy		odel		
	c. relational data model d. XML	data model			
	ANSWER: c				
	PTS: 1	DIF:	Difficulty: Easy	REF:	p.42
	NAT: BUSPROG: Technology		DISC: Information Technologies		
	KEY: Bloom's: Knowledge	TOP:	The Evolution of Data Models		
	Relationship.				
42.			describe schema components.		
	a. extensible markup language (XM		a definition language (DDL)		
	c. unified modeling language (UML	d. que	ery language		
	ANSWER: b				
	PTS: 1 NAT: BUSPROG: Technology	DIF: STATE:	Difficulty: Easy DISC: Information Technologies	REF:	p.42
	KEY: Bloom's: Knowledge	TOP:	The Evolution of Data Models		
12	The relational date model was devial	anad in the			
+3.	The relational data model was devel a. 1960s b. 1970s	oped in the			
	c. 1980s d. 1990s				
	ANSWER: b				
	PTS: 1	DIF:	Difficulty: Easy	REF:	p.43
	NAT: BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY: Bloom's: Knowledge	TOP:	The Evolution of Data Models		

44.	Themodel was developed to allow designers to use a graphical tool to examine structures rather than describing them with text.					
	a. hierarchical b. network					
	c. object-oriented d. entity relation	nship				
	ANSWER: d PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.45	
45.	A(n)enables a database admin a. extensible markup language (XML	b. dat	a definition language (DDL)			
	c. unified modeling language (UML)	d. que	ery language			
	ANSWER: b PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.45	
46.	Themodel uses the term connects a. relational b. network c. object-oriented d. entity relation	·	label the relationship types.			
	c. object-oriented d. entity relation	isnip				
	ANSWER: d PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.46	
47.	Thedata model is said to be a	semantic d	lata model.			
	a. relational b. network					
	c. object-oriented d. entity relation	iship				
	ANSWER: c PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge		Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.48	
1 Q	Thedata model uses the conce	ent of inher	ritanca			
40.	a. relational b. network	pt of filler	Italice.			
	c. object-oriented d. entity relation					
	ANSWER: c PTS: 1 NAT: BUSPROG: Technology KEY: Bloom's: Knowledge	DIF: STATE: TOP:	Difficulty: Easy DISC: Information Technologies The Evolution of Data Models	REF:	p.50	
49.	Which of the following types of HDF a. Data node b. Client node	S nodes st	ores all the metadata about a file system?			
	c. Name node d. Map node					
	c. I tame node u. Iviap node					

ANSWER: c

PTS: 1 DIF: Difficulty: Easy REF: p.52

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 50. Which of the following is true of NoSQL databases?
 - a. They do not support distributed database architectures. b. They are not based on the relational model.
 - c. They are geared toward transaction consistency rather than performance.

 d. They do not support very large amounts of sparse data.

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.53

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 51. Which of the following types of HDFS nodes acts as the interface between the user application and the HDFS?
 - a. Data nodeb. Client nodec. Name noded. Map node

ANSWER: b

PTS: 1 DIF: Difficulty: Easy REF: p.53

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 52. NoSQL databases:
 - a. are geared toward transaction consistency; not performance. b. support only small amounts of sparse data.
 - c. are based on the relational model.

 d. provide fault tolerance.

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.55

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 53. Which of the following is a disadvantage of the hierarchical data model?
 - a. It does not promote data sharing. b. It is not efficient with 1:M relationships.
 - c. It does not promote data integrity. d. It does not have standards.

ANSWER: d

PTS: 1 DIF: Difficulty: Easy REF: p.58

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

- 54. One of the limitations of the _____ model is that there is a lack of standards.
 - a. hierarchical b. network
 - c. relational d. entity relationship

ANSWER: a PTS: 1 DIF: Difficulty: Easy REF: p.58 NAT: BUSPROG: Technology STATE: DISC: Information Technologies The Evolution of Data Models KEY: Bloom's: Knowledge TOP: 55. The model is the end users' view of the data environment. b. external a. abstract c. conceptual d. internal ANSWER: b PTS: 1 DIF: Difficulty: Easy REF: p.60 STATE: DISC: Information Technologies NAT: BUSPROG: Technology KEY: Bloom's: Knowledge TOP: The Evolution of Data Models 56. An internal refers to a specific representation of an internal model, using the database constructs supported by the chosen database. a. tuple b. schema c. object d. value ANSWER: b Difficulty: Easy PTS: 1 DIF: REF: p.62 STATE: DISC: Information Technologies NAT: BUSPROG: Technology KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction 57. A(n) is a relatively simple representation of more complex real-world data structures. ANSWER: data model PTS: 1 DIF: Difficulty: Easy REF: p.36 NAT: BUSPROG: Communication STATE: DISC: Information Technologies KEY: Bloom's: Knowledge Data Modeling and Data Models TOP: 58. A(n) is a brief, precise, and unambiguous description of a policy, procedure, or principle within a specific organization. ANSWER: business rule PTS: 1 DIF: Difficulty: Easy REF: p.39 STATE: DISC: Information Technologies NAT: BUSPROG: Technology KEY: Bloom's: Knowledge TOP: **Business Rules** 59. A(n) in a hierarchical model is the equivalent of a record in a file system. ANSWER: segment Difficulty: Easy PTS: 1 DIF: REF: p.41 NAT: BUSPROG: Technology STATE: DISC: Information Technologies The Evolution of Data Models KEY: Bloom's: Knowledge TOP: 60. A(n) is the conceptual organization of an entire database as viewed by a database administrator. ANSWER: schema PTS: 1 DIF: Difficulty: Easy REF: p.42 NAT: BUSPROG: Technology STATE: DISC: Information Technologies The Evolution of Data Models KEY: Bloom's: Knowledge TOP:

61.	A(n)defines the environment in which data can be managed and is used to work with the data in the database.					
	uataba	SC.				
		ER: data manipulation langua				
	PTS:		DIF:	Difficulty: Easy	REF:	p.42
		BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
62.	The re	lational model's foundation is	a mathema	tical concept known as a		
ANSWER: relation						
	PTS:		DIF:	Difficulty: Easy	REF:	p.43
		BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
63.	Each r	ow in a relation is called a(n)_	·			
		ER: tuple				
	PTS:			Difficulty: Easy	REF:	p.43
	NAT:	BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
64.	Each c	olumn in a relation represents	a(n)	_•		
	ANSW	ER: attribute				
	PTS:			Difficulty: Easy	REF:	p.43
	NAT:	BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
65.	Each r	ow in the relational table is known	own as a(n))		
	ANSW	ER: entity instance				
	PTS:		DIF:		REF:	p.46
	NAT:	BUSPROG: Technology	STATE:	DISC: Information Technologies		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
66.	In, a three-pronged symbol represents the "many" side of the relationship.					
	ANSW	ER: Crow's Foot notation				
	PTS:		DIF:	Difficulty: Easy	REF:	p.46
		BUSPROG: Technology	STATE:	C		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
67.	A(n)	is a collection of similar	objects wit	h a shared structure and behavior.		
		ER: class				
	PTS:		DIF:	Difficulty: Easy	REF:	p.48
		BUSPROG: Technology	STATE:	<u> </u>		
	KEY:	Bloom's: Knowledge	TOP:	The Evolution of Data Models		
68.	In obje	ect-oriented terms, a(n)	defines an	object's behavior.		

ANSWER: method

PTS: 1 DIF: Difficulty: Easy REF: p.48

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: The Evolution of Data Models

69. is a language based on OO concepts that describes a set of diagrams and symbols used to graphically model a system.

ANSWER: UML (Unified Modeling Language)

Unified Modeling Language (UML)

Unified Modeling Language

UML

PTS: 1 DIF: Difficulty: Easy REF: p.48

STATE: DISC: Information Technologies NAT: BUSPROG: Technology The Evolution of Data Models KEY: Bloom's: Knowledge TOP:

70. The term is used to refer to the task of creating a conceptual data model that could be implemented in any DBMS.

ANSWER: logical design

DIF: Difficulty: Easy PTS: 1 REF: p.62

NAT: BUSPROG: Technology STATE: DISC: Information Technologies KEY: Bloom's: Knowledge TOP: Degrees of Data Abstraction

71. The. ... is the representation of a database as "seen" by the DBMS.

ANSWER: internal model

PTS: 1 DIF: Difficulty: Easy REF: p.62

NAT: BUSPROG: Technology STATE: DISC: Information Technologies TOP: Degrees of Data Abstraction KEY: Bloom's: Knowledge

72. What components should an implementation-ready data model contain?

ANSWER: An implementation-ready data model should contain at least the following components:

A description of the data structure that will store the end-user data. A set of enforceable rules to guarantee the integrity of the data.

A data manipulation methodology to support the real-world data transformations.

PTS: 1 DIF: Difficulty: Moderate REF: p.36

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: Data Modeling and Data Models

73. What do business rules require to be effective?

ANSWER: To be effective, business rules must be easy to understand and widely disseminated to ensure that every person in the organization shares a common interpretation of the rules. Business rules describe, in simple language, the main and distinguishing characteristics of the data as viewed by

the company.

PTS: 1 DIF: Difficulty: Moderate REF: p.39

NAT: BUSPROG: Communication STATE: DISC: Information Technologies

KEY: Bloom's: Comprehension TOP: **Business Rules**

74. What are the sources of business rules, and what is the database designer's role with regard to business rules?

ANSWER: The main sources of business rules are company managers, policy makers, department managers, and written documentation such as a company's procedures, standards, and operations manuals. A faster and more direct source of business rules is direct interviews with end users. Unfortunately, because perceptions differ, end users are sometimes a less reliable source when it comes to specifying business rules. For example, a maintenance department mechanic might believe that any mechanic can initiate a maintenance procedure, when actually only mechanics with inspection authorization can perform such a task. Such a distinction might seem trivial, but it can have major legal consequences. Although end users are crucial contributors to the development of business rules, it pays to verify end-user perceptions. Too often, interviews with several people who perform the same job yield very different perceptions of what the job components are. While such a discovery may point to "management problems," that general diagnosis does not help the database designer. The database designer's job is to reconcile such differences and verify the results of the reconciliation to ensure that the business rules are appropriate and accurate.

PTS: 1 DIF: Difficulty: Moderate REF: p.39-40

NAT: BUSPROG: Communication STATE: DISC: Information Technologies

KEY: Bloom's: Comprehension TOP: Business Rules

75. Describe the three parts involved in any SQL-based relational database application.

ANSWER: From an end-user perspective, any SQL-based relational database application involves three parts: a user interface, a set of tables stored in the database, and the SQL "engine." Each of these parts is explained below.

- 1. The end-user interface. Basically, the interface allows the end user to interact with the data (by automatically generating SQL code). Each interface is a product of the software vendor's idea of meaningful interaction with the data. You can also design your own customized interface with the help of application generators that are now standard fare in the database software arena.
 - 2. A collection of tables stored in the database. In a relational database, all data are perceived to be stored in tables. The tables simply "present" the data to the end user in a way that is easy to understand. Each table is independent. Rows in different tables are related by common values in common attributes.
 - 3. SQL engine. Largely hidden from the end user, the SQL engine executes all queries, or data requests. Keep in mind that the SQL engine is part of the DBMS software. The end user uses SQL to create table structures and to perform data access and table maintenance. The SQL engine processes all user requests—largely behind the scenes and without the end user's knowledge. Hence, SQL is said to be a declarative language that tells what must be done but not how.

PTS: 1 DIF: Difficulty: Moderate REF: p.45

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: The Evolution of Data Models

76. Describe the conceptual model and its advantages. What is the most widely used conceptual model?

ANSWER: The conceptual model represents a global view of the entire database by the entire organization. That is, the conceptual model integrates all external views (entities, relationships, constraints, and processes) into a single global view of the data in the enterprise. Also known as a conceptual schema, it is the basis for the identification and high-level description of the main data objects (avoiding any database model- specific details).

The most widely used conceptual model is the ER model. Remember that the ER model is illustrated with the help of the ERD, which is effectively the basic database blueprint. The ERD is used to graphically represent the conceptual schema.

The conceptual model yields some important advantages. First, it provides a bird's-eye (macro level) view of the data environment that is relatively easy to understand.

Second, the conceptual model is independent of both software and hardware. Software independence means that the model does not depend on the DBMS software used to implement the model. Hardware independence means that the model does not depend on the hardware used in the implementation of the model. Therefore, changes in either the hardware or the DBMS software will have no effect on the database design at the conceptual level. Generally, the term logical design refers to the task of creating a conceptual data model that could be implemented in any DBMS.

PTS: 1 DIF: Difficulty: Moderate REF: p.61-62

NAT: BUSPROG: Analytic STATE: DISC: Information Technologies KEY: Bloom's: Comprehension TOP: Degrees of Data Abstraction