Systems Analysis and Design Methods
Chapter 7: Data Modeling and Analysis

Multiple Choice Questions

1. Which of the following sentence is NOT correct about a logical model:

   A. is implementation dependent
   B. shows what a system is or does
   C. illustrates the essence of the system
   D. is a conceptual model

2. Which of the following sentence is NOT correct about a physical model:

   A. is implementation independent
   B. shows only what a system should do, not how it should do it
   C. is a conceptual model
   D. can only be used to represent a new system

3. Logical models:

   A. increase biases that are the result of the way the current system is implemented
   B. increase the risk of missing business requirements
   C. allow us to confuse the end users because they are so technical
   D. show what a system is or does

4. Physical models:

   A. can be biased based on the way the current system is implemented
   B. show what a system should do, not how it should do it
   C. describe how a system is implemented
   D. can include the technical jargon associated with the implementation of the system

5. An entity can be a class of:

   A. persons
   B. places
   C. objects
   D. all of the above

6. Which of the following consists of other attributes?

   A. a domain
   B. a compound attribute
   C. an entity existence
   D. a data type

7. A group of attributes that uniquely identifies an instance of an entity is called:

A. an entity relationship
B. a default value
C. a concatenated key
D. a domain

8. A natural business association that exists between one or more entities is known as:

A. a domain
B. an entity
C. an associative entity
D. a relationship

9. A binary relationship:

A. can be also ternary at the same time
B. has a degree of 2
C. has a cardinality of 2
D. is recursive

10. When each participating entity in a relationship has its own independent primary key, the relationship is known as:

A. primary
B. associative
C. nonidentifying
D. identifying

11. A relationship where many instances of one entity can be associated with many instances of another entity is known as:

A. specific
B. recursion
C. redundant
D. non-specific

12. A technique wherein attributes that are common to several types of an entity are grouped into their own entity called a supertype is called:

A. recursion
B. normalization
C. generalization
D. subsetting

13. An entity whose instances inherit some common attributes from another entity and then add other attributes that are unique to an instance of itself is known as:

A. a subtype
B. a compound type
C. a complex type
D. a supertype

14. During requirements analysis, what order of model development is used to arrive at the logical data model?

A. context data model; fully attributed data model; key-based data model; normalized data model
B. normalized data model; context data model; fully attributed data model; key-based data model
C. normalized data model; key-based data model; fully attributed data model; context data model
D. context data model; key-based data model; fully attributed data model; normalized data model

15. Which of the following is a technique for identifying entities?

A. study existing forms
B. interview users
C. reverse engineer existing files and databases
D. all of the above

16. A true entity:

A. must have many possible instances
B. should have a meaningful name that is usually a noun
C. should be defined in business terms
D. all of the above

17. A code that uses blocks of numbers that are divided into groups that have some business meaning is known as a:

A. serial code
B. sequential code
C. hierarchical code
D. block code

18. Which of the following is a criteria for making a good data model?

A. Simplicity
B. Redundancy.
C. Precise to accurately describe the business.
D. Data attributes should be flexible and useful in multiple entities.

19. An entity is in second normal form if:

A. all the values of nonprimary keys are dependent on the full primary key.
B. any nonkey attributes that are dependent on only part of the primary key should be moved to any entity where that partial key is the actual full key.
C. it must already be in first normal form.
D. all of the above.

20. A table in which rows indicate entities (and possible attributes) and the columns indicate locations, and the cells indicate the document level of access including create, read, update or delete, is known as:

A. an entity relationship table
B. data-to-location CRUD matrix
C. a decision table
D. a normalization table

True or False Questions

21. Models are used in systems analysis and design to help structure unstructured problems.

A. True B. False

22. A physical model is also known as an essential model, conceptual model and business model.

A. True B. False

23. Logical models are implementation dependent.

A. True B. False

24. Logical models are also known as implementation models and technical models.

A. True B. False

25. Logical models allow us to communicate with end users in non-technical or less technical languages. Thus, we don't lose business requirements in the technical jargon of the computing discipline.

A. True B. False

26. Data modeling is also sometimes known as conceptual business modeling.

A. True B. False

27. An exigency is something about which the business needs to store data.

A. True B. False

28. An attribute is also known as an element, a property or a field.

A. True B. False

29. The value type of an attribute defines what type of data can be stored in that attribute.

A. True B. False

30. The default value for an attribute is the value that will be recorded if not specified by the user.

A. True B. False

31. A condensed key is a group of attributes that uniquely identifies an instance of an entity.

A. True B. False

32. An alternate key is also known as a primary key.

A. True B. False

33. A relationship may represent an event that links the entities or merely a logical affinity that exists between the entities.

A. True B. False

34. Concatenability defines the minimum and maximum number of occurrences of one entity that may be related to a single occurrence of another entity.

A. True B. False

35. Instances within an entity may not have a relationship with other instances in the same entity.

A. True B. False

36. A foreign key is a primary key of one entity that is contributed to another entity to identify instances of a relationship.

A. True B. False

37. Identifying relationships are those in which the child entity contributes its secondary key to become part of the parent entity.

A. True B. False

38. A many-to-many relationship is one in which many instances of one entity are associated with many instances of another entity.

A. True B. False

39. An entity subtype is an entity whose instances store attributes that are common to one or more entity supertypes.

A. True B. False

40. The data model for a single information system is usually called the enterprise data model.

A. True B. False

41. The requirements analysis results in a physical data model that is developed in stages as follows: (1) context data model; (2) key-based data model; (3) fully attributed data model; and (4) the normalized data model.

A. True B. False

42. Another name for the physical data model is the database schema.

A. True B. False

43. The value of a key cannot be null.

A. True B. False

44. Block codes are similar to serial codes except that block numbers are divided into groups that have some business meaning.

A. True B. False

45. A good data model is complex because it has to represent so much information about a company in one place.

A. True B. False

46. Data analysis is a process that prepares a data model for implementation as a simple, nonredundant, flexible and adaptable database through a technique called normalization.

A. True B. False

47. Generalization is a data analysis technique that organizes data domains such that they have data integrity through redundancy, stability and explicit enumeration.

A. True B. False

48. An entity is in third normal form (3NF) if there are no attributes that can have more than one value for a single instance of the entity. Any attributes that have multiple values actually describe a separate entity, possibly an entity and relationship. This step must be done prior to doing second or first normal forms (2NF and 1NF).

A. True B. False

49. Derived attributes are those attributes whose values make them good candidate keys for the entity.

A. True B. False