Chapter 4 - Review Questions

True/False
Indicate whether the statement is true or false.

____ 1. Database designers must obtain a precise description of the nature of the data and the many uses of such data within an organization.

____ 2. The ER model is used to expand the different views of the data at the conceptual level.

____ 3. The Chen model is especially useful to illustrate some of the conceptual elements of database design.

____ 4. The Crow's Foot model is less implementation-oriented than the Chen model.

____ 5. A composite key is a primary key composed of more than one attribute.

____ 6. The ER diagram represents the conceptual database as viewed by the end user.

____ 7. The word "entity" in the ER model corresponds to a table.

____ 8. The ER model refers to a specific table row as an entity instance.

____ 9. The ER model refers to a specific table row as an entity occurrence.

____ 10. Cardinality expresses the specific number of entity occurrences associated with one occurrence of the related entity.

____ 11. Attributes do not have a domain.

____ 12. Attributes may not share a domain.

____ 13. Cardinality expresses the specific number of entity occurrences associated with every occurrence of a related entity.

____ 14. In both the Chen and Crow's Foot models, an entity is represented with a rectangle containing the entity's name.

____ 15. Attributes are types of entities.

____ 16. In the Chen model, each attribute is represented using an oval with the attribute name connected to the entity with a line.

____ 17. In an ER diagram, primary keys are usually bolded.

____ 18. Ideally, a primary key is composed of several attributes.

____ 19. All attributes are either simple or composite.

____ 20. All simple attributes are also single-valued.

____ 21. In the Chen model, a multivalued attribute is connected to the owning entity with a double line.

____ 22. The DBMS can easily handle multivalued attributes.

____ 23. Derived attributes are stored in a special database table.

____ 24. In Chen notation, there is no way to represent cardinality.

____ 25. Connectivities and cardinalities are established by business rules.

____ 26. All entity relationships can be characterized as weak or strong.

____ 27. You should always load data from the 1 side of a 1:M relationship.

____ 28. The existence of a mandatory relationship indicates that the minimum cardinality is 1 for the mandatory entity.

____ 29. Relationship participation is not very important when designing a database.

____ 30. A weak entity has a primary key that is partially or totally derived from the parent entity in the relationship.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 31. The ERD is used to graphically represent the ____ database model.
   a. condensed
   b. physical
   c. logical
   d. conceptual

____ 32. The Chen model is especially useful to illustrate the database from a(n) ____ perspective.
   a. developmental
   b. conceptual
   c. actual
   d. specific

____ 33. Successful database design is, first and foremost, based on ____ requirements.
   a. designer
   b. programmer
   c. end-user
   d. business

____ 34. Some attributes are classified as ____.
   a. simple
   b. complex
   c. defined
   d. grouped

____ 35. A derived attribute ____.
   a. must be stored physically within the database
   b. need not be physically stored within the database
   c. has many values
   d. must be based on the value of three or more attributes

____ 36. A relationship is an association between ____.
   a. objects
   b. entities
   c. databases
   d. fields

_____ 37. Cardinality expresses _____ number of entity occurrences associated with one occurrence of the related entity.
    a. an undetermined
    b. the specific
    c. a pre-determined
    d. a programmed

_____ 38. Knowing the _____ number of entity occurrences is very helpful at the application software level.
    a. maximum
    b. minimum
    c. exact
    d. maximum and minimum

_____ 39. The _____ model is the end user's view of the data environment.
    a. internal
    b. external
    c. physical
    d. conceptual

_____ 40. A _____ key is a key that consists of more than one attribute.
    a. primary
    b. foreign
    c. composite
    d. domain

_____ 41. A _____ attribute can be further subdivided to yield additional attributes.
    a. composite
    b. simple
    c. single-valued
    d. multivalued

_____ 42. A _____ attribute is one that cannot be subdivided.
    a. composite
    b. simple
    c. single-valued
    d. multivalued

_____ 43. A _____ attribute can have only one value.
    a. composite
    b. simple
    c. single-valued
    d. multivalued

_____ 44. _____ attributes can have several values.
    a. Composite
    b. Simple
    c. Single-valued
    d. Multivalued

_____ 45. A _____ attribute need not be physically stored within the database.
    a. composite
    b. multivalued
    c. single-valued
    d. derived

____ 46. If an entity's existence depends on the existence of one or more other entities, it is said to be _____-dependent.
  a. existence
  b. relationship
  c. business
  d. weak

____ 47. If an entity can exist apart from one or more related entities, it is said to be _____-independent.
  a. existence
  b. relationship
  c. business
  d. weak

____ 48. A _____ entity has a primary key that is partially derived from the parent entity in the relationship.
  a. strong
  b. weak
  c. business
  d. relationship

____ 49. A _____ relationship exists when an association is maintained within a single entity.
  a. unary
  b. ternary
  c. binary
  d. weak

____ 50. A _____ relationship exists when two entities are associated.
  a. unary
  b. binary
  c. ternary
  d. weak

____ 51. A _____ relationship exists when three entities are associated.
  a. unary
  b. binary
  c. ternary
  d. weak

____ 52. A _____ entity is composed of the primary keys of each of the entities to be connected.
  a. bridge
  b. composite
  c. unary
  d. binary

____ 53. The bridge entity is known as a _____ entity.
  a. unary
  b. weak
  c. strong
  d. composite

____ 54. Attributes may share a:
  a. name
  b. domain
  c. location
  d. table

____ 55. The set of possible values for an attribute is a ____.
   a. domain
   b. range
   c. set
   d. key

____ 56. In an ER diagram, primary keys are indicated by ____.
   a. bolding
   b. italics
   c. underlining
   d. a special font

____ 57. What is the ideal number of attributes used to make up a primary key?
   a. 0
   b. 1
   c. 2
   d. 6

____ 58. Which attribute(s) make up the primary key in the table definition:
   CLASS (CRS_CODE, CLASS_SECTION, CLASS_TIME, CLASS_ROOM, PROF_NUM)
   a. CRS_CODE
   b. CLASS_SECTION
   c. CRS_CODE and CLASS_SECTION
   d. There is no primary key

____ 59. Which of the following might be represented with a multivalued attribute?
   a. Person's name
   b. Class location
   c. Bank account balance
   d. Book title

____ 60. Which of the following might be represented with a single-valued attribute?
   a. Person's phone number(s)
   b. Car's color
   c. Employee's educational background
   d. Computer's processor speed

____ 61. What type of attribute cannot be created in a DBMS?
   a. derived
   b. multivalued
   c. simple
   d. composite

____ 62. Which of the following should be a derived attribute?
   a. Person's name
   b. Person's age
   c. Person's social security number
   d. Person's phone number

____ 63. How is a derived attribute indicated in the Chen model?
   a. Single line
   b. Dashed line
   c. Circle
   d. Double line

____ 64. A relationship name should be a(n) ____.
    a.   verb
    b.   noun
    c.   adjective
    d.   number

____ 65. In the Chen model, cardinality is indicated using the ____ notation.
    a.   (max, min)
    b.   (min, max)
    c.   [min ... max]
    d.   {min|max}

____ 66. Making sure all ____ are identified is the most important part of a database designer's job.
    a.   business rules
    b.   cardinalities
    c.   derived attributes
    d.   relationships

____ 67. Another word for existence-independent is ____.
    a.   weak
    b.   alone
    c.   unary
    d.   strong

____ 68. When the PK of one entity does not contain the PK of a related entity, the relationship is ____.
    a.   missing
    b.   weak
    c.   strong
    d.   neutral

____ 69. The term "____" is used to label any condition in which one or more optional relationships exist.
    a.   participation
    b.   optionality
    c.   cardinality
    d.   connectivity

____ 70. Which ER model was developed first?
    a.   Crow's Foot
    b.   Rein85
    c.   Chen
    d.   IDEF1X

Completion

Complete each statement.

71. The Chen model is specially useful to illustrate some of the _____ elements of database design.

72. The Crow's Foot model is more _____-oriented than the Chen model.

73. Successful database design is, first and foremost, based on _____ requirements.

74. The most widely used conceptual model is the _____ relationship model.

75. One of the conceptual model advantages is that it provides a relatively easily understood, bird's-eye view of the data _____.

76. A(n) _____ attribute need not be physically stored within the database.

77. A person's social security number would be an example of a(n) _____ attribute.

78. Knowing the minimum and maximum number of entity _____ is very useful at the application software level.

79. _____ expresses the specific number of entity occurrences associated with one occurrence of the related entity.

80. The _____ refers to a specific table row as an entity instance.

81. _____ attributes can be subdivided.

82. A(n) _____ is the attribute's set of possible values.

83. _____ are characteristics of entities.

84. _____ are underlined in an ER diagram.

85. A(n) _____ attribute cannot be subdivided.

86. An attribute representing one or more college degrees belonging to a person would be a(n) _____ attribute.

87. Instead of storing a person's age, it is better to store the date of birth and use the difference between that value and the system date as a(n) _____ attribute.

88. _____ expresses the specific number of entity occurrences associated with one occurrence of the related entity.

89. In the relationship "EMPLOYEE claims DEPENDENT" the DEPENDENT entity is _____ on the EMPLOYEE entity.

90. A(n) _____ relationship is also known as an identifying relationship.

91. Participation is _____ if one entity occurrence does not require a corresponding entity occurrence in a particular relationship.

92. Relationship strength depends on how the primary key of the related entity is formulated, while the relationship _____ depends on how the business rule is written.

93. A weak entity must be _____-dependent.

94. A(n) _____ relationship exists when two entities are associated.

95. Connectivities and cardinalities are usually based on _____ rules.

Essay

96. Explain the difference between simple and composite attributes. Provide at least one example of each.

97. Explain single-valued attributes and provide an example. Is an attribute that is single-valued always simple? Why or why not? Use an example to illustrate your point.

98. Explain multivalued attributes, and provide an example. How are multivalued attributes indicated in the Chen model? How are they indicated in the Crow's Foot model?