SAD Chapter 6

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

____ 1. A data model is a:
   a. The mathematical model of formulas and logic used in a system
   b. The abstract creating of an ideal system transformation
   c. The model that is produced by extreme programming
   d. The expanded, thoroughly balanced and normalized use case for a system
   e. A formal way of representing the data that are used and created by a business system

____ 2. A data model can _____:
   a. Illustrate return-on-investment, break-even point, and economic feasibility
   b. Represent actions or processes that occur in the to-be system
   c. Be used as a logical data model in analysis and as a physical data model in design
   d. Only be used in BPR situations
   e. Only be used with JAD sessions

____ 3. Which is NOT true about using Visible Analyst Workbench?
   a. It can be used with many different databases
   b. It integrates the data model with other parts of the project
   c. It is a full-service CASE tool
   d. Data modeling is one of many capabilities
   e. It can generate Java code when the data modeling is done

____ 4. An entity relationship diagram (ERD):
   a. Is a use-case diagram enhanced graphically to show data and process modeling
   b. Is a high-level CASE diagram of data modeling used in business systems
   c. Is an illustration of external data flows to and from a business systems
   d. Is a picture that shows the information that is created, stored and used by a business system
   e. Is a graphical display of the processes in a business system

____ 5. On an ERD _____:
   a. Processes are listed alphabetically with relationship connections drawn between processes
   b. Data elements are listed alphabetically with a cross listing to the processes that manipulate them
   c. Data elements are described as singular (1:1); plurals (1:N); or didactic (M:N)
   d. Data elements are grouped in a hierarchical structure that is uniquely identified by number
   e. Data elements are listed together and place inside boxes called entities.

____ 6. Lines on an ERD diagram indicate:
   a. Hierarchies between processes
   b. Relationships among the data
   c. Plurality of data items
   d. Uniqueness of data items
   e. Primary keys

____ 7. Which of the following is NOT true about ERDs?
   a. Special symbols are added to show high-level business rules
   b. The diagrams are drawn in a sequential order – from top to bottom
   c. Similar kinds of information are listed together in entities
   d. ERD's are data modeling techniques
   e. Lines are drawn to show relationships among the data

____ 8. An entity:
   a. Is the association between two related processes
   b. Has cardinality (1:1, 1:N, or M:N)
   c. Shows if it can be null or no null
   d. Is a person, place or thing
   e. Is described with a verb phrase

____ 9. Which would NOT likely be an attribute of an entity called "Student"?
   a. Age
   b. Student identification number
   c. Class room number
   d. Home phone
   e. Gender

____ 10. Which would NOT likely be an **entity** on a car insurance ERD?
   a. Customer
   b. Policy
   c. Agent
   d. Zip code
   e. Car

____ 11. You have entities of ITEM, SOLD-ITEM, SALE and PAYMENT. Which most likely is NOT a relationship?
   a. SALE is paid by PAYMENT
   b. PAYMENT pays for ITEM
   c. ITEM is included in SOLD-ITEM
   d. SALE involves SOLD-ITEM
   e. PAYMENT pays for SALE

____ 12. Modality refers to:
   a. Relationships of one-to-one; one-to-many; or many-to-many
   b. Whether a child entity can exist with or without a related instance in the parent entity
   c. The hierarchical structure that was developed in process models applied to data models
   d. The number of attributes generated by an entity
   e. Whether the entity has a unique identifier (aka 'primary key') or a concatenated identifier (aka 'composite key')

____ 13. Jack is developing an ERD for a small dental practice office patient record system. The dental practice has three dentists, six hygienists, and many patients. A patient is always assigned to the same dentist for all appointments. In particular, he is working on the relationship between dentists and patients. Should it be:
   a. 1 to 1, with a modality of null
   b. 1 to many with a modality of not null
   c. Many to many with a modality of null
   d. Many to many with a modality of not null
   e. 1 to many with a modality of null

____ 14. Information in the data dictionary is called: _____
   a. Metadata
   b. Cached information
   c. Compiled data
   d. Data repository
   e. File silo

____ 15. Entity Relationship Diagrams show relationships between entities that are _____.
   a. Outputs from JAD sessions
   b. Consistent with the ACM guidelines
   c. In line with the business rules and processing
   d. Defined by the project sponsor
   e. Extensions of the process models

____ 16. The three major parts of an ERD diagram are:
   a. Process, data flow, data store
   b. Attribute, modularity, cardinality
   c. Relationship, data flow, entity
   d. Relationship, attribute, entity
   e. Process, entity and relationship

____ 17. What is true about creating an entity relationship diagram?
   a. There will be at most seven entities
   b. There will be at most seven relationships
   c. If you identify more than seven entities, analyze and combine until you have seven or less
   d. It is an iterative process
   e. Entities will have at most seven attributes

____ 18. In creating ERD's, which would most likely NOT be a source for entities?
   a. Use cases
   b. Level 0 DFD diagrams
   c. External entities
   d. Data flows
   e. Cost / benefit reports

____ 19. In adding attributes to an ERD, which of the following might NOT be a good resource for attributes?
   a. From the CASE tool
   b. Data flows from DFD's
   c. Requirements documents
   d. The system proposal document
   e. Through interviews (what users need for reports and processing)

____ 20. The last step in creating basic ERD's is to:
   a. Identify relationships
   b. Define attributes and assign identifiers
   c. Recognize entities
   d. Test them with users
   e. Compile them with Java

____ 21. Ting-You is creating an ERD diagram. She knows that it is a(n) _____
   a. Well defined process
   b. Sequential process
   c. Process defined by five steps
   d. Iterative process
   e. User defined process

____ 22. Anthony is working on the cardinality of doctors and patients in a large urban hospital. With the large number of doctors with varying specialties and patients that may have more than one aliment, he thinks the relationship might be noted as:
   a. 1 to 1
   b. 1 to 2
   c. 1 to many
   d. Many to many
   e. Many to 1

____ 23. Omar has a model with 85 entities. He can:
   a. Compress these into at most seven entity grouping units
   b. Group these into related subject areas
   c. Stop – he has all entities defined
   d. Sort the entities alphabetically
   e. Co-validate the entities with the level 2 DFD diagrams

____ 24. The first step to building an Entity Relationship Diagram is to _____
   a. Identify data flows from the level 0 DFD diagram
   b. draw the relationships between the entities
   c. identify the attributes for each entity
   d. identify the entities
   e. identify the processes, data flows and data stores

____ 25. When normalizing data models, if you take attributes that have multiple values for a single instance of an entity and create separate entities for those attributes you are moving from:
a. O normal form to 1st normal form (1NF)
b. 1st normal form (1NF) to 2nd normal form (2NF)
c. 2nd normal form (2NF) to 3rd normal form (3NF)
d. Generalized normal form (GNF) to fully normalized form (FNF)
e. Dependent normal form (DNF) to Independent normal form (INF)

____ 26. Independent entities are:
a. When a child requires attributes from the parent
b. When there is only one entity for a data process model
c. When an entity can exist without the help of another entity
d. Where the entity identifier is also the primary key
e. When a entity comes from an external source (aka 'external entity')

____ 27. A(n) _____ entity is an entity at the "1" end of a relationship or an entity with an identifier that describes only the entity.
a. dependent
b. incomplete
c. independent
d. intersection
e. non-identifying

____ 28. A(n) _____ entity cannot exist without the presence of another entity and is normally on the "many" end of a relationship or has an identifier that is based on another entity's attribute.
a. independent
b. incomplete
c. dependent
d. variable
e. non-complying

____ 29. The two methods to validate that an ERD is well formed are _____.
a. Balancing with process models and following design guidelines created by Chen
b. Normalization and balancing with process models
c. Renaming theory
d. Balancing with process models and renaming theory
e. Normalization and following design guidelines created by Chen

____ 30. Andrew, an analyst for PaxMedia Inc, has just learned that the business rules for a system he has been working on have changed. This means that _____.
a. Nothing – once the ERD data models have been drawn, they are 'frozen' for the system
b. Andrew will be reassigned to a different project that is in its beginning stages
c. The ERD components will have to be changed
d. The ERD data model will have to be put on hold while new DFD diagrams are created
e. The project will have to be scrapped and restarted

____ 31. A logical data model that does not lead to repeating fields and that the data models leads to tables containing fields that are dependent on the whole identifier is in _____ normal form.
a. balanced
b. first
c. primary
d. second
e. third

____ 32. When the analyst is evaluating a data model to ensure that all fields in a record depend fully on the entire primary key, which step of normalization is being performed?
a. base normal form
b. first normal form
c. second normal form
d. third normal form
e. cannot tell from the above information

____ 33. If the logical data model does not contain attributes that have *repeating values* it is in _____.
a. base normal form
b. first normal form
c. non-normal form
d. second normal form
e. third normal form

____ 34. If the logical data model contains attribute values that depend on an attribute that is not the identifier, then it is in _____.
a. base normal form
b. first normal form
c. non-normal form
d. second normal form
e. third normal form

____ 35. Balance occurs between DFDs and ERDs when the data stores _____
a. Are uniquely named
b. Have only one input and one output flow
c. Are named the same as the relationships on the ERD
d. Can be compared to ERD data flows and attributes on the ERD are included in data stores on the DFD
e. Can be equated to entities on the ERD and when entities are referred to by data stores on the DFD

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

____ 36. Data models can be either logical or physical.

____ 37. During the analysis phase, analysts create programming models to represent how the business system will operate.

____ 38. A data model is a formal way of representing the data that are used and created by a business system.

____ 39. One of the most commonly used techniques for data modeling is ERD's.

____ 40. ERD's are drawn in several levels: Context ERD diagrams; Level 0 ERD diagrams; Level 1 ERD diagrams.

____ 41. ERD's and DFD's are two techniques for data modeling.

____ 42. ERD's and DFD's are two techniques for process modeling.

____ 43. A textbook-provided example of a 'full-service CASE' tool is Visible Analyst Workbench.

____ 44. An ERD is a picture that shows how data and information is processed and transformed by a business system.

____ 45. A graphical illustration that shows the information that is created, stored and used by a business system would be an ERD.

____ 46. An illustration of the transformation of data into business value is an ERD.

____ 47. An analyst can read an ERD to discover the individual pieces of information in a system and how they are organized and related to each other.

____ 48. On an ERD, similar kinds of information are listed together and placed inside boxes called data containers.

____ 49. An entity is the basic building block for a data model.

____ 50. An entity is described by an action verb.

____ 51. Entities are further designed with attributes.

____ 52. In an entity called STUDENT, you might find attributes of Student-ID, Last-Name, First-Name and cell-phone.

____ 53. In an entity called STUDENT, you might find attributes of PROFESSOR-ID, Last-Name, First-Name and CLASSROOM.

____ 54. Relationships are some type of information that is captured about entities.

____ 55. Relationships are associations between entities.

____ 56. Relationships are drawn with lines showing cardinality and plurality.

____ 57. ERD's can be quite complex and might have hundreds or thousands of entities.

____ 58. The three steps in creating an ERD are: (1) identify the entities; (2) identify the processes; (3) identify the relationships

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____ 59. Metadata is data about data.

____ 60. CASE tools have ‘data repositories’.

____ 61. In defining the data characteristics of Universal Product Codes, we might describe them as twelve characters made up of digits – numeric only.

____ 62. In defining LAST-NAME in the data dictionary, we might describe it as a character field having from 1 to 15 alphabetic characters.

____ 63. One of the first places to start developing Entity Relationship Diagrams is by looking at the level 0 process models (DFD) and the use cases for data flows and data stores.

____ 64. Data modeling is an iterative process.

____ 65. When validating ERD’s you should balance ERD entities with the data flows and data stores from the DFD process diagrams.

____ 66. CRUD stands for create, read, update and delete and can be used to verify DFDs and ERDs.