

Chapter 02 Introduction to Database Development

1. An system is a set of unrelated components that work independently to accomplish some objectives.
True False

2. The role of a database is to provide short-term memory for an information system.
True False

3. In the traditional systems development life cycle, the boundaries between the various phases are usually well-defined and each phase is completed before the next phase is begun.
True False

4. In the traditional life cycle, the systems implementation phase begins when an information system becomes operational.
True False

5. The systems analysis phase produces problem statement and feasibility study, which are inputs into the systems design phase.
True False

6. Due to the high cost costs of developing new systems, a system is seldom changed once it has been implemented.
True False

7. The broadest goal of database development is to produce a working database that processes data efficiently and securely.
True False

8. Although establishing a common vocabulary among different parts of an organization is not easy, a database can unify an organization by accomplishing this.
True False

9. The characteristic of consistency in data quality is achieved when each part of the database has only one meaning.

True False

10. Achieving good data quality is such an important goal in database design that short and long-term costs are seldom an issue.

True False

11. The first two phases of database development are concerned with the information content of the database, while the last two phases are concerned with the efficient implementation of the design.

True False

12. The external schema of a database represents all the requirements and formats of the system, while the conceptual schema deals with the requirements of a particular usage of the database.

True False

13. The conceptual data modeling and logical database design phases are not concerned with the efficient implementation of a database.

True False

14. Refinements to the conceptual data model usually occur in the logical database design phase.

True False

15. The two main activities in the logical database design phase of database development are conversion to tables and data propagation.

True False

16. Database replication, a technique to improve performance by having multiple copies of the database available to various user groups, is very seldom done in practice because it is too difficult to keep all the copies consistent.

True False

17. Indexing on a column or group of columns of a table can improve the performance of update operations in a database, but it slows down the retrieval process of queries.

True False

18. Data placement decisions usually occur in the distributed design phase of database development.

True False

19. Because many physical design and distributed design decisions must be tested on a populated database, these last two phases of the development process are usually divided between systems design and systems implementation.

True False

20. Conceptual data modeling is especially process-oriented and requires mostly hard skills of the database designer.

True False

21. Due to the highly integrated nature of database design, design role specialization rarely occurs and the same individual usually performs all phases of the development process.

True False

22. Analysis functions, which are supported by most products, are the most widely used function in CASE tools.

True False

23. CASE is an acronym for computer-assisted system engineering.

True False

24. Prototyping tools are useful for creating forms and reports, but their main disadvantage is that they cannot generate code.

True False

25. Even though most of the prominent CASE tools are offered by DBMS vendors, they are relatively DBMS neutral.
True False
26. Choose the most appropriate statement.
A. A database is synonymous with information system
B. An information system is part of a database
C. Databases are essential components of many information systems.
D. A database is usually not a component of an information system
27. The following is usually a component(s) of an information system:
A. Databases
B. Procedures
C. Software
D. All of the above
28. Which of the following shows the correct order of various phases of the traditional Systems Development Life Cycle?
A. Systems Design, Systems Analysis, Systems Implementation
B. Systems Analysis, Systems Design, Systems Implementation
C. Systems Implementation, Systems Analysis, Systems Design
D. Systems Analysis, Systems Implementation, Systems Design
29. Which one is a drawback of the traditional Systems Development Life Cycle?
A. There is no feedback between successive phases
B. There is no feasibility study
C. An operational system is produced very late in the cycle
D. There is no distinction between analysis and design
30. Which one is not an advantage of prototyping?
A. The initial prototype incorporates all requirements
B. Prototypes provide for clarification of requirements
C. Prototypes provide meaningful feedback to developers
D. Prototypes are implemented rapidly

31. The waterfall model characterizes the following systems development model:

- A. Prototyping
- B. Traditional Systems Development Life Cycle
- C. Spiral Development
- D. Data model development

32. Select the most appropriate statement about information systems development.

- A. The data model is usually produced first
- B. The process model is usually produced first
- C. The environment interaction model is usually produced first
- D. The choice of the first of these three models is purely arbitrary

33. When designing a database, which of the following is not a required feature?

- A. Support of organizational policies
- B. Provide high quality data
- C. Limit data access to very few users
- D. Allow efficient access to data

34. If an information system consistently reports outdated inventory levels that causes delays in re-stocking orders, this would be an example of a lack of what characteristic of data quality?

- A. Completeness
- B. Ambiguity
- C. Reliability
- D. Timeliness

35. Which one of the following indicates poor data quality?

- A. Ambiguity
- B. Consistency
- C. Completeness
- D. Reliability

36. A supplier shown with two different addresses in two parts of the database would violate:

- A. Completeness
- B. Timeliness
- C. Consistency
- D. Reliability

37. The non-enforcement of a business rule in a database would be a lack of which characteristic of data quality?

- A. Completeness
- B. Reliability
- C. Timeliness
- D. Consistency

38. Entity Relationship Diagrams are input to the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

39. Data Requirements are input to the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

40. Relational Database Tables are output from the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

41. The Internal Schema is output from the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

42. Which of the following decisions would be part of Distributed Database Design?

- A. Student data and enrollment data will be stored in two different tables
- B. An index file will be created on the last name of students in the Student table
- C. The Social Security number will be chosen as the primary key of the Student table
- D. Student data and enrollment data will be stored in two different tables at two different locations

43. Which of the following is independent of the choice of a DBMS?

- A. Entity Relationship Diagrams
- B. Distribution Schema
- C. Internal Schema
- D. Index files

44. The decision to place each student's record next to the student's enrollment data on disk takes place in the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

45. For large projects, the most difficult problem in view design and integration is often:

- A. Choosing the views
- B. Designing individual views
- C. Choosing the staff to work on individual views
- D. Integrating the views

46. The main source of conflict in view integration is caused by:

- A. Different views have conflicting data requirements
- B. Designers use conflicting DBMS
- C. Designers use conflicting design methods
- D. Designers use different versions of SQL

47. Conceptual data modeling takes place during:

- A. Systems implementation
- B. Systems design
- C. Systems design and system implementation
- D. Systems analysis

48. Physical database design takes place during:

- A. Systems implementation
- B. Systems design
- C. Systems design and system implementation
- D. Systems analysis

49. Normalization takes place during the following database development phase:

- A. Conceptual data modeling
- B. Logical database design
- C. Physical database design
- D. Implementation

50. Which of the following is a feature provided by prototyping tools?

- A. create forms and reports
- B. create an initial database from a library of databases
- C. generate code
- D. all of the above

51. A set of related components that work together to accomplish some objective is known as a(n)

_____.

52. A(n) _____ accepts data from its environment, processes data, and produces output data for decision making.

53. The traditional systems development life cycle is known as the _____ model because each phase flows to the next phase.

54. In the traditional systems development life cycle, the _____ phase produces a problem statement and a feasibility study.

55. In the traditional systems development life cycle, the _____ phase produces requirements describing processes, data, and environment interactions.

56. In the traditional systems development life cycle, the _____ phase produces executable code, databases, and user documentation.

57. A scaled-down version of a system that can be implemented quickly using graphical tools for generating forms and reports is called a _____.

58. In system development methodology, the _____ model describes the kind of data and relationships that will occur in the system.

59. In system development methodology, the _____ model describes relationships among processes, such as which process can provide input data another process.

60. In system development methodology, the _____ model describes relationships between events and processes.

61. One of the common characteristics of data quality is _____, meaning failures or interferences do not corrupt the database.

62. A common characteristic of data quality is _____, where the database represents all the important parts of the information system.

63. In the database development process, a graphical representation that depicts entities and relationships among entities is a(n) _____.

64. In the database development process, the _____ phase uses data requirements and produces entity relationship diagrams (ERDs).

65. In the database development process, the _____ phase uses entity relationship diagrams (ERDs) and converts them into relational table designs.

66. _____ is a database design activity which removes redundancies in table design using constraints or dependencies among columns.

67. In the database development process, the _____ phase involves choices about the location of data and processes so that performance can be optimized.

68. In the database development process, important choices about indexes and data placement occur during the _____ phase.

69. The _____ strategy, which breaks a large problem into many smaller problems, is one way to manage complexity in database design.

70. A design approach in which ERDs are constructed for each group of users and merged into a complete conceptual schema is referred to as _____.

71. One set of skills that a database designer needs, which are described as qualitative, subjective, and people-oriented are known as _____ skills.

72. The distributed database design and physical database design phases involve _____ skills, which are characterized as quantitative, objective, and data intensive.

73. A specialized software product which is used to improve the productivity of in developing information systems, and includes diagramming and documentation functions is called a(n) _____.

74. A repository which stores data types, integrity rules, alias names, assumptions and alternatives in a database is known as a(n) _____.

75. In database design, a CASE tool analysis function which converts a table design to an ERD is known as _____.

76. CASE tools that create prototypes and generate code that can be used to cross check a database with other components of an information system are classified as _____ CASE tools.

Chapter 02 Introduction to Database Development **Key**

1. An system is a set of unrelated components that work independently to accomplish some objectives.

FALSE

Level: Easy

Mannino - Chapter 02 #1

2. The role of a database is to provide short-term memory for an information system.

FALSE

The role of a database is to provide long-term memory for an information system.

Level: Easy

Mannino - Chapter 02 #2

3. In the traditional systems development life cycle, the boundaries between the various phases are usually well-defined and each phase is completed before the next phase is begun.

FALSE

The boundaries are blurred and there is considerable backtracking between phases.

Level: Medium

Mannino - Chapter 02 #3

4. In the traditional life cycle, the systems implementation phase begins when an information system becomes operational.

FALSE

This is when the maintenance phase begins.

Level: Medium

Mannino - Chapter 02 #4

5. The systems analysis phase produces problem statement and feasibility study, which are inputs into the systems design phase.

FALSE

The problem statement and feasibility study are outputs of the preliminary investigation phase. System requirements are the output of the systems analysis phase.

Level: Easy
Mannino - Chapter 02 #5

6. Due to the high cost costs of developing new systems, a system is seldom changed once it has been implemented.

FALSE

Level: Easy
Mannino - Chapter 02 #6

7. The broadest goal of database development is to produce a working database that processes data efficiently and securely.

FALSE

The broadest goal of database development is to produce a database that provides an important resource for an organization.

Level: Hard
Mannino - Chapter 02 #7

8. Although establishing a common vocabulary among different parts of an organization is not easy, a database can unify an organization by accomplishing this.

TRUE

Level: Medium
Mannino - Chapter 02 #8

9. The characteristic of consistency in data quality is achieved when each part of the database has only one meaning.

FALSE

This is the characteristic of a lack of ambiguity.

Level: Medium
Mannino - Chapter 02 #9

10. Achieving good data quality is such an important goal in database design that short and long-term costs are seldom an issue.

FALSE

The short and long-term costs and benefits should always be considered.

*Level: Easy
Mannino - Chapter 02 #10*

11. The first two phases of database development are concerned with the information content of the database, while the last two phases are concerned with the efficient implementation of the design.

TRUE

*Level: Medium
Mannino - Chapter 02 #11*

12. The external schema of a database represents all the requirements and formats of the system, while the conceptual schema deals with the requirements of a particular usage of the database.

FALSE

The conceptual schema represents all the requirements; the external schema represents a particular usage.

*Level: Hard
Mannino - Chapter 02 #12*

13. The conceptual data modeling and logical database design phases are not concerned with the efficient implementation of a database.

TRUE

*Level: Medium
Mannino - Chapter 02 #13*

14. Refinements to the conceptual data model usually occur in the logical database design phase.

TRUE

*Level: Easy
Mannino - Chapter 02 #14*

15. The two main activities in the logical database design phase of database development are conversion to tables and data propagation.

FALSE

Level: Easy

Mannino - Chapter 02 #15

16. Database replication, a technique to improve performance by having multiple copies of the database available to various user groups, is very seldom done in practice because it is too difficult to keep all the copies consistent.

FALSE

Level: Hard

Mannino - Chapter 02 #16

17. Indexing on a column or group of columns of a table can improve the performance of update operations in a database, but it slows down the retrieval process of queries.

FALSE

Level: Medium

Mannino - Chapter 02 #17

18. Data placement decisions usually occur in the distributed design phase of database development.

FALSE

Level: Easy

Mannino - Chapter 02 #18

19. Because many physical design and distributed design decisions must be tested on a populated database, these last two phases of the development process are usually divided between systems design and systems implementation.

TRUE

Level: Hard

Mannino - Chapter 02 #19

20. Conceptual data modeling is especially process-oriented and requires mostly hard skills of the database designer.

FALSE

Conceptual data modeling is especially people-oriented and requires mostly soft skills.

Level: Medium

Mannino - Chapter 02 #20

21. Due to the highly integrated nature of database design, design role specialization rarely occurs and the same individual usually performs all phases of the development process.

FALSE

Database design roles are often split between data modelers and database performance specialists.

Level: Easy

Mannino - Chapter 02 #21

22. Analysis functions, which are supported by most products, are the most widely used function in CASE tools.

FALSE

Level: Hard

Mannino - Chapter 02 #22

23. CASE is an acronym for computer-assisted system engineering.

FALSE

CASE is computer-aided software engineering.

Level: Medium

Mannino - Chapter 02 #23

24. Prototyping tools are useful for creating forms and reports, but their main disadvantage is that they cannot generate code.

FALSE

They can generate code.

Level: Medium

Mannino - Chapter 02 #24

25. Even though most of the prominent CASE tools are offered by DBMS vendors, they are relatively DBMS neutral.

TRUE

Level: Hard

Mannino - Chapter 02 #25

26. Choose the most appropriate statement.

- A. A database is synonymous with information system
- B. An information system is part of a database
- C.** Databases are essential components of many information systems.
- D. A database is usually not a component of an information system

Level: Easy

Mannino - Chapter 02 #26

27. The following is usually a component(s) of an information system:

- A. Databases
- B. Procedures
- C. Software
- D.** All of the above

Level: Easy

Mannino - Chapter 02 #27

28. Which of the following shows the correct order of various phases of the traditional Systems Development Life Cycle?

- A. Systems Design, Systems Analysis, Systems Implementation
- B.** Systems Analysis, Systems Design, Systems Implementation
- C. Systems Implementation, Systems Analysis, Systems Design
- D. Systems Analysis, Systems Implementation, Systems Design

Level: Easy

Mannino - Chapter 02 #28

29. Which one is a drawback of the traditional Systems Development Life Cycle?

- A. There is no feedback between successive phases
- B. There is no feasibility study
- C.** An operational system is produced very late in the cycle
- D. There is no distinction between analysis and design

Level: Medium

Mannino - Chapter 02 #29

30. Which one is not an advantage of prototyping?
- A.** The initial prototype incorporates all requirements
 - B. Prototypes provide for clarification of requirements
 - C. Prototypes provide meaningful feedback to developers
 - D. Prototypes are implemented rapidly

Level: Medium
Mannino - Chapter 02 #30

31. The waterfall model characterizes the following systems development model:
- A. Prototyping
 - B.** Traditional Systems Development Life Cycle
 - C. Spiral Development
 - D. Data model development

Level: Medium
Mannino - Chapter 02 #31

32. Select the most appropriate statement about information systems development.
- A.** The data model is usually produced first
 - B. The process model is usually produced first
 - C. The environment interaction model is usually produced first
 - D. The choice of the first of these three models is purely arbitrary

Level: Easy
Mannino - Chapter 02 #32

33. When designing a database, which of the following is not a required feature?
- A. Support of organizational policies
 - B. Provide high quality data
 - C.** Limit data access to very few users
 - D. Allow efficient access to data

Level: Medium
Mannino - Chapter 02 #33

34. If an information system consistently reports outdated inventory levels that causes delays in re-stocking orders, this would be an example of a lack of what characteristic of data quality?

- A.** Completeness
- B. Ambiguity
- C. Reliability
- D. Timeliness

Level: Medium

Mannino - Chapter 02 #34

35. Which one of the following indicates poor data quality?

- A.** Ambiguity
- B. Consistency
- C. Completeness
- D. Reliability

Level: Easy

Mannino - Chapter 02 #35

36. A supplier shown with two different addresses in two parts of the database would violate:

- A. Completeness
- B. Timeliness
- C.** Consistency
- D. Reliability

Level: Medium

Mannino - Chapter 02 #36

37. The non-enforcement of a business rule in a database would be a lack of which characteristic of data quality?

- A.** Completeness
- B. Reliability
- C. Timeliness
- D. Consistency

Level: Medium

Mannino - Chapter 02 #37

38. Entity Relationship Diagrams are input to the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design**
- D. Distributed Database Design

Level: Medium

Mannino - Chapter 02 #38

39. Data Requirements are input to the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling**
- C. Logical Database Design
- D. Distributed Database Design

Level: Medium

Mannino - Chapter 02 #39

40. Relational Database Tables are output from the following phase of Database Development:

- A. Physical Database Design
- B. Conceptual Data Modeling
- C. Logical Database Design**
- D. Distributed Database Design

Level: Medium

Mannino - Chapter 02 #40

41. The Internal Schema is output from the following phase of Database Development:

- A. Physical Database Design**
- B. Conceptual Data Modeling
- C. Logical Database Design
- D. Distributed Database Design

Level: Medium

Mannino - Chapter 02 #41

42. Which of the following decisions would be part of Distributed Database Design?
- A. Student data and enrollment data will be stored in two different tables
 - B. An index file will be created on the last name of students in the Student table
 - C. The Social Security number will be chosen as the primary key of the Student table
 - D. Student data and enrollment data will be stored in two different tables at two different locations**

Level: Medium
Mannino - Chapter 02 #42

43. Which of the following is independent of the choice of a DBMS?
- A. Entity Relationship Diagrams**
 - B. Distribution Schema
 - C. Internal Schema
 - D. Index files

Level: Medium
Mannino - Chapter 02 #43

44. The decision to place each student's record next to the student's enrollment data on disk takes place in the following phase of Database Development:
- A. Physical Database Design**
 - B. Conceptual Data Modeling
 - C. Logical Database Design
 - D. Distributed Database Design

Level: Medium
Mannino - Chapter 02 #44

45. For large projects, the most difficult problem in view design and integration is often:
- A. Choosing the views
 - B. Designing individual views
 - C. Choosing the staff to work on individual views
 - D. Integrating the views**

Level: Medium
Mannino - Chapter 02 #45

46. The main source of conflict in view integration is caused by:

- A.** Different views have conflicting data requirements
- B. Designers use conflicting DBMS
- C. Designers use conflicting design methods
- D. Designers use different versions of SQL

Level: Hard

Mannino - Chapter 02 #46

47. Conceptual data modeling takes place during:

- A. Systems implementation
- B. Systems design
- C. Systems design and system implementation
- D.** Systems analysis

Level: Medium

Mannino - Chapter 02 #47

48. Physical database design takes place during:

- A. Systems implementation
- B. Systems design
- C.** Systems design and system implementation
- D. Systems analysis

Level: Hard

Mannino - Chapter 02 #48

49. Normalization takes place during the following database development phase:

- A. Conceptual data modeling
- B.** Logical database design
- C. Physical database design
- D. Implementation

Level: Easy

Mannino - Chapter 02 #49

50. Which of the following is a feature provided by prototyping tools?

- A. create forms and reports
- B. create an initial database from a library of databases
- C. generate code
- D. all of the above**

Level: Easy
Mannino - Chapter 02 #50

51. A set of related components that work together to accomplish some objective is known as a(n)

_____.
system

Level: Easy
Mannino - Chapter 02 #51

52. A(n) _____ accepts data from its environment, processes data, and produces output data for decision making.

information system

Level: Easy
Mannino - Chapter 02 #52

53. The traditional systems development life cycle is known as the _____ model because each phase flows to the next phase.

waterfall

Level: Medium
Mannino - Chapter 02 #53

54. In the traditional systems development life cycle, the _____ phase produces a problem statement and a feasibility study.

preliminary investigation

Level: Medium
Mannino - Chapter 02 #54

55. In the traditional systems development life cycle, the _____ phase produces requirements describing processes, data, and environment interactions.

systems analysis

Level: Medium

Mannino - Chapter 02 #55

56. In the traditional systems development life cycle, the _____ phase produces executable code, databases, and user documentation.

system implementation

Level: Medium

Mannino - Chapter 02 #56

57. A scaled-down version of a system that can be implemented quickly using graphical tools for generating forms and reports is called a _____.

Prototype

Level: Medium

Mannino - Chapter 02 #57

58. In system development methodology, the _____ model describes the kind of data and relationships that will occur in the system.

data

Level: Medium

Mannino - Chapter 02 #58

59. In system development methodology, the _____ model describes relationships among processes, such as which process can provide input data another process.

process

Level: Medium

Mannino - Chapter 02 #59

60. In system development methodology, the _____ model describes relationships between events and processes.

environment interaction

Level: Hard

Mannino - Chapter 02 #60

61. One of the common characteristics of data quality is _____, meaning failures or interferences do not corrupt the database.

reliability

Level: Easy

Mannino - Chapter 02 #61

62. A common characteristic of data quality is _____, where the database represents all the important parts of the information system.

completeness

Level: Medium

Mannino - Chapter 02 #62

63. In the database development process, a graphical representation that depicts entities and relationships among entities is a(n) _____.

entity relationship diagram (ERD)

Level: Easy

Mannino - Chapter 02 #63

64. In the database development process, the _____ phase uses data requirements and produces entity relationship diagrams (ERDs).

conceptual data modeling

Level: Medium

Mannino - Chapter 02 #64

65. In the database development process, the _____ phase uses entity relationship diagrams (ERDs) and converts them into relational table designs.

logical database design

Level: Medium

Mannino - Chapter 02 #65

66. _____ is a database design activity which removes redundancies in table design using constraints or dependencies among columns.

normalization

Level: Hard

Mannino - Chapter 02 #66

67. In the database development process, the _____ phase involves choices about the location of data and processes so that performance can be optimized.

distributed database design

Level: Medium

Mannino - Chapter 02 #67

68. In the database development process, important choices about indexes and data placement occur during the _____ phase.

physical database design

Level: Medium

Mannino - Chapter 02 #68

69. The _____ strategy, which breaks a large problem into many smaller problems, is one way to manage complexity in database design.

divide-and-conquer

Level: Medium

Mannino - Chapter 02 #69

70. A design approach in which ERDs are constructed for each group of users and merged into a complete conceptual schema is referred to as _____.

view design and integration

Level: Hard

Mannino - Chapter 02 #70

71. One set of skills that a database designer needs, which are described as qualitative, subjective, and people-oriented are known as _____ skills.

soft

Level: Easy

Mannino - Chapter 02 #71

72. The distributed database design and physical database design phases involve _____ skills, which are characterized as quantitative, objective, and data intensive.

hard

Level: Easy

Mannino - Chapter 02 #72

73. A specialized software product which is used to improve the productivity of in developing information systems, and includes diagramming and documentation functions is called a(n) _____.

CASE tool

Level: Easy

Mannino - Chapter 02 #73

74. A repository which stores data types, integrity rules, alias names, assumptions and alternatives in a database is known as a(n) _____.

data dictionary

Level: Medium

Mannino - Chapter 02 #74

75. In database design, a CASE tool analysis function which converts a table design to an ERD is known as _____.

reverse engineering

Level: Hard

Mannino - Chapter 02 #75

76. CASE tools that create prototypes and generate code that can be used to cross check a database with other components of an information system are classified as _____ CASE tools.

back-end

Level: Medium

Mannino - Chapter 02 #76

Chapter 02 Introduction to Database Development **Summary**

| <u>Category</u> | <u># of Questions</u> |
|----------------------|-----------------------|
| Level: Easy | 23 |
| Level: Hard | 12 |
| Level: Medium | 41 |
| Mannino - Chapter 02 | 76 |