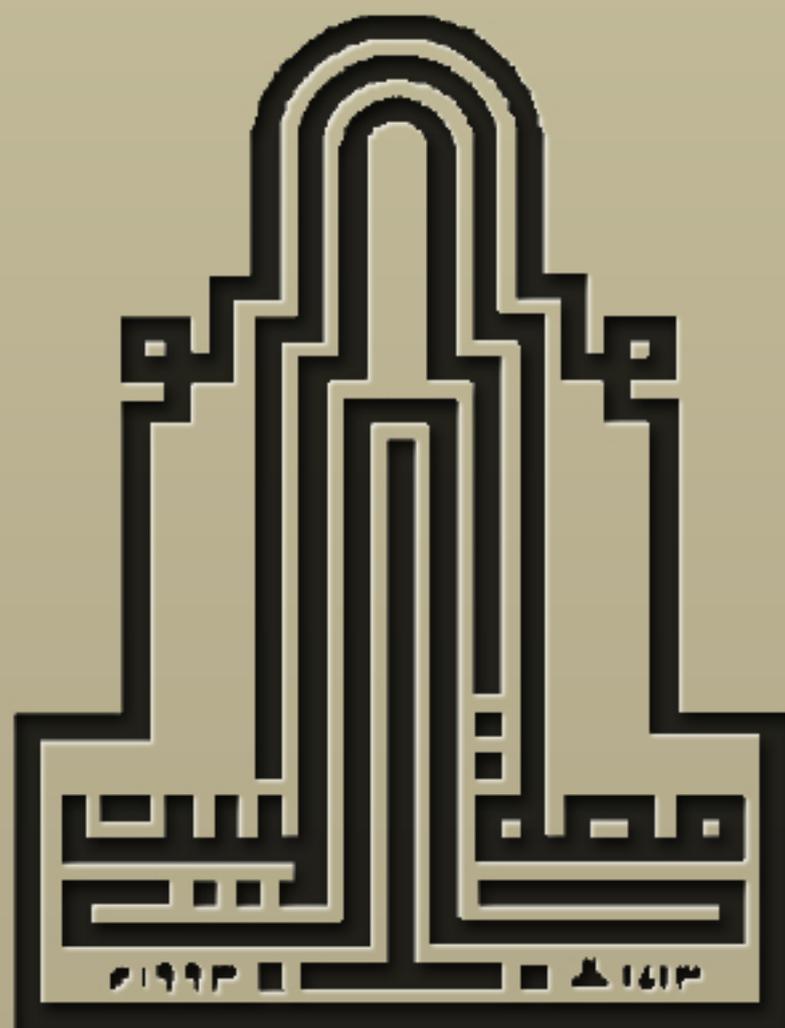


مكتبة

” خذُ وأعطي ”  
الإلكترونية

جامعة آل البيت " كلية الإقتصاد "

مجموعة طلابية تسعى لتوفير كل ما يلزم طلاب  
كلية إدارة المال والاعمال من مواد وشرحات واسئلة بصورة الكترونية



Chapter 4

**MULTIPLE CHOICE**

1. What is the most popular type of database?
  - a) hierarchical
  - b) relational
  - c) object-oriented
  - d) network
  
2. Using a file-oriented approach to data and information, data is maintained in
  - a) a central database.
  - b) many interconnected files.
  - c) many separate files.
  - d) a decentralized database.
  
3. File-oriented approaches create problems for organizations because of
  - a) multiple transaction files.
  - b) a lack of sophisticated file maintenance software.
  - c) multiple users.
  - d) multiple master files which may contain redundant data.
  
4. Which statement is true regarding file systems?
  - a) Transaction files are similar to ledgers in a manual AIS.
  - b) The proliferation of master files creates problems in the consistency of specific data stored in different files.
  - c) Transaction files are permanent.
  - d) Individual records are never deleted in a master file.
  
5. A set of interrelated, centrally coordinated files is called
  - a) a database.
  - b) a master file.
  - c) a transaction file.
  - d) a multiple-records grouping (MRG).
  
6. The software program that creates, manipulates, and accesses the database goes by the acronym
  - a) DBMS.
  - b) DBP.
  - c) OS.
  - d) DBA.
  
7. The \_\_\_\_\_ acts as an interface between the database and the various application programs
  - a) Data warehouse
  - b) Database administrator
  - c) Database management system
  - d) Database system
  
8. The combination of the database, the DBMS, and the application programs that access the database through the DBMS is referred to as the

- a) Data warehouse
- b) Database administrator
- c) Database system
- d) Database manager

9. The person responsible for the database is the

- a) Data coordinator
- b) Database administrator
- c) Database manager
- d) Database master

10. All of the following are benefits of database technology *except*:

- a) Data integration and sharing
- b) Decentralized management of data
- c) Minimal data redundancy
- d) Reporting flexibility

11. Separating the logical and physical views in a database allows the programmers to concentrate on coding the application logic

- a) by identifying physical location and layouts of various data items.
- b) since they do not have to focus on the physical location and layouts of various data items.
- c) by consolidating all data in one database.
- d) by providing pointers to data items regardless of physical location.

12. A database system separates the logical and physical view of data. Such separation facilitates the development of new applications since programmers can concentrate their efforts on coding application logic. The term physical view refers to

- a) how a user or programmer conceptually organizes and understands the data.
- b) how the DBMS accesses data for an certain application program.
- c) how and where the data are physically arranged and stored.
- d) how master files maintain facts used by certain application programs.

13. The \_\_\_\_\_ handles the link between the way data are physically stored and each user's logical view of that data.

- a) Data warehouse
- b) Database administrator
- c) Database management system software
- d) Schema

14. The logical structure of a database is described by the

- a) dictionary.
- b) schema.
- c) subschema.
- d) internal level.

15. Schemas are used in designing database systems. The schema that provides an organization-wide view of the entire database is known as

- a) the external-level schema.

- b) the internal-level schema.
- c) the conceptual-level schema.
- d) the logical view of the database.

16. A set of individual user views of the database is called the

- a) schema.
- b) internal-level schema.
- c) external-level schema.
- d) meta-schema.

17. A low-level view of the database that describes how the data are actually stored and accessed is the

- a) schema.
- b) subschema.
- c) internal-level schema.
- d) external-level schema.

18. Record layouts, definitions, addresses, and indexes will be stored at the \_\_\_\_\_ level schema.

- a) external
- b) conceptual
- c) internal
- d) inner

19. Accountants may be involved in several aspects of database development. In which area below would an accountant least likely have involvement when developing a database system?

- a) the conceptual-level schema
- b) the external-level schema
- c) the internal-level schema
- d) the logical view of data

20. The \_\_\_\_\_ contains information about the structure of the database.

- a) Data definition language
- b) Data dictionary
- c) Data warehouse
- d) Database management system

21. Which of the following would *not* be found in a data dictionary entry for a data item?

- a) records containing a data item
- b) the physical location of the data
- c) the source of the data item
- d) the field (data) type

22. The data dictionary usually is maintained

- a) automatically by the DBMS.
- b) by the database administrator.
- c) by the database programmers.
- d) by top management.

23. Reports produced using the data dictionary could include all of the following *except*
- a list of all programs where a data item is used.
  - a list of all synonyms for the data items in a particular file.
  - a list of all outputs where a data element is used.
  - a list of all the schemas included in a database.
24. One of the key components of a DBMS is the data dictionary, which contains information about the structure of the database. Which would *not* generally be considered a data dictionary output report?
- a list of cash balances in the organization's bank accounts
  - a list of all programs in which a data element is used
  - a list of all synonyms for the data elements in a particular file
  - a list of all data elements used by a particular user
25. The DBMS language that is used to build, initialize, and describe logical views for users is called the
- DDL.
  - DML.
  - DQL.
  - DBA.
26. The DBMS language that is used for data maintenance and updating of the database is referred to by the letters
- DDL.
  - DML.
  - DQL.
  - SQL.
27. A DBMS must provide a way to define, manipulate, and query data in a database. This is accomplished by the use of three different languages. The language that is used to provide the function of data maintenance in a DBMS is
- DDL.
  - DML.
  - DQL.
  - report writer.
28. The part of the DBMS that is used to interrogate the database and present subsets of the database to users is called the
- DDL.
  - DML.
  - DQL.
  - DBA.
29. DBMS uses a language to retrieve, sort, order, and present subsets in a database. This language is known as
- data definition language (DDL).
  - data manipulation language (DML).
  - data query language (DQL).
  - report writer.

30. Creating an empty table in a relational database requires use of the \_\_\_\_\_, and filling that table requires the use of \_\_\_\_\_.
- a) DDL; DML
  - b) DQL; SQL
  - c) DDL; DQL
  - d) DML; DDA
31. Many database systems include a feature that simplifies the creation of reports by allowing users to specify the data elements desired and the format of the output. This feature is named the \_\_\_\_\_.
- a) report writer
  - b) report generator
  - c) report creator
  - d) report printer
32. The abstract representation of the contents of a database is called the logical \_\_\_\_\_.
- a) data model.
  - b) data dictionary.
  - c) data relationship.
  - d) subschemas.
33. A database model that represents all data as stored in two-dimensional tables is the \_\_\_\_\_ model.
- a) tuple
  - b) relational
  - c) hierarchy
  - d) object
34. Each row in a relational database's table is known as a \_\_\_\_\_.
- a) data model
  - b) relation
  - c) schema
  - d) tuple
35. The attribute that can uniquely identify a specific row in a table is the \_\_\_\_\_.
- a) primary key
  - b) secondary key
  - c) foreign key
  - d) logical key
36. An attribute in a table that is a primary key in another table is a \_\_\_\_\_.
- a) primary key
  - b) secondary key
  - c) foreign key
  - d) anomaly
37. Redundancy can be a major problem in the design and operation of relational databases. If a database uses only one relation to store data, several problems may

subsequently occur. The problem of changes (or updates) to data values being incorrectly recorded is known as

- a) an update anomaly.
- b) an insert anomaly.
- c) a delete anomaly.
- d) a memory anomaly.

38. The potential inconsistency problem could arise when there are multiple occurrences of a data item in a database. This is called the

- a) update anomaly.
- b) insert anomaly.
- c) inconsistency anomaly.
- d) integrity anomaly.

39. The problem of inability to add new data without violating the basic integrity of the database is referred to as the

- a) update anomaly.
- b) insert anomaly.
- c) integrity anomaly.
- d) add anomaly.

40. A relational database has been designed where the customer data is not maintained independently of sales invoice data. This design weakness will most likely result in

- a) an update anomaly.
- b) an insert anomaly.
- c) a delete anomaly.
- d) no anomaly.

41. The problem of losing desired information from a database when an unwanted record is purged from the database is referred to as the \_\_\_\_\_ anomaly.

- a) purge
- b) erase
- c) delete
- d) integrity

42. One important constraint in a relational database environment is that a primary key uniquely identifies each row in a data table. This principle is called the

- a) entity integrity rule.
- b) referential integrity rule.
- c) unique primary key rule.
- d) foreign key rule.

43. The database constraint that says that foreign keys must be null or have a value corresponding to the value of a primary key in another table is formally called the

- a) entity integrity rule.
- b) referential integrity rule.
- c) rule of keys.
- d) referential entity rule.

44. A well-structured or "normalized" database imposes several requirements on the structure of tables. The constraint that ensures the consistency of the database is known as
- the entity integrity rule.
  - the referential integrity rule.
  - the logical view.
  - the physical view.
45. Which statement below is false regarding the basic requirements of the relational data model?
- "Every column in a row must be single-valued."
  - "All nonkey attributes in a table should describe a characteristic about the object identified by the primary key."
  - "Foreign keys, if not null, must have values that correspond to the value of a primary key in another table."
  - "Primary keys can be null."
46. Identify the aspect of a normalized database that is incorrect:
- Data is consistent.
  - Redundancy is minimized and controlled.
  - All data is stored in one table or relation.
  - The primary key of any row in a relation cannot be null.
47. In the database design approach known as normalization, the first assumption made about data is
- there is no redundancy in the data.
  - the delete anomaly will not apply since all customer records will be maintained indefinitely.
  - everything is initially stored in one large table.
  - the data will not be maintained in 3NF tables.
48. The process of designing a database that is well-structured and free from anomalies is called
- normalization.
  - anormalization.
  - data modeling.
  - manipulation.
49. Normalization means tables are in the \_\_\_\_\_ normal form.
- first
  - second
  - third
  - fourth
50. There are two basic ways to design a well-structured relational database. The method in which a database designer uses knowledge about how business processes work to draw a graphical picture of the elements to be included in the database is called
- normalization.
  - decentralization.
  - geometric data modeling.

d) semantic data modeling.

51. Which of the statements below is incorrect regarding semantic data modeling?

- a) It facilitates the efficient design of transaction processing databases.
- b) It facilitates communicating with the intended users of the system.
- c) It allows a database designer to use knowledge about how the business processes work to design the database.
- d) Semantic data modeling simply follows the rules of normalization in the design of a database.

52. What is one potential drawback in the design and implementation of database systems for accounting?

- a) Double-entry accounting relies on redundancy as part of the accounting process; well-designed database systems reduce and attempt to eliminate redundancy.
- b) Relational DBMS query languages will allow financial reports to be prepared to cover whatever time periods managers want to examine.
- c) Relational DBMS provide the capability of integrating financial and operational data.
- d) Relational DBMS can accommodate multiple views of the same underlying phenomenon; therefore, tables storing information about assets can include data about both historical and replacement costs.

53. Which is probably the most significant effect of database technology on accounting?

- a) replacement of the double entry-system
- b) change in the nature of financial reporting
- c) elimination of traditional records such as journals and ledgers
- d) quicker access to and greater use of accounting information in decision-making

#### SHORT ANSWER

54. Define and distinguish between these terms: database, database management system, database system and database administrator.

55. What is a major advantage of database systems over file-oriented transaction processing systems?

56. What is the difference in logical view and physical view?

57. Describe the different schemas involved in a database structure. What is the role of accountants in development of schemas?

58. What is a data dictionary?

59. List the four languages used within a DBMS.

60. Name the three "anomalies" that may occur in an improperly designed relational database?

61. Name the types of attributes that tables possess in a relational database.
62. Briefly explain the two advantages semantic data modeling has over normalization when designing a relational database.

### **ESSAY**

63. What is the difference between file-oriented transaction processing systems and relational database systems? Discuss the advantages and disadvantages of these systems.
64. Discuss redundancy as it applies to database design.
65. Discuss the ways in which a well-designed DBMS will facilitate the three basic functions of creating, changing, and querying data.
66. List the four DBMS "languages." Provide a brief description which identifies who uses them and for what purpose.
67. Describe the information that is contained in the data dictionary.
68. Discuss the relational database data model.
69. What are the main constraints when a relational database model is being logically designed?
70. What do you think will be the main impact of database technology in your career?

**ANSWER KEY**

- 1) B
- 2) C
- 3) D
- 4) B
- 5) A
- 6) A
- 7) C
- 8) C
- 9) B
- 10) B
- 11) B
- 12) C
- 13) C
- 14) B
- 15) C
- 16) C
- 17) C
- 18) C
- 19) C
- 20) B
- 21) B
- 22) A
- 23) D
- 24) A
- 25) A
- 26) B
- 27) B
- 28) C
- 29) C
- 30) A
- 31) A
- 32) A
- 33) B
- 34) D
- 35) A
- 36) C
- 37) A
- 38) A
- 39) B
- 40) B
- 41) C
- 42) A
- 43) B
- 44) B
- 45) D
- 46) C
- 47) C
- 48) A
- 49) C
- 50) D
- 51) D
- 52) A
- 53) D

- 54) A database is a set of interrelated, centrally coordinated files. A database management system acts as an interface between the database and the various application programs. A database system refers to the combination of the database, the DBMS and the application programs. A database administrator is the person responsible for the database.
- 55) Database systems separate logical and physical views. This separation is referred to as program-data independence. Such separation facilitates developing new applications because programmers can concentrate on coding the application logic (what the program will do) and do not need to focus on how and where the various data items are stored or accessed. In the file-oriented transaction systems, programmers need to know physical location and layout of records which adds another layer of complexity to programming.
- 56) The logical view is how the user or programmer conceptually organizes and understands the data, such as data organized in a table. The physical view, on the other hand, refers to how and where the data are physically arranged and stored on a disk, tape, or CD-ROM media.
- 57) A schema describes the logical structure of a database. There are three levels of schemas. First, the conceptual-level schema is an organization-wide view of the entire database listing all data elements and relationships between them. Second, an external-level schema is a set of individual user views of portions of the database, each of which is referred to as a subschema. Finally, an internal-level schema provides a low-level view of the database includes descriptions about pointers, indexes, record lengths, etc. Accountants are primarily involved in the development of conceptual- and external-level schemas; however, database knowledgeable accountants may participate in developing an internal level schema.
- 58) A data dictionary is a means by which information about the structure of a database is maintained. For each data element stored in the database, there is a corresponding record in the data dictionary that describes it. The DBMS usually maintains the data dictionary. Inputs to the dictionary include various new data, changed data, and deleted data. Output from the data dictionary may include a variety of reports useful to programmers, database designers, and other users of the information system. Accountants have a very good understanding of the data elements that exist in a business organization, so when an organization is developing a database, accountants should be allowed to participate in the development of the data dictionary.
- 59) The four languages used within a DBMS are data definition language, data manipulation language, data query language, and a report writer.
- 60) Update, insert, and delete
- 61) Primary key - the attribute, or combination of attributes, that uniquely identify a specific row in a table. Foreign key - an attribute appearing in one table that is a primary key in another table. Nonkey attributes found in tables - For example, an inventory table may contain information about the description, quantity on hand, and list price of each item a company sells.
- 62) Semantic data modeling takes advantage of a system designer's knowledge about the business policies and practices of an organization. This is of great benefit in the design of transaction processing databases. Also, since the database model is created around the policies and practices of an organization, communications with the future database users is facilitated. The result is that the system will more closely meet the needs of the intended users.
- 63) In file-oriented approaches, different users (or departments, units, etc.) maintain their own data and use different application programs. This results in a significant increase in number of master files stored by an organization. The various disadvantages of file-oriented organization include data redundancy, data inconsistencies, lack of data integration, a large number of data files, substantial program-data dependence, lack of compatibility, and lack of data sharing. The database approach views data as an organizational resource that should be used and managed for the entire organization. The program that manages and controls the data and the interfaces between data and application programs is called the database management system (DBMS). The various advantages of database approach include the following: minimal data redundancy, fewer data inconsistencies, data integration, data sharing, reporting flexibility, central management of data, cross-functional analysis, and data independence.
- 64) Redundancy has been called an enemy of relational databases. There are several problems that may occur when redundant data is stored in a database. First, the database becomes larger than it needs to be, since duplicate facts are being stored within it. Second, a situation may occur where only one instance of redundant data is updated or purged. The result is that the accuracy and

- integrity of the database suffers, since users may be relying on such inaccurate or incorrect redundant data. Redundancy can also make file maintenance unnecessarily time consuming and error-prone when human intervention is required. The problems discussed above have been identified as anomalies of a relational database. There are three specific anomalies connected with redundancy: the update anomaly, the insert anomaly, and the delete anomaly. A well-designed relational database will attempt to reduce or eliminate the number of instances of redundant data. The best way to achieve such a goal is proper design of the database for the needs of a specific organization.
- 65) A DBMS will use data definition, data manipulation, and data query languages in order to perform the three basic, essential data functions. Data definition is achieved using DDL (data definition language); data manipulation is achieved using DML (data manipulation language) which includes operations such as updating, inserting, and deleting portions of the database. DQL (data query language) is used to retrieve, sort, order, and present subsets of data in response to user queries. A DBMS will probably also include a report writer, which is a language that simplifies report creation.
  - 66) DDL is the data definition language used by the DBA (database administrator) to create, initialize, describe logical views, and specify security limits. The DML is the data manipulation used by application programmers who embed these action commands into applications to access data in the database. The DQL is the data query language used by IT professionals and users to interrogate the database by retrieving and presenting data in novel ways often on an ad hoc basis. The report writer is a language used by IT professionals and users that simplifies report creation so reports can be created according to user-specified format.
  - 67) The data dictionary contains information about the structure of the data base. For each data element stored in the database, the data dictionary contains all the descriptive information about it, such as its name, description, where it is recorded, its source, field length, type of field, programs it is used in, outputs that contain it, and authorized users.
  - 68) A data model is an abstract representation of the contents of a database. The majority of new DMBS use what is called the relational data model, developed by Dr. E. F. Codd in 1970. Using this model, everything in the database is stored in the form of tables, known as relations. Keep in mind that this is the conceptual- and external-level schemas (which describes the logical structure of a database), not the actual physical structure of the database itself. In the concept of relations, both rows and columns comprise the database tables. Each row in a relation (table) is called a tuple. Tuples contain data about a specific occurrence of the type of entity represented by that table. For example, in a sales table, each tuple may contain all of the information about a specific customer. Each column in a relation contains information about one specific attribute of that entity. Using the sales example again, the columns in such a table may represent specific characteristics about each sales transaction.
  - 69) Every row in every table must have a unique key known as a primary key. Tables may also have a key known as a foreign key; such a key will have a value corresponding to the primary key in another table. Each column in a table must be single-valued (the same data type) and describe an attribute of the entity identified by the primary key; neither column nor row order is significant in the relational model. Keep in mind that the relational model is a logical model, and the physical model may have a different structure to it to facilitate the storage and access to data.
  - 70) Answers to this question could cover a wide range. Most likely the following items will be discussed or mentioned: -- the probable demise of the double-entry system as the need for such redundancy is much less in a database system. -- financial reporting may become more of accessing a database of corporate data in the format desired by the user than relying on financial reports prepared by accountants. -- accountants will no longer need to be the filter for accounting data as users will be able to do this themselves, thus the accountants may become more decision makers and managers. -- the whole notion of internal controls will become more important in the future if the accountants' role changes in relation to financial reporting