Data Analytics for Accounting 1st edition Richardson Test Bank

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Data Analytics for Accounting, 1e **(Richardson)**
Chapter 2 Data Preparation and Cleaning

1) Mastering the data requires a firm understanding of what data is available to you and where it is stored, as well as being skilled in the process of extracting, transforming, and loading (ETL).

Answer: TRUE
Difficulty: 1 Easy
Topic: How Data Are Used and Stored in The Accounting Cycle
Learning Objective: 02-01 Understand how data are organized in an accounting information system.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

2) A flat file is a means of storing data in one place, such as in an Excel spreadsheet, as opposed to storing the data in multiple tables, such as in a relational database.

Answer: TRUE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology

3) A foreign key is an attribute that is required to exist in each table of a relational database and serves as the unique identifier for each record in a table.

Answer: FALSE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology

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4) A primary key is an attribute that is required to exist in each table of a relational database and serves as the unique identifier for each record in a table.

Answer: TRUE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology

5) A foreign key is an attribute that exists in relational databases in order to carry out the relationship between two tables.

Answer: TRUE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

6) A composite primary key is made up of the three or more primary keys in the tables that it is linking.

Answer: FALSE
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

7) Descriptive attributes are attributes that exist in relational databases that are neither primary nor foreign keys.

Answer: TRUE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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8) Once you have extracted the data of interest, it will need to be validated for completeness and existence.

Answer: FALSE
Difficulty: 2 Medium
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

9) The M in IMPACT Cycle represents Manipulating the Data.

Answer: FALSE
Difficulty: 1 Easy
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

10) The T in IMPACT Cycle represents transfer.

Answer: FALSE
Difficulty: 1 Easy
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

11) The I in IMPACT Cycle represents Inquiry.

Answer: FALSE
Difficulty: 1 Easy
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
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12) In order to obtain the right data, it is important to have a firm grasp of what data is available and how it is stored.

Answer: TRUE
Difficulty: 2 Medium
Topic: How Data Are Used and Stored in The Accounting Cycle
Learning Objective: 02-01 Understand how data are organized in an accounting information system.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

13) Data normalization can reduce data redundancy and improve data integrity.

Answer: TRUE
Difficulty: 1 Easy
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

14) Much like the IMPACT cycle, requesting data is often an iterative process.

Answer: TRUE
Difficulty: 2 Medium
Topic: The Data Analytics Process Using the Impact Cycle
Learning Objective: 02-04 Describe the Data Analytics Process Using the IMPACT Cycle.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

15) Unlike the IMPACT cycle, requesting data is not an iterative process.

Answer: FALSE
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
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16) If the extraction and transformation steps have been done correctly, the loading part of the ETL process should be the simplest step.

Answer: TRUE
Difficulty: 2 Medium
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

17) After obtaining the data and determining the purpose and scope of the data request, the next step is to validate the data.

Answer: TRUE
Difficulty: 1 Easy
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

18) Comparing the number of records that were extracted to the number of records in the source database is an example of validating the data for integrity.

Answer: FALSE
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

19) Formatting negative numbers is an example of cleaning the data.

Answer: TRUE
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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20) A template can make communication easier between data requestor and provider.

Answer: TRUE
Difficulty: 1 Easy
Topic: Obtain the Data
Learning Objective: 02-01 Understand how data are organized in an accounting information system.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; BB Industry

21) Mastering the data can also be described via the ETL process. The ETL process stands for:
A) Extract, total, and load data.
B) Extract, transform, and load data.
C) Enter, transform, and load data.
D) Enter, total, and load data.

Answer: B
Difficulty: 1 Easy
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

22) All of the following are Audit Data Standards (ADS) developed by the American Institute of Certified Accountants *except*:
A) Investments subledger standards
B) General Ledger standards
C) Procure-to-Pay subledger standards
D) Order-to-Cash subledger standards

Answer: A
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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23) When using [EmployeeID] as the unique identifier of the Employee table, [EmployeeID] is an example of which of the following:
A) Foreign key
B) Composite key
C) Primary key
D) Key attribute

Answer: C
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

24) The purpose of extracting data is:
A) To validate the data for completeness and integrity
B) To load the data into the appropriate tool for analysis
C) To identify and obtain the data from the appropriate source
D) To identify which approach to data analytics should be used

Answer: C
Difficulty: 1 Easy
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

25) The purpose of transforming data is:
A) To validate the data for completeness and integrity
B) To load the data into the appropriate tool for analysis
C) To identify and obtain the data from the appropriate source
D) To identify which approach to data analytics should be used

Answer: A
Difficulty: 1 Easy
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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26) The purpose of loading data is:
A) To validate the data for completeness and integrity
B) To load the data into the appropriate tool for analysis
C) To identify and obtain the data from the appropriate source
D) To identify which approach to data analytics should be used

Answer: B
Difficulty: 1 Easy
Topic: Loading
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

27) All of the following are included in the five steps of the ETL process *except*:
A) Determine the purpose and scope of the data request
B) Obtain the data
C) Validate the data for completeness and integrity
D) Scrub the data

Answer: D
Difficulty: 1 Easy
Topic: How Data Are Used and Stored in The Accounting Cycle
Learning Objective: 02-01 Understand how data are organized in an accounting information system.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

28) Which of the following best exemplifies a way that data will need to be cleaned after extraction and validation?
A) Remove headings and subtotals
B) Validate date/time fields
C) Remove trailing zeroes
D) Compare string limits for text fields

Answer: A
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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29) _____ is the metadata that describes each attribute in a database.
A) Relational database
B) Data dictionary
C) Descriptive attributes
D) Flat file

Answer: B
Difficulty: 2 Medium
Topic: Data Dictionaries
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

30) Removing headings or subtotals from data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: C
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

31) Correcting inconsistencies across data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: C
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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32) Formatting negative numbers in the data is an example of which of the following?
A) Validating the Data for Completeness
B) Validating the Data for Integrity
C) Cleaning the Data
D) Obtaining the Data

Answer: C
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

33) Removing leading zeroes and non-printable characters from the data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: C
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

34) Comparing descriptive statistics for numeric fields within the data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: A
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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35) Comparing the number of records within the data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: A
Difficulty: 2 Medium
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

36) Validating date/time fields within the data is an example of which of the following?
A) Validating the data for completeness
B) Validating the data for integrity
C) Cleaning the data
D) Obtaining the data

Answer: B
Difficulty: 1 Easy
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

37) Which of the following best describes the purpose of a primary key?
A) To ensure that each row in the table is unique
B) To create the relationship between two tables
C) To provide business information, but are not required to build a database
D) To support business processes across the organization

Answer: A
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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38) Which of the following best describes the purpose of a non-key attribute?
A) To ensure that each row in the table is unique
B) To create the relationship between two tables
C) To provide business information
D) To support business processes across the organization

Answer: C
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

39) Which of the following best describes the purpose of relational databases?
A) To ensure that business rules are enforced
B) To increase information redundancy in the organization
C) To provide business information to data analysts
D) To support business processes across the organization

Answer: D
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

40) Which of the following best describes the purpose of a foreign key?
A) To ensure that each row in the table is unique
B) To create the relationship between two tables
C) To provide business information
D) To support business processes across the organization

Answer: B
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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41) A data dictionary is paramount in helping data analysts do which of the following?
A) Maintain databases.
B) Identify the data they need to use.
C) Communicating insights.
D) Track outcomes.

Answer: B
Difficulty: 2 Medium
Topic: Data Dictionaries
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

42) A data dictionary is paramount in helping database administrators do which of the following?
A) Maintain databases.
B) Identify the data they need to use.
C) Communicating insights.
D) Track outcomes.

Answer: A
Difficulty: 2 Medium
Topic: Data Dictionaries
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

43) At which step of the ETL process should you try to answer the question "What tools will be used to perform data analytic tests or procedures and why?"
A) Step 1: Determine the purpose and scope of the data request.
B) Step 2: Obtain the data.
C) Step 3 or 4: Transformation.
D) Step 5: Loading the data for data analysis.

Answer: B
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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44) At which step of the ETL process should you try to answer the question "What other information will impact the nature, timing and extent of the data analysis?"
A) Step 1: Determine the purpose and scope of the data request.
B) Step 2: Obtain the data.
C) Step 3 or 4: Transformation.
D) Step 5: Loading the data for data analysis.

Answer: A
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

45) At which step of the ETL process should you try to answer the question "What business problem will the data address?"
A) Step 1: Determine the purpose and scope of the data request.
B) Step 2: Obtain the data.
C) Step 3 or 4: Transformation.
D) Step 5: Loading the data for data analysis.

Answer: A
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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46) At which step of the ETL process should you try to answer the question "Where are the data located in the financial or other related systems?"
A) Step 1: Determine the purpose and scope of the data request.
B) Step 2: Obtain the data.
C) Step 3 or 4: Transformation.
D) Step 5: Loading the data for data analysis.

Answer: B
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

47) When obtaining the data yourself, you should do all of the following before you begin *except*:
A) Identify the tables that contain the information you need.
B) Identify which attributes specifically hold the information you need in each table.
C) Identify how those tables are related to each other.
D) Identify any errors or issues from the extraction.

Answer: D
Difficulty: 2 Medium
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Understand
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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48) There are a variety of methods that you could take to retrieve the data, including SQL. What does SQL stand for?
A) Systems Query Language.
B) Systems Question Language.
C) Structured Question Language.
D) Structured Query Language.

Answer: D
Difficulty: 1 Easy
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

49) All of the following are benefits of using a normalized relational database *except*:
A) Completeness.
B) No redundancy.
C) Business rules are enforced.
D) Data is stored in one place.

Answer: D
Difficulty: 2 Medium
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Remember
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

50) Which of the following is most likely to be the primary key in an Employee table?
A) Employee ID
B) Employee Social Security Number
C) Employee Name
D) Employee Type

Answer: A
Difficulty: 2 Medium
Topic: Relational DatabaseEssay and Computational Questions
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Apply
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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51) Chapter 2 describes, the various ways in which data can be stored for differing purposes. Describe the two ways data can be organized and the purpose for each organizational structure.

Answer: Answers may vary slightly!
A **relational database**, is the type of database you are most likely to come across when extracting and using accounting and financial data. While it is often preferred to analyze data from a **flat file** (e.g., in an Excel spreadsheet, in which all the data are stored in one place), when it comes to storing data and maintaining data integrity, a relational database is preferred because of its ability to maintain "one version of the truth" across multiple data elements.
Difficulty: 3 Hard
Topic: How Data Are Used and Stored in The Accounting Cycle
Learning Objective: 02-01 Understand how data are organized in an accounting information system.
Bloom's: Evaluate
AACSB: Reflective Thinking; Analytical Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; BB Industry

52) Taylor is a new staff accountant for a fortune 100 company. After hearing that she just successfully completed an Accounting Data Analytics course, her boss said, "Get me a listing of all our deadbeat customer, so I can cut off their credit." After asking clarifying questions, Taylor was able to determine that root request was "Which customer, with a credit limit over $10,000, have more than $5,000 outstanding for more than 90 days at the prior quarter's end?" Use the ETL Techniques briefly describe the process Taylor with have to complete to answer her boss' question. (Assume that Taylor does not have direct access the data, data will export into an Excel file, and she will complete the analysis with an Excel Pivot Table.)

Answer: Answers will vary but should include some of these items.

- EXTRACTION: Taylor completed step 1 by asking her boss clarifying question to determine purpose and scope of the data request. To complete step 2 she should complete a template to request the data from the system administrator.
- TRANSFORMATION: For step 3, Taylor will need to validate the data for completeness and integrity. She can compare the total AR balance of the data extracted to the gross AR amount on the financial statement from the prior quarter's end. For step 4, Taylor should clean the data by removing headings or subtotals, ensuring formatting is consistent, etc.
- LOADING: No additional loading is necessary as the analysis will be run in Excel.

Difficulty: 3 Hard
Topic: Extraction, Transformation, and Loading (ETL) of Data
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Apply; Analyze
AACSB: Reflective Thinking; Knowledge Application
AICPA: BB Industry; FN Decision Making; BB Leveraging Technology; FN Leveraging Technology

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53) Define and compare a primary key, a foreign key, and non-key attribute.

Answer: Answers will vary!
- The purpose of the primary key is to ensure that each row in the table is unique, so it is often referred to as a "unique identifier."
    a. Each table must have a primary key. The primary key is typically made up of one column, but it can occasionally be made up of a combination of columns. It is rarely truly descriptive; instead, a collection of letters of simply sequential numbers are often used.
- The purpose of the foreign key is to create the relationship between two tables. The relationship is created by placing a foreign key in one of the two tables that are related.
    a. Whenever two tables are related, one of those tables must contain a foreign key to create the relationship. The foreign key is special type of attribute as it must be the primary key in a related table.
- The other columns in a table are descriptive attributes.
    a. Primary and foreign keys facilitate the structure of a relational database, and the descriptive attributes provide actual business information.

Difficulty: 3 Hard
Topic: Relational Database
Learning Objective: 02-02 Understand how data are stored in a relational database.
Bloom's: Analyze
AACSB: Reflective Thinking
AICPA: BB Industry; BB Leveraging Technology; FN Decision Making

54) Assume that you will be up for a promotion next month and you'd like to analyze a recently acquired database to show off your data analytic skills. After identifying the goal of your data analysis, using the first step of the IMPACT cycle, what steps would you take if you have direct access to the database?

Answer: Answers may vary!
1. Identify the tables that contain the information you need. You can do this by looking through the data dictionary or the relationship model.
2. Identify which attributes, specifically, hold the information you need in each table.
3. Identify how those tables are related to each other.

Difficulty: 3 Hard
Topic: Extraction
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Analyze
AACSB: Reflective Thinking
AICPA: BB Industry; BB Leveraging Technology; FN Decision Making

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55) Assume that you have just completed the extraction process on a data set. As you begin validating the data for completeness and integrity, you notice an error. Describe the steps you might take to determine the source of an error.

Answer: Answers will vary! A potential answer might include:
If an error is found, depending on the size of the dataset, you may be able to easily find the missing or erroneous data by scanning it with your eyes. However, if the dataset is large, or if the error is difficult to find, it may be easiest to go back to the extraction and examine how the data was extracted, fix any errors in the SQL code, and re-run the extraction.
Difficulty: 3 Hard
Topic: Transformation
Learning Objective: 02-03 Explain and apply extraction, transformation, and loading (ETL) techniques.
Bloom's: Apply
AACSB: Reflective Thinking
AICPA: BB Leveraging Technology; FN Leveraging Technology; FN Decision Making

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