



• Name: _____

• Date: _____

• Section: _____

BUSN 315: Management Information Systems

Quiz #3: Suggested Solutions

Spring 2026

INSTRUCTIONS:

- Write your name, date, and section clearly at the top of the first page.
- This is a closed-book quiz. Do not use your textbook, class notes, or electronic devices.
- The quiz consists of four parts: Definitions, True / False, Multiple Choice, and Short Answers.
- For definitions, write in complete sentences. Limit each definition to at most three sentences.
- For multiple-choice questions, circle the single best answer. Only one option is correct.
- For short-answer questions, write your responses in complete sentences. Limit each response to at most five sentences.
- You have 75 minutes to complete the quiz. Manage your time carefully.

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Problem 1. Definitions**(5 Points Each)**

Select FOUR items from the list below, and provide a definition for each item you choose.

- Program-Data Dependence
 - Data Warehouse
 - Big Data
 - Edge Computing
 - Horizontal Scalability
 - Software Defined Storage
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- **Program-Data Dependence:**
A situation in which data definitions and formats are embedded within application programs, making it difficult to change data structures without modifying the programs that use the data.
 - **Data Warehouse:**
A centralized repository that stores large amounts of historical data from multiple sources, designed primarily for reporting, analysis, and decision making.
 - **Big Data:**
Extremely large and complex data sets that cannot be easily managed or analyzed using traditional database tools.
 - **Edge Computing:**
A computing approach in which data processing occurs closer to where the data are generated rather than in centralized data centers or cloud servers.
 - **Horizontal Scalability:**
The ability of a system to increase capacity by adding more servers or machines, rather than upgrading the power of a single machine.
 - **Software Defined Storage:**
A storage architecture in which storage resources are managed and controlled through software, separating storage management from the underlying hardware.

Problem 2. True / False**(4 Points Each)**

Determine whether each statement is TRUE or FALSE. If FALSE, justify briefly.

2.A. Each era of computing infrastructure completely replaced the technologies of the previous era.

- FALSE

New eras of computing infrastructure build on and coexist with earlier technologies rather than completely replacing them. Many organizations continue to use older systems alongside newer technologies.

2.B. The consumerization of IT refers to the process by which organizations prohibit employees from using consumer technologies such as smartphones and cloud apps in the workplace.

- FALSE

Consumerization of IT refers to the growing use of consumer technologies in the workplace, where employees bring devices such as smartphones, tablets, and consumer applications into organizational environments.

2.C. Virtualization allows multiple operating systems and applications to run on a single physical server as separate virtual machines.

- TRUE

2.D. Data redundancy occurs when the same data are stored in multiple locations within an organization.

- TRUE

Problem 3. Multiple Choice**(3 Points Each)**

Select the BEST answer for each question based on course concepts discussed in class.

3.A. Which of the following best describes a server in a client/server architecture?

- a) A device that stores only backup copies of data
- b) A computer that requests services from another machine
- c) A computer dedicated to providing services or resources to other computers**
- d) A computer used exclusively for software development

3.B. Which of the following was a key feature of the personal computer era of computing?

- a) Centralized computing controlled by a small number of operators
- b) Affordable computing power distributed to individual employees**
- c) Elimination of centralized computing systems
- d) Exclusive reliance on cloud-based applications

3.C. Cloud computing allows firms to:

- a) Access computing resources over the Internet on demand**
- b) Store all data only on local hard drives
- c) Eliminate the need for software applications
- d) Remove the need for network connections

3.D. A startup launches a new online service but chooses not to purchase its own servers. Instead, it rents computing power and storage from a cloud provider such as Amazon Web Services and scales its resources as demand changes. This situation best illustrates:

- a) Client/server computing
- b) Infrastructure as a Service (IaaS)**
- c) Data mining
- d) Data warehousing

Problem 3. Multiple Choice (continued)**(3 Points Each)**

Select the BEST answer for each question based on course concepts discussed in class.

3.E. Under the Software as a Service (SaaS) model, users typically:

- a) Purchase and maintain their own servers
- b) Access fully managed applications through the Internet**
- c) Develop custom operating systems
- d) Store all data locally on personal computers

3.F. A bank stores highly sensitive financial data on its own internal servers but uses a public cloud provider for less critical applications and data storage. This approach is best described as:

- a) A hybrid cloud architecture**
- b) A client/server system
- c) A server virtualization strategy
- d) A distributed database system

3.G. An employee uses a personal smartphone to access company email and internal systems. The phone is later lost at an airport. Which concern does this situation most directly illustrate?

- a) Data redundancy
- b) Data warehousing limitations
- c) Security risks associated with BYOD**
- d) Server virtualization

3.H. Which of the following best describes data inconsistency?

- a) Different versions of the same data appear in different systems**
- b) Data stored in encrypted format
- c) Data stored in multiple tables within a database
- d) Data stored in cloud storage

Problem 3. Multiple Choice (continued)**(3 Points Each)**

Select the BEST answer for each question based on course concepts discussed in class.

- 3.I. A company stores customer phone numbers in two different systems. One system lists a customer's number as 555-0123, while another lists it as 555-0213. This situation is an example of:
- a) Data mining
 - b) Encryption
 - c) Data redundancy
 - d) Data inconsistency**
- 3.J. A database contains a CUSTOMER table and an ORDER table. Each order includes a Customer_ID field that refers to a specific customer in the CUSTOMER table. In this situation, Customer_ID in the ORDER table is most likely a:
- a) Primary key
 - b) Foreign key**
 - c) Data mart
 - d) Index file
- 3.K. Which of the following tools allows managers to analyze data across multiple dimensions such as time, region, and product?
- a) Blockchain
 - b) OLAP**
 - c) Virtualization
 - d) Encryption
- 3.L. An online retailer analyzes millions of purchase records and discovers that customers who buy coffee makers often purchase coffee filters shortly afterward. This discovery is an example of:
- a) Data mining**
 - b) Data redundancy
 - c) Database normalization
 - d) Program-data dependence

Problem 4. Short Answers #1**(7 Points Each)**

A growing e-commerce company currently runs its website and internal inventory system on servers located in its office. During major sales events, such as holiday promotions, the website often becomes slow because the servers cannot handle the sudden increase in customer traffic. The company is considering moving its systems to a cloud provider such as Amazon Web Services so that it can quickly increase computing resources when traffic rises and reduce them when demand falls.

4.A. What major change to its IT infrastructure is the company considering?

- Moving the company's IT infrastructure to cloud computing (or cloud-based infrastructure).

4.B. Explain one advantage this change could provide for handling periods of high customer demand.

- Scalability: The company can quickly add more computing power during peak traffic periods.
- Elasticity: Resources can automatically expand during high demand and shrink when traffic decreases.
- Improved performance during traffic spikes: Additional servers can be provisioned to handle large numbers of users.
- Reduced risk of system slowdowns or crashes during major sales events.

Problem 5. Short Answers #2**(7 Points Each)**

A large retail company has grown quickly over the past decade. Different departments adopted their own software systems and began storing their own customer information. The marketing department maintains a database of customer emails for advertising campaigns, the sales department stores customer records for transactions, and the customer support department maintains its own database for service requests. As a result, the same customer information is stored in multiple systems. Managers also notice that customer contact information is sometimes different across systems. For example, a customer's phone number may be updated in the sales system but remain outdated in the marketing database.

5.A. Identify two data management problems illustrated in this situation.

- Data redundancy occurs because the same customer information is stored in multiple departmental systems.
- Data inconsistency occurs when the same data appear with different values across systems, such as when a phone number is updated in one database but not in another.

5.B. Explain how using a database management system (DBMS) could help address these problems.

- Reduced data redundancy: Customer information would be stored in one place instead of multiple systems.
- Improved data consistency: Updates to customer information would occur in a single database, ensuring all departments access the same data.
- Better data sharing: Different departments could access the same centralized data rather than maintaining separate records.
- Easier data maintenance: Changes to customer information only need to be made once.

• Original Score: _____

• Recovered Score: _____

• Original Date: _____

• Recovered Date: _____