Database Management Systems
Knowledge Probe

Vikas Thammanna Gowda

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1 Circle the right answer

1. What is data?

   (a) Raw facts and figures without context

   (b) Processed information with meaning

   (c) A collection of related web pages

   (d) A type of software application

2. How does information differ from data?

   (a) Information is data organized and processed to have meaning

   (b) Information is always numerical, while data is textual

   (c) Data is more valuable than information

   (d) There is no difference; they are interchangeable terms

3. Which of the following is an example of organizing data in everyday life?

   (a) A random list of words

   (b) A shopping list categorized by product type

   (c) An unreadable string of characters

   (d) A blank sheet of paper

4. Which tool is commonly used to store and manage numerical data?

   (a) Word processor

   (b) Spreadsheet application

   (c) Web browser

   (d) Graphic design software

5. Why is it important to organize and manage data effectively?

   (a) To increase data redundancy

   (b) To ensure data is easily accessible and useful

   (c) To make data retrieval more time-consuming

   (d) To decrease data accuracy

6. What challenge might arise when handling large amounts of data manually?

    (a) Increased accuracy
    (b) Faster processing
    (c) Higher likelihood of errors
    (d) Improved data security

7. What is a potential benefit of using computerized systems to manage data?

    (a) Limited storage capacity
    (b) Slower data retrieval
    (c) Enhanced ability to analyze large datasets
    (d) Increased manual workload

8. Which of the following is a real-world application where databases are used?

    (a) Handwritten personal diary
    (b) Online banking systems
    (c) Printed telephone directory
    (d) Traditional chalkboard

9. How can you ensure the accuracy and reliability of information you collect?

    (a) By accepting all data sources without verification
    (b) By cross-referencing multiple reputable sources
    (c) By relying solely on memory
    (d) By ignoring data validation processes

10. What is a common concern regarding the security and privacy of stored data?

    (a) Unauthorized access and data breaches
    (b) Data being too accessible to authorized users
    (c) Lack of data redundancy
    (d) Excessive data encryption

11. Which data structure uses the Last-In-First-Out (LIFO) principle?

    (a) Queue
    (b) Stack
    (c) Linked List
    (d) Tree

12. What is the primary advantage of using a linked list over an array?

    (a) Fixed size
    (b) Faster access to elements
    (c) Dynamic size adjustment
    (d) Easier sorting algorithms

13. In a binary search tree, what is the maximum number of children a node can have?

    (a) 1
    (b) 2
    (c) 3
    (d) 4

14. Which data structure is best suited for implementing recursion?

    (a) Queue
    (b) Stack
    (c) Array
    (d) Graph

15. What is the time complexity of searching for an element in a balanced binary search tree?

    (a) O(n)
    (b) O(log n)
    (c) O(n log n)
    (d) O(1)

16. Which of the following is not a fundamental concept of OOP?

    (a) Encapsulation
    (b) Inheritance
    (c) Compilation
    (d) Polymorphism

17. What does encapsulation in OOP entail?

    (a) Inheriting properties from another class
    (b) Hiding the internal state and requiring all interaction to be performed through an object's methods
    (c) Allowing multiple functions to have the same name
    (d) Deriving new classes from existing ones

18. Which OOP principle allows a subclass to provide a specific implementation of a method that is already defined in its superclass?

    (a) Abstraction
    (b) Inheritance
    (c) Overloading
    (d) Overriding

19. What is polymorphism in OOP?

    (a) The ability of different objects to respond to the same function call in different ways
    (b) The process of hiding the implementation details of a class
    (c) The mechanism by which one class acquires the properties of another
    (d) The organization of data into a hierarchical structure

20. Which keyword in Java is used to inherit properties from another class?

    (a) implements
    (b) extends
    (c) inherits
    (d) derives