

First Quarter Exam

Data Structures and Algorithms by Larry David

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1. Discuss the key differences between HTTP and HTTPS.
2. Discuss the concept of space complexity in algorithm analysis.
3. Write a Python function to calculate the power of a number using recursion.
4. Write a Python function to check if a number is prime.
5. Inheritance allows a subclass to override attributes and behaviors inherited from its superclass. ☐ True ☐ False
6. The Python programming language was named after a snake. ☐ True ☐ False
7. Discuss the advantages of using version control systems in software development.
8. Which programming paradigm emphasizes immutability and pure functions? A. Procedural B. Object-Oriented C. Functional D. Structured E. Scripting
9. Which of the following is a common use case for a binary search algorithm? A. Sorting an array of integers B. Searching for a specific element in a sorted array C. Reversing an array D. Shuffling an array randomly E. Finding the maximum element in an array
10. Object-oriented programming supports encapsulation, inheritance, and polymorphism. ☐ True ☐ False
11. Write a Python function to calculate the factorial of a non-negative integer using recursion.
12. Write a Python function to calculate the Fibonacci sequence.
13. A hash map data structure allows elements to be stored in a sorted order. ☐ True ☐ False
14. Which of the following are key principles of the Agile Manifesto? A. ☐ Heavy documentation B. ☐ Contract negotiation C. ☐ Individuals and interactions over processes and tools D. ☐ Comprehensive project plan E. ☐ Working software over comprehensive documentation
15. Which of the following is a popular relational database management system? A. MongoDB B. Redis C. Cassandra D. SQLite E. Elasticsearch
16. Which of the following is an example of a programming language? A. HTML B. CSS C. Python D. JSON E. XML

