First Quarter Exam

Data Structures and Algorithms by Larry David

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1. Which of the following is a sorting algorithm that works by repeatedly selecting the minimum element from the unsorted part of the array and putting it in the sorted part? A. Bubble Sort B. Insertion Sort C. Merge Sort D. Selection Sort E. Quick Sort

2. 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

3. Python is a statically typed programming language. [ ] True [ ] False

4. Write a Python function to calculate the factorial of a non-negative integer without using recursion.

5. Which data structure allows us to store elements in a sorted order? A. Linked List B. Array C. Hash Map D. Binary Search Tree E. Stack

6. Explain the concept of object-oriented programming.

7. Discuss the importance of algorithms in computer science.

8. What is the output of the following code?

9. Which of the following are reasons for using version control systems in software development? A. [ ] Enforcing strict coding standards B. [ ] Facilitating code collaboration C. [ ] Maintaining a record of changes D. [ ] Automating software testing E. [ ] Ensuring code correctness

10. Inheritance allows a subclass to inherit attributes and behaviors from multiple superclasses. [ ] True [ ] False

11. What is the output of the following code?

12. Which of the following is a software design pattern that separates the creation of objects from their usage? A. Observer B. Factory C. Decorator D. Singleton E. Facade

13. What is the output of the following code?

14. Which of the following are key aspects of agile software development? A. [ ] Heavy documentation B. [ ] Predictive planning C. [ ] Adaptive planning D. [ ] Rigidity E. [ ] Collaborative teams

15. Which of the following is an example of a programming language? A. HTML B. CSS C. Python D. JSON E. XML

16. Write a Python function to calculate the factorial of a non-negative integer using recursion.