

# 16 Lecture - CS101

## Important Subjective

1. **What is data abstraction in software development?**

**Answer:** Data abstraction is the process of hiding implementation details and presenting only the necessary information to the user, in order to manage complexity in large software systems.

2. **Why is data abstraction important in software development?**

**Answer:** Data abstraction is important in software development because it helps manage complexity in large software systems, improves software quality, and makes it easier to maintain and fix bugs without disrupting the user experience.

3. **How is data abstraction achieved in object-oriented programming?**

**Answer:** Data abstraction is achieved in object-oriented programming through the use of classes, interfaces, and inheritance. Classes and interfaces define the essential features of an object, while inheritance allows for the creation of new classes that inherit the properties and methods of existing classes.

4. **What are abstract data types?**

**Answer:** Abstract data types (ADTs) are data structures that encapsulate data and operations that can be performed on the data. ADTs provide a simplified view of the data structure, which makes it easier for programmers to use the data structure without worrying about the underlying implementation.

5. **How does data abstraction improve software quality?**

**Answer:** Data abstraction improves software quality by reducing the likelihood of errors and bugs, and by making it easier to maintain the software system without disrupting the user experience.

6. **What is modular programming and how is data abstraction achieved in it?**

**Answer:** Modular programming is the process of dividing a software system into modules, which are self-contained units of code that perform specific tasks. Data abstraction is achieved in modular programming by allowing developers to focus on the essential features of the module without worrying about the details of other modules.

7. **What are APIs and how do they use data abstraction?**

**Answer:** APIs are sets of functions or methods that can be used to interact with a software system. APIs use data abstraction by providing a simplified interface to complex software systems, making it easier for developers to use the system without worrying about the underlying implementation.

8. **How does data abstraction help manage complexity in large software systems?**

**Answer:** Data abstraction helps manage complexity in large software systems by providing a simplified view of the system, which makes it easier for developers to understand and maintain the system.

9. **What is the role of libraries in data abstraction?**

**Answer:** Libraries provide pre-built code that can be used to perform specific tasks, using data abstraction to simplify the process for developers.

10. **How does data abstraction make software systems easier to use for end-users?**

**Answer:** Data abstraction makes software systems easier to use for end-users by hiding implementation details and providing a simplified view of the system, allowing users to interact with the system without worrying about the underlying code.