11 Lecture - CS403

Important Subjective

1. **What is the main benefit of using inheritance in object-oriented programming?**
   Answer: The main benefit of using inheritance is code reuse, as it allows the creation of new classes that inherit the properties and methods of existing classes.

   How does inheritance promote code organization in software development?
   Answer: Inheritance promotes code organization by allowing the creation of hierarchies of related classes, where the derived classes inherit and extend the functionality of the base class.

   What is the difference between single and multiple inheritance?
   Answer: Single inheritance allows a class to inherit properties and methods from only one base class, while multiple inheritance allows a class to inherit from more than one base class.

   What is the Fragile Base Class problem, and how can it be avoided?
   Answer: The Fragile Base Class problem occurs when changes made to the base class can break the functionality of the derived classes. It can be avoided by minimizing the number of public and protected members of the base class and by avoiding modifying the base class once it has been released.

   Can a derived class override a private method of its base class?
   Answer: No, a derived class cannot override a private method of its base class, as private methods are not visible to the derived class.

   What is the diamond problem in multiple inheritance, and how can it be resolved?
   Answer: The diamond problem occurs when two or more base classes of a derived class have a common method, leading to ambiguity in the method resolution. It can be resolved by using virtual inheritance, which ensures that only one copy of the common base class is present in the object hierarchy.

   How does inheritance support the concept of polymorphism?
   Answer: Inheritance supports polymorphism by allowing the same method to be implemented in different ways in different derived classes, and by allowing a derived class to be treated as an instance of its base class.

   What is the difference between public, protected, and private access modifiers in inheritance?
   Answer: Public members are accessible from any class, protected members are accessible within the same package and in derived classes, and private members are accessible only within the same class.

   Can a derived class access the private members of its base class?
   Answer: No, a derived class cannot access the private members of its base class.

   Can a base class be instantiated in inheritance?
   Answer: Yes, a base class can be instantiated in inheritance, but it cannot be used to create

objects directly.