Reading Assignment - Lab 03

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Question 1: What are the advantages of Polymorphism?

-**Increases Code Reusability**: This means you can write code that works with the superclass, and it can be reused with any subclass without modifying the existing code.

-**Readability and maintainability**: Polymorphism improves the readability and maintainability of code by reducing the amount of code that needs to be written and maintained.

-**Supports Dynamic Binding**: This shows how dynamic binding allows Java to select the appropriate method implementation at runtime based on the actual object type.

-**Enables Objects to be Treated as a Single Type**: Polymorphism allows you to write generic code that operates on objects of a common superclass type. This makes it easier to write flexible and adaptable code that can handle objects of different types without knowing their specific class at compile time.

Question 2: How is Inheritance useful to achieve Polymorphism in Java?

- Method Overriding: Through inheritance, a subclass can override methods of its superclass.

- Code Reusability: Inheritance promotes code reuse by enabling subclasses to inherit methods and fields from their superclass. This eliminates the need to reimplement common functionalities in each subclass.

-Flexibility and Extensibility: Inheritance and polymorphism provide flexibility and extensibility in Java programming. Subclasses can add new methods, override existing ones, or introduce new fields while benefiting from the superclass's polymorphic behavior.

Question 3: What are the differences between Polymorphism and Inheritance in Java?

Inheritance	Polymorphism
Inheritance is one in which a new class is created that inherits the features from the already existing class, so it defines "parent-child" relationships between classes.	Polymorphism describes the ability of something to have or to be displayed in more than one form(like the ability to present the same interface for differing underlying data types)
It is basically applied to classes.	Polymorphism basically applied to functions or methods.
Inheritance supports the concept of reusability and reduces code length in object-oriented programming.	Polymorphism allows the object to decide which form of the function to implement at compile-time (overloading) and run-time (overriding).
Inheritance can be single, hybrid, multiple, hierarchical, and multilevel inheritance.	Polymorphism can be compiled-time polymorphism (overload) and run-time polymorphism (overriding).