

Sure, here are the answers to the questions:

1. **\*\*Advantages of Polymorphism\*\***:

- **Flexibility**: Polymorphism allows for more flexible and adaptable code. It enables a single interface to be used to represent different data types or classes, which can simplify code and increase its reusability.
- **Code Maintainability**: Polymorphism promotes code reusability and modularity, which in turn makes code easier to maintain and update.
- **Extensibility**: It enables easy addition of new classes or types without modifying existing code, thus promoting extensibility and scalability.

2. **\*\*How Inheritance achieves Polymorphism in Java\*\***:

- Inheritance is one of the key mechanisms in Java for achieving polymorphism. It allows a subclass to inherit properties and behaviors (methods) from its superclass.
- Through inheritance, a subclass can override methods of its superclass with its own implementation. This allows different subclasses to provide their own specialized behavior while still being treated as instances of their common superclass.
- Polymorphism in Java is often achieved through method overriding, where a subclass provides a specific implementation of a method that is already defined in its superclass. When a method is called on a superclass reference pointing to a subclass object, the JVM determines at runtime which version of the method to execute based on the actual type of the object.

3. **\*\*Differences between Polymorphism and Inheritance in Java\*\***:

- Inheritance is a mechanism by which one class acquires the properties and behaviors of another class. It establishes a "is-a" relationship between classes, where a subclass "is a" type of its superclass.
- Polymorphism, on the other hand, refers to the ability of a single interface to represent multiple underlying data types or classes. It allows objects of different types to be treated as instances of a common superclass or interface.
- Inheritance is a way to achieve code reuse and establish hierarchical relationships between classes, while polymorphism enables dynamic method dispatch and allows for more flexible and generic code.
- Inheritance is a compile-time concept, as the relationships between classes are determined at compile time. Polymorphism, however, is a runtime concept, as the determination of which method to execute occurs at runtime based on the actual type of the object.