Lab03 reading assignment

What are the advantages of Polymorphism?

Polymorphism allows for flexibility in our code. With Method Polymorphism (method overloading), a similar method with similar signature can have different implementations that better suit each implementing classes. With Object Polymorphism (method overriding), it is possible to use references of parent/abstract class or interface instead of precise types, enabling flexibility and headroom for future modifications.

How is Inheritance useful to achieve Polymorphism in Java?

Inheritance is the technique that enables Object Polymorphism. By inheriting from more general classes or interfaces, one object can be referred by variables of general types through upcasting and downcasting. This makes our code more "loose" or forgiving in terms of type casting, facilitating further changes to the implementations wihtout breaking stuffs.

What are the differences between Polymorphism and Inheritance in Java?

Though the technique to achieve is similar, the idea behind them is not alike. Inheritance aims at reducing repetition and structuring our code more systematically/logically. This is done by grouping related attibutes and methods into separate classes and interfaces. On the other hand, Polymorphism is the "byproduct" of utilizing Inheritance. Polymorphism aims to make typecasting more forgiving or "loose". This is done by upcasting and downcasting, whihc can only be done after organizing some kinds of Inheritance.